City Council Regular Meeting

Dripping Springs City Hall

511 Mercer Street – Dripping Springs, Texas

Tuesday, October 07, 2025, at 6:00 PM

AGENDA

CALL TO ORDER & ROLL CALL

City Council Members
Mayor Bill Foulds, Jr.
Mayor Pro Tem Taline Manassian
Council Member Place 2 Wade King
Council Member Place 3 Geoffrey Tahuahua
Council Member Place 4 Travis Crow
Council Member Place 5 Sherrie Parks

Staff, Consultants, & Appointed/Elected Officials
City Administrator Michelle Fischer
Deputy City Administrator Ginger Faught
Deputy City Administrator Shawn Cox
City Attorney Laura Mueller
Deputy City Attorney Aniz Alani
City Secretary Diana Boone
IT Director Jason Weinstock
Planning Director Tory Carpenter
People & Communications Director Lisa Sullivan
Parks & Community Services Director Andy Binz

PLEDGE OF ALLEGIANCE

CITY COUNCIL

PRESENTATION OF CITIZENS

A member of the public that wishes to address the City Council on any issue, regardless of whether it is posted on this agenda, may do so during Presentation of Citizens. It is the request of the City Council that individuals wishing to speak on agenda items with a public hearing hold their comments until the item is being considered. Individuals are allowed two (2) minutes each to speak regarding issues not on the agenda and two (2) minutes per item on the agenda and may not cede or pool time. Those requiring the assistance of a translator will be allowed additional time to speak. Individuals are not required to sign in; however, it is encouraged. Individuals that wish to share documents with the City Council must present the documents to the City Secretary or City Attorney providing at least seven (7) copies; if seven (7) copies are not provided, the City Council will receive the documents the following day. Audio Video presentations

will not be accepted during Presentation of Citizens. By law no action shall be taken during Presentation of Citizens; however, the Mayor may provide a statement of specific factual information, recitation of existing policy, or direction or referral to staff.

PROCLAMATIONS & PRESENTATIONS

Proclamations and Presentations are for discussion purposes only and no action shall be taken.

1. **Presentation and Approval of a Resolution celebrating ten years of dedicated service by Penny Appleman for the City of Dripping Springs.** *Sponsor: Mayor Bill Foulds, Jr.*

CONSENT AGENDA

The following items will be acted upon in a single motion and are considered to be ministerial or routine. No separate discussion or action on these items will be held unless pulled at the request of a member of the City Council or City staff.

2. **Approval of the September 2, 2025 City Council special meeting & Board of Adjustment meeting minutes.**

3. **Approval of the appointment of Stephanie Moody to the Emergency Management Committee as a representative of the Dripping Springs Chamber of Commerce for term ending January 1, 2026.**

4. **Approval of a Resolution of the City of Dripping Springs Accepting Improvements and Approving and Accepting a Maintenance Bond for the East Interceptor Segment One - Wastewater Improvements.** *Applicant: CC Carlton Industries, Ltd.*

5. **Approval of a Resolution of the City of Dripping Springs Consenting to the Issuance of Bonds by Headwaters Municipal Utility District of Hays County for Series 2025A.** *Applicant: Matt Matthews*

6. **Approval of Updated Professional Services Agreement with Keenan Smith for TIRZ Project Management Services.** *Sponsor: Mayor Pro Tem Taline Manassian*

7. **Approval of the August 2025 Treasurer's Report.** *Deputy City Administrator, Shawn Cox*

BUSINESS AGENDA

8. **Discuss and consider approval of a Construction Contract between the City of Dripping Springs and QA Construction Services, Inc. for the Stephenson Building and Parking Lot Project.** *Sponsor: Mayor Bill Foulds, Jr.*

9. **Presentation and discussion regarding Plan of Finance for the "City of Dripping Springs, Texas Special Assessment Revenue Bonds, Series 2025 (Heritage Public Improvement District Improvement Area #3A and Improvement Area #3B Project)".** *Applicant: Steve Metcalf*

10. **Consideration and possible action with respect to a "Resolution of the City Council of the City of Dripping Springs, Texas, Determining Costs of the Proposed Public Improvements in the Heritage Public Improvement District, Approving a Proposed Improvement Area #3A Assessment Roll and Proposed Improvement Area #3B Assessment Roll, Calling a Public Hearing, and Making Related Findings and Determinations, in Accordance With Chapter 372 of the Texas Local Government Code"** *Applicant: Steve Metcalf*

11. **Discuss and consider approval of a Temporary Street Closure Permit Request from the Dripping Springs Lions Club to close portions of Mercer Street, College Street, San Marcos Street, and Old Fitzhugh Road on December 6, 2025 for the 2025 Christmas on Mercer event.** *Sponsor: Council Member Sherrie Parks*

12. **Discuss and consider approval of a Resolution revising the City of Dripping Springs Personnel Manual as it relates to telecommuting and paid time off.** *Sponsor: Council Member Geoffrey Tahuahua*

13. **Public hearing and consideration of an Ordinance Approving a Master Sign Plan for Village Grove P.D.D.** *Applicant: Taylor Morrison*

14. **Discuss and consider an Ordinance Repealing and Replacing Appendix A: Article A1.000 (General Provisions) of the Dripping Springs Code of Ordinances amending fees for Building Fees and Updating Fee Schedule Formats; Providing for the Following: Findings of Fact; Enactment; Repealer; Severability; Publication; Effective Date; and Proper Notice and Meeting.** *Sponsor: Mayor Bill Foulds, Jr.*

    a. Staff Report
    b. Public Hearing
    c. Ordinance

15. **Discuss and consider approval of an ordinance amending Chapter 2, Article 2.03, Division 4 of the City of Dripping Springs Code of Ordinances to update the Electronic Signature Policy, specifically to include provisions governing the limited acceptance of digital seals on bonds.** *Sponsor: Mayor Bill Foulds, Jr.*

16. **Public hearing, discussion, and consideration of approval of proposed amendments to an Ordinance of the City of Dripping Springs, Chapter 20, implementing the enforcement provisions of the City's Drought Contingency Plan.** *Sponsor: Mayor Bill Foulds, Jr.*

    a. Staff Report
    b. Public Hearing
    c. Ordinance

REPORTS

Reports listed are on file and available for review upon request. The City Council may provide staff direction; however, no action shall be taken.

17. **Planning Department Report.** *Tory Carpenter, Planning Director*

18. **Update on Proposed Sign Ordinance Updates.** *Laura Mueller, City Attorney*

CLOSED SESSION

The City Council has the right to adjourn into closed session on any item on this agenda and at any time during the course of this meeting to discuss any matter as authorized by law or by the Open Meetings Act, Texas Government Code Sections 551.071 (Consultation With Attorney), 551.072 (Deliberation Regarding Real Property), 551.073 (Deliberation Regarding Prospective Gifts), 551.074 (Personnel Matters), 551.076 (Deliberation Regarding Security Devices or Security Audits), and 551.087 (Deliberation Regarding Economic Development Negotiations), and 551.089 (Deliberation Regarding Security Devices or Security Audits). Any final action or vote on any Closed Session item will be taken in Open Session.

19. **Consultation with City Attorney related to opioid lawsuits.** (*Consultation with Attorney, 551.071).*

20. **Consultation with attorney related to law enforcement services and authority.** (*Consultation with Attorney, 551.071*).

21. **Consultation with Attorney and Deliberation Regarding Real Property and interlocal discussions related to TIRZ Priority Projects and Other Potential Strategic Real Property Acquisitions.** (*Consultation with Attorney, 551.071; Deliberation Regarding Real Property, 551.072)*

22. **Consultation with Attorney regarding legal issues related to the South Regional Water Reclamation Project, Wastewater, and Amendment 2 Permits, Wastewater Service Area and Agreements, Water Service and Agreements, Wastewater Fees, Wastewater Infrastructure Agreements, facility liability coverage, and related items.** (*Consultation with Attorney, 551.071)*

UPCOMING MEETINGS

City Council & Board of Adjustment Meetings
October 21, 2025, at 6:00 p.m.
November 4, 2025, at 6:00 p.m.
November 18, 2025, at 6:00 p.m.
December 2, 2025, at 6:00 p.m.
December 16, 2025, at 6:00 p.m.

Board, Commission, & Committee Meetings
Parks & Recreation Commission, October 15, 2025, at 6:00 p.m.
Farmers Market Committee, October 16, 2025, at 10:00 a.m.
Emergency Management Committee, October 16, 2025, at 12:00 p.m.
Transportation Committee, October 27, 2025, at 3:30 p.m.
Founders Day Commission, October 27, 2025, at 6:30 p.m.
Planning & Zoning Commission, October 28, 2025, at 6:00 p.m.

ADJOURN

TEXAS OPEN MEETINGS ACT PUBLIC NOTIFICATION OF MEETING

I certify that this public meeting is posted in accordance with Texas Government Code Chapter 551, Open Meetings. This meeting agenda is posted on the bulletin board at the City of Dripping Springs City Hall, located at 511 Mercer Street, and on the City website at, www.cityofdrippingsprings.com, on October 1, 2025 at 5:00 p.m.

_____

Diana Boone, City Secretary

This facility is wheelchair accessible. Accessible parking spaces are available. Request for auxiliary aids and services must be made 48 hours prior to this meeting by calling (512) 858-4725.

CITY OF DRIPPING SPRINGS
RESOLUTION NO. 2025-_____

A RESOLUTION OF THE CITY COUNCIL OF DRIPPING SPRINGS, TEXAS, CELEBRATING TEN YEARS OF DEDICATED SERVICE FOR THE CITY OF DRIPPING SPRINGS.

WHEREAS, each city should have personnel dedicated to the supporting its programs, budgets, and staff; and

WHEREAS, the City Council of the City of Dripping Springs ("City Council") finds it to be in the public interest, and necessary for the administration and management of the City of Dripping Springs to recognize its employees for dedicated years service; and

WHEREAS, Penny Appleman has provided dedicated service in the finance department to the City for ten years; and

WHEREAS, Penny has been a fervent enforcer of all payroll rules and regulations while steadfastly supporting city staff with their questions, timecards, and payroll inquiries; and

WHEREAS, Penny has ensured that the City employees and all vendors are timely paid during the time of her employment; and

WHEREAS, Penny was one of the Stars in the Dripping Springs group the Drippin' Dots; and

WHEREAS, the City Council finds that it is the best interest in its residents, businesses, and staff to recognize Penny Appleman for her years of devoted service.

NOW, THEREFORE, BE IT RESOLVED by the City of Dripping Springs City Council:

1. The City Council hereby approves the resolution recognizing Penny Appleman for ten years of service.

2. The City Council congratulates Penny Appleman.

3. The City Council directs City Administration to recognize Penny Appleman for her committed years of service.

PASSED & APPROVED this, the _____ day of _____ 2025, by a vote of ___ (*ayes*) to ___ (*nays*) to ____ (*abstentions*) of the City Council of Dripping Springs, Texas.

CITY OF DRIPPING SPRINGS:

by: _____
Bill Foulds, Jr., Mayor

ATTEST:

_____
Diana Boone , City Secretary

City Council Special Meeting
& Board of Adjustment Meeting

Dripping Springs City Hall

511 Mercer Street – Dripping Springs, Texas

Tuesday, September 02, 2025, at 5:30 PM

DRAFT MINUTES

CITY COUNCIL

CALL TO ORDER & ROLL CALL

With a quorum of council members present, Mayor Foulds called the meeting to order at 5:33 p.m.

City Council Members
Mayor Bill Foulds, Jr.
Mayor Pro Tem Taline Manassian
Council Member Place 2 Wade King
Council Member Place 3 Geoffrey Tahuahua
Council Member Place 4 Travis Crow
Council Member Place 5 Sherrie Parks

Staff, Consultants, & Appointed/Elected Officials
City Administrator Michelle Fischer
Deputy City Administrator Ginger Faught
Deputy City Administrator Shawn Cox
City Attorney Laura Mueller
Deputy City Attorney Aniz Alani
City Secretary Diana Boone
Planning Director Tory Carpenter
City Engineer Chad Gilpin
Project Manager Keenan Smith
Transportation Engineer Leslie Pollack
Visitors Bureau Manager Pam King
IT Director Jason Weinstock
Building Official Shane Pevehouse
DSRP Manager Lily Sellers
Community Events Coordinator Johnna Krantz
Parks & Community Services Director Andy Binz
Parks & Community Services Assistant Director Emily Nelson
People & Communications Director Lisa Sullivan

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Council Member King.

BUDGET WORKSHOP

1. **Presentation and discussion regarding the proposed Municipal Budget for Fiscal Year 2026.** *Deputy City Administrator, Shawn Cox*

   No action was taken.

BOARD OF ADJUSTMENT

CALL TO ORDER & ROLL CALL

With a quorum of board members present, Chair Foulds called the meeting to order at 6:19 p.m.

Board Members
Chair Bill Foulds, Jr.
Taline Manassian
Wade King
Geoffrey Tahuahua
Travis Crow
Sherrie Parks
Alternate Charles Busbey
Alternate Joe Volpe

BOARD OF ADJUSTMENT AGENDA

2. **Public hearing, discussion, and consideration of approval of VAR2025-002: a variance request to allow a commercial building associated with the Dripping Springs Sports Club to be larger than the 100,000 square feet limit in the Planned Development District No. 6 zoning district for a property located at the northwest intersection of Canyonwood Drive and US 290.** *Applicant: Drew Rose, DSSC Equity, LLC*

   a. Applicant Presentation

   Applicant Drew Rose presented and remained in the audience to answer questions.

   b. Staff Report

   Planning Director Tory Carpenter presented the staff report and recommended that if the board acts on the variance request, that it be approved with the following conditions:

   1. The applicant must provide 8-foot wood or masonry screening along the eastern and northern property boundaries consistent with Section 5.10.1 of the Zoning Ordinance.
   2. The applicant shall submit an Alternative Exterior Design application for review and approval prior to submitting a site development application.
   3. The gross floor area of the building shall not exceed 150,000 square feet.
   4. The building footprint shall not exceed 65,000 square feet.
   5. The applicant shall install a six-foot wood fence or masonry wall with supplemental screening along the northern and eastern boundaries of the outdoor sports courts.

6. The applicant shall install timers and blackout shades on mezzanine level windows facing residential areas to shield from sunset to sunrise and shall use fully shielded, downward facing parking lot fixtures with motion sensors and timers.
7. Prior to obtaining a Certificate of Occupancy, the applicant shall establish a Neighborhood Advisory Board with representatives from Headwaters and Sunset Canyon, meeting at least twice annually during construction and first year of operation.
8. A site development permit shall be approved and construction commence on the site within two years of approval of this variance request.

c. Public Hearing

Theodore Crawford spoke concerning sound mitigation.

d. Variance

A motion was made by Council Member Tahuahua and seconded by Council Member King to approve the variance with the conditions identified by staff in the presentation which should reflect the 8 ft. wood or masonry screening as well as the addition of the sound mitigation on the outdoor sports courts for pickleball & basketball. The motion carried unanimously 6 to 0.

Roll Call Vote:
Chair Foulds – Aye
Taline Manassian – Aye
Wade King – Aye
Geoffrey Tahuahua - Aye
Travis Crow – Aye
Sherrie Parks - Aye

CITY COUNCIL

PRESENTATION OF CITIZENS

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Tom Crawford spoke in favor of the Wayfinding signs.

PROCLAMATIONS & PRESENTATIONS
Proclamations and Presentations are for discussion purposes only and no action shall be taken.

3. **A Proclamation of the City of Dripping Springs declaring September 17th through September 23rd, 2025 as "Constitution Week."**

   This proclamation was read by Council Member King and was presented to Jessica Rodriguez, representing the local chapter of the National Society Daughters of the American Revolution.

4. **Proclamation of the City of Dripping Springs proclaiming the months of September - November 2025 and March - May 2026, as "Lights Out Migratory Months" in the City of Dripping Springs, Texas.** *Sponsor: Council Member Sherrie Parks*

   This proclamation was read by Council Member Parks and presented to Johnna Krantz with the City of Dripping Springs.

CONSENT AGENDA
The following items will be acted upon in a single motion and are considered to be ministerial or routine. No separate discussion or action on these items will be held unless pulled at the request of a member of the City Council or City staff.

5. **Approval of the August 5, 2025 City Council meeting minutes.**

6. **Approval of an updated Professional Services Agreement for City Engineering Services with Gilpin Engineering, LLC.** *Sponsor: Mayor Bill Foulds, Jr.*

7. **Approval of the July 2025 Treasurer's Report.** *Deputy City Administrator, Shawn Cox*

   A motion was made by Mayor Prot Tem Manassian and seconded by Council Member Parks, to approve Consent Agenda items 5, 6, and 7. The motion to approve carried unanimously 5 to 0.

BUSINESS AGENDA

8. **Public hearing, discussion, and consideration of a variance request to allow twelve (12) additional wall signs on fence screening at BPI Partners, Inc., located at 13240 Rooster Springs Rd., Austin, TX 78737, and a request to reduce the Sign Permit Application Fees.** *Applicant: Shane Bauerle, BPI Partners, Inc.*

   a. Applicant Presentation

      Director of Business Development Robert McClelland presented and remained in audience to answer possible questions.

   b. Staff Report

      Building Official Shane Pevehouse presented the staff report and recommended denial of the sign variance.

c. Public Hearing

No one spoke during the Public Hearing.

d. Variance Request to allow additional wall signs

A motion was made by Council Member King and seconded by Council Member Tahuahua, to treat this as two (2) signs with the applicable dues and grant the variance for two (2) years. The motion to approve carried 3 to 2, with Mayor Pro Tem Manassian and Council Member Crow voting nay.

This motion addressed both the additional signs and the fees.

e. Request to reduce Sign Permit Application Fees

Same motion.

A motion was made by Council Member King and seconded by Council Member Tahuahua, to treat this as two (2) signs with the applicable dues and grant the variance for two (2) years. The motion to approve carried 3 to 2, with Mayor Pro Tem Manassian and Council Member Crow voting nay.

9. Discuss and consider approval of an Ordinance Repealing and Replacing Appendix A: Article A100 (General Provisions) of the Dripping Springs Code of Ordinances; Amending Fees and Updating Fee Schedule Formats. *Sponsor: Mayor Bill Foulds, Jr.*

A motion was made by Council Member Tahuahua and seconded by Council Member Parks, to approve the fire section of the fee schedule with amendment under new fees to add unauthorized burning during burn ban and unauthorized burning and to have these fees increase with each subsequent offence. The motion carried 3 to 2, with Mayor Pro Tem Manassian and Council Member Crow voting nay.

10. Public hearing, discussion, and consideration of approval of proposed amendments to an Ordinance of the City of Dripping Springs, Chapter 20, implementing the enforcement provisions of the City's Drought Contingency Plan. *Sponsor: Mayor Bill Foulds, Jr.*

This item was postponed.

11. Discuss and consider the selection of a bidder for the Stephenson Building and Parking Lot Improvement Project and authorize staff and the Mayor to finalize agreement with selected bidder. *Sponsor: Mayor Bill Foulds, Jr.*

A motion was made by Council Member Crow and seconded by Council Member Parks, to accept QA Construction for $4,281,000 for the Stephenson Building and Parking Lot Improvement Project and authorize staff and Mayor to finalize the agreement. The motion to approve the carried 4 to 1, with Council Member Tahuahua voting nay.

12. **Public Hearing regarding the Proposed 2025 Ad Valorem Tax and Levy of Two Thousand Two Hundred and Sixty-Seven Ten-Thousands Cents ($0.2267) per one hundred ($100.00) of assessed valuation of all taxable property within the Corporate City Limits.**

No one spoke during the Public Hearing and there was no action taken.

13. **Public hearing and consideration of approval regarding an Ordinance of the City of Dripping Springs, Texas, adopting the 2025-2026 Fiscal Year Municipal Budget; funding municipal services and authorizing expenditures.**

a. Staff Report

Staff report was presented by Deputy City Administrator Shawn Cox.

b. Public Hearing

No one spoke during the Public Hearing

c. Budget Ordinance

A motion was made by Mayor Pro Tem Manassian and seconded by Council Member Tahuahua, to postpone this item to date certain, September 16, 2025, with direction to add the Dripping Spring Ranch Park items to the budget. The motion to postpone carried unanimously 5 to 0.

CLOSED SESSION

The City Council has the right to adjourn into closed session on any item on this agenda and at any time during the course of this meeting to discuss any matter as authorized by law or by the Open Meetings Act, Texas Government Code Sections 551.071 (Consultation With Attorney), 551.072 (Deliberation Regarding Real Property), 551.073 (Deliberation Regarding Prospective Gifts), 551.074 (Personnel Matters), 551.076 (Deliberation Regarding Security Devices or Security Audits), and 551.087 (Deliberation Regarding Economic Development Negotiations), and 551.089 (Deliberation Regarding Security Devices or Security Audits). Any final action or vote on any Closed Session item will be taken in Open Session.

A motion was made by Mayor Pro Tem Manassian and seconded by Council Member Crow, to go into Closed Session for items 14 and 15, under sections 551.071 and 551.072. The motion carried unanimously 5 to 0.

Closed Session began at 10:08 PM.

14. **Consultation with City Attorney related to opioid lawsuits.** *Consultation with Attorney, 551.071*

15. **Consultation with Attorney and Deliberation Regarding Real Property and interlocal discussions related to TIRZ Priority Projects and Other Potential Strategic Real Property Acquisitions.** (*Consultation with Attorney, 551.071; Deliberation Regarding Real Property, 551.072)*

16. **Consultation with city attorney related to legal issues regarding land use conditions on variances, special exceptions, and other zoning issues.** (*Consultation with Attorney, 551.071*).

17. **Consultation with Attorney regarding legal issues related to the South Regional Water Reclamation Project, Wastewater, and Amendment 2 Permits, Wastewater Service Area and Agreements, Water Service and Agreements, Wastewater Fees, Wastewater Infrastructure Agreements, facility liability coverage, and related items.** (*Consultation with Attorney, 551.071)*

18. **Deliberation of the Evaluation and Duties of the City Administrator, Deputy City Administrator I, and Deputy City Administrator II and Consultation with Attorney related to legal issues regarding evaluation, agreements, and duties of city employees.** (*Consultation with Attorney, 551.071; Deliberation Regarding Personnel Matters, 551.074*).

Closed Session ended at 10:18 PM.

A motion was made by Mayor Pro Tem Manassian and seconded by Council Member Crow to bring item 14 out of Closed Session. The motion carried unanimously 5 to 0.

A motion was made by Mayor Pro Tem Manassian and seconded by Council Member King, to approve the resolution regarding the opioid settlement as discussed in Closed Session. The motion to approve carried unanimously 5 to 0.

ADJOURN

A motion to adjourn was made by Council Member King and seconded by Council Member Parks. The motion to adjourn carried unanimously 5 to 0.

The meeting was adjourned at 10:19 PM.

APPROVED ON: Month, XX, 202X

Bill Foulds, Jr., Mayor

ATTEST:

Diana Boone, City Secretary

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78602

Submitted By: Dane Sorensen, Utilities Director

Council Meeting Date: 10/07/2025

Agenda Item Wording: **Approval of a Resolution Accepting Improvements and Approving a Maintenance Bond for the East Interceptor Segment 1 - Wastewater Improvements.** *Applicant: CC Carlton Industries, Ltd.*

Agenda Item Requestor:

Summary/Background: CC Carlton Industries, Ltd. has completed Wastewater Improvements for East Interceptor Segment 1. City staff has inspected the project throughout all stages of construction. The City Engineer has completed a final inspection, and the Design Engineer has provided concurrence. All improvements have been built per plan.

Per the bid documents this maintenance bond is for 15% of construction cost and has a warranty term of one year.

Commission Recommendations: N/A

Recommended Council Actions: City staff recommends approval.

Attachments: Draft resolution (attaching maintenance bond)

Final Estimated Cost and Quantities

Next Steps/Schedule: Execution.

CITY OF DRIPPING SPRINGS

RESOLUTION No. 2025-R___

A RESOLUTION OF THE CITY OF DRIPPING SPRINGS, TEXAS ("CITY"), ACCEPTING IMPROVEMENTS AND APPROVING AND ACCEPTING MAINTENANCE BOND FOR EAST INTERCEPTOR SEGMENT 1 – WASTEWATER IMPROVEMENTS, PROVIDING FOR EFFECTIVE DATE; AND PROPER NOTICE & MEETING.

WHEREAS, CC Carlton Industries, Ltd. ("Contractor") recently completed and the City Engineer for the City of Dripping Springs has inspected the revegetation, storm water, drainage, paving, wastewater ("Improvements") for the East Interceptor Segment – Wastewater Improvements; and

WHEREAS, the City desires to accept as being complete in accordance with applicable development the Improvements at East Interceptor Segment 1 – Wastewater Improvements; and

WHEREAS, the City of Dripping Springs City Council ("City Council") seeks the Contractor to provide a Maintenance Bond (Attachment "A") conditioned to guarantee for the period of one (1) Year from and after the date of substantial completion of the Improvements, guaranteeing the materials and workmanship related to Contractor's Improvements; and

WHEREAS, this Resolution conforms with the Maintenance and Guarantee regulation of the City's Code requiring all public improvements be free from defects for a period of one (1) year; and

WHEREAS, pursuant to Texas Local Government Code Section 51.001, the City has general authority to adopt an ordinance or police regulation that is for the good government, peace or order of the City and is necessary or proper for carrying out a power granted by law to the City; and

WHEREAS, the City Council finds that it is necessary and proper for the good government, peace or order of the City to approve this Resolution.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF `DRIPPING SPRINGS, TEXAS:

1. **Finding of Fact:** The above and foregoing recitals are hereby found to be true and correct and are incorporated as finding of fact.

2. **Acceptance of Improvements:** The City Council hereby accepts the Improvements.

3. **Acceptance of Maintenance Bond:** The City Council hereby approves and accepts the Contractor's proposed Maintenance Bond No. 602-208635-4, from United States Fire Insurance Company ("Insurer"), included and attached herein as Attachment "A".

4. **Assumption of Responsibility:** Conditioned upon the fiscal guarantee for maintenance from the Contractor and the Insurer, the City shall assume responsibility for the repair, maintenance, and regulation of the Improvements for the benefit of the public.

5. **Authorization to Execute Documents:** The City Council hereby authorizes the Mayor or the Mayor's designee to execute any documentation on the City's behalf necessary to effectuate the intent and purpose of this Resolution.

6. **Effective Date:** The resolution shall be effective from and after its approval and passage.

7. **Meeting:** The meeting at which this Resolution was passed was open to the public, and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Texas Government Code, Chapter 551.

PASSED AND APPROVED this, the 7th day of October 2025, by a vote of _____(ayes) to _ (nays) to _____(abstentions) of the City Council of Dripping Springs, Texas:

CITY OF DRIPPING SPRINGS:

_____

Bill Foulds, Jr., Mayor

ATTEST:

_____

Diana Boone, City Secretary

BURGESS & NIPLE

Firm Registration No. F-10834

235 Ledge Stone Drive | Austin, TX 78737 | 512.432.1000

July 22, 2025
City Of Dripping Springs
PO Box 384
511 Mercer Street
Dripping Springs, TX 78620

Re: City of Dripping Springs South Regional Wastewater Facilities
East Interceptor Segment 1
Payment Application No.8 Final

Dear Dane:

Attached is Payment Application No. 8 from CC Carlton Industries Ltd. All work associated with the East Interceptor Segment 1 has been completed and successfully tested.

Based on the completion of this work, this pay application includes retainage in the amount of $101,015.76.

We further recommend the City approve Payment Application No. 8. If you have any questions or need any additional information, please give us a call.

Sincerely,
Burgess & Niple, Inc.

William Ball, P.E.

Attachment: One (1) original Payment Application No. 8

CONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

Project City of Dripping Springs East Interceptor Seg 1

Job No. 24-027

On receipt by the signer of this document of a check from City of Dripping Springs (maker of check) in the sum of $ 101,015.76 payable to C.C. CARLTON INDUSTRIES LTD (payee or payees of check) and when the check has been properly endorsed and has been paid by the bank on which it is drawn, this document becomes effective to release any mechanic's lien right, any right arising from a payment bond that complies with a state or federal statute, any common law payment bond right, any claim for payment, and any rights under any similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's position that the signer has on the property of City of Dripping Springs (owner) located at Dripping Springs, TX (location) to the following extent: Wastewater Installation (job description).

This release covers a progress payment for all labor, services, equipment, or materials furnished to the property or to City of Dripping Springs (person with whom signer contracted) as indicated in the attached statement(s) or progress payment request(s), except for unpaid retention, pending modifications and changes, or other items furnished.

Before any recipient of this document relies on this document, the recipient should verify evidence of payment to the signer.

The signer warrants that the signer has already paid or will use the funds received from this progress payment to promptly pay in full all of the signer's laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or services provided for or to the above referenced project in regard to the attached statement(s) or progress payment request(s).

Date 05/23/2025

C.C. CARLTON INDUSTRIES LTD. (Company name)

By _____ (Signature)

PROJECT MANAGER (Title)

STATE OF TEXAS §
§
COUNTY OF WILLIAMSON §

This instrument was acknowledged before me on this 23 day of May, 2025, by Byron Dupre (name), SENIOR PROJECT MANAGER (job title) of C C CARLTON INDUSTRIES LTD (company name).

_____
NOTARY PUBLIC, STATE OF TEXAS

CHARLA ANN ROGERS
Notary Public, State of Texas
Comm. Expires 04-18-2026
Notary ID 133710723

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

APPLICATION FOR PAYMENT

Prepared By

EJCDC®
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

ACEC
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Contractor's Application for Payment

Owner:	City of Dripping Springs	**Owner's Project No.:**	73819
Engineer:	Burgess & Niple, Inc.	**Engineer's Project No.:**	PR39677
Contractor:	C.C. Carlton Industries, LTD.	**Contractor's Project No.:**	24-027
Project:	City of Dripping Springs East Interceptor		
Contract:	TWDB CW-SRF No. 73819		
Application No.:	8	**Application Date:**	5/25/2025
Application Period:	**From** 5/1/2025	**to**	5/31/2025

1. Original Contract Price				$	1,991,125.20
2. Net change by Change Orders				$	29,190.00
3. Current Contract Price (Line 1 + Line 2)				$	2,020,315.20
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)				$	2,020,315.20
5. Retainage					
a.	0%	X $ 2,020,315.20	Work Completed	$	-
b.	5%	X $ -	Stored Materials	$	-
c. Total Retainage (Line 5.a + Line 5.b)				$	-
6. Amount eligible to date (Line 4 - Line 5.c)				$	2,020,315.20
7. Less previous payments (Line 6 from prior application)				$	1,919,299.44
8. Amount due this application				$	101,015.76
9. Balance to finish, including retainage (Line 3 - Line 4)				$	-

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:
(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;
(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and
(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor:

Signature: Byron Dupre Digitally signed by Byron Dupre DN: C=US, E=BDupre@CCCarlton.com, O="C.C.Carlton Industries, LTD.", OU=Project Manager, CN=Byron Dupre Reason: I am approving this document Date: 2025.05.23 15:59:03-05'00' **Date:**

Recommended by Engineer	**Approved by Owner**
By: C.B. Ball	**By:** Michelle Fischer
Title: Senior Project Manager	**Title:** City Administrator
Date: 7/22/2025	**Date:** 7/23/2025
Approved by Funding Agency	
By:	**By:**
Title:	**Title:**
Date:	**Date:**

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Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner:	City of Dripping Springs
Engineer:	Burgess & Niple, Inc.
Contractor:	C.C. Carlton Industries, LTD.
Project:	City of Dripping Springs East Interceptor
Contract:	TWDB CW-SRF No. 73819

Owner's Project No.:	73819
Engineer's Project No.:	PR39677
Contractor's Project No.:	24-027

Application No.: 8 **Application Period:** From 05/01/25 to 05/31/25 **Application Date:** 05/25/25

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
	Original Contract										
1	MOBILIZATION (MAX 10%)	1.00	LS	90,000.00	90,000.00	1.00	90,000.00		90,000.00	100%	-
2	STABALIZED CONSTRUCTION ENTRANCE	1.00	EA	100.00	100.00	1.00	100.00		100.00	100%	-
3	CLEARING & GRUBBING	0.72	AC	100.00	72.00	0.72	72.00		72.00	100%	-
4	REMOVE AND REPLACE ASPHALT & BASE ROAD	515.00	SY	1.00	515.00	515.00	515.00		515.00	100%	-
5	SILT FENCE	350.00	LF	5.00	1,750.00	350.00	1,750.00		1,750.00	100%	-
6	REVEGETATION	0.72	AC	10.00	7.20	0.72	7.20		7.20	100%	-
7	TRENCH SAFETY	2,530.00	LF	1.00	2,530.00	2,530.00	2,530.00		2,530.00	100%	-
8	MANHOLE VACCUM TESTING	10.00	EA	1,000.00	10,000.00	10.00	10,000.00		10,000.00	100%	-
9	TELEVISION TESTING	2,947.00	LF	3.00	8,841.00	2,947.00	8,841.00		8,841.00	100%	-
10	MANDREL TESTING	2,947.00	LF	3.00	8,841.00	2,947.00	8,841.00		8,841.00	100%	-
11	CONCRETE WASH OUT	1.00	EA	100.00	100.00	1.00	100.00		100.00	100%	-
12	24" GRAVITY MAIN (10-12')	39.00	LF	200.00	7,800.00	39.00	7,800.00		7,800.00	100%	-
13	24" GRAVITY MAIN (12-14')	43.00	LF	220.00	9,460.00	43.00	9,460.00		9,460.00	100%	-
14	24" GRAVITY MAIN (14-16')	452.00	LF	240.00	108,480.00	452.00	108,480.00		108,480.00	100%	-
15	24" GRAVITY MAIN (16-18')	279.00	LF	260.00	72,540.00	279.00	72,540.00		72,540.00	100%	-
16	24" GRAVITY MAIN (18-20')	97.00	LF	320.00	31,040.00	97.00	31,040.00		31,040.00	100%	-
17	24" GRAVITY MAIN (20-22')	76.00	LF	400.00	30,400.00	76.00	30,400.00		30,400.00	100%	-
18	30" GRAVITY MAIN (6-8')	71.00	LF	270.00	19,170.00	71.00	19,170.00		19,170.00	100%	-
19	30" GRAVITY MAIN (8-10')	89.00	LF	275.00	24,475.00	89.00	24,475.00		24,475.00	100%	-
20	30" GRAVITY MAIN (10-12')	15.00	LF	300.00	4,500.00	15.00	4,500.00		4,500.00	100%	-
21	30" GRAVITY MAIN (12-14')	59.00	LF	320.00	18,880.00	59.00	18,880.00		18,880.00	100%	-
22	30" GRAVITY MAIN (14-16')	30.00	LF	380.00	11,400.00	30.00	11,400.00		11,400.00	100%	-
23	30" GRAVITY MAIN (16-18')	29.00	LF	440.00	12,760.00	29.00	12,760.00		12,760.00	100%	-
24	30" GRAVITY MAIN (18-20')	123.00	LF	520.00	63,960.00	123.00	63,960.00		63,960.00	100%	-
25	30" GRAVITY MAIN (20-22')	152.00	LF	570.00	86,640.00	152.00	86,640.00		86,640.00	100%	-
26	30" GRAVITY MAIN (22-24')	128.00	LF	620.00	79,360.00	128.00	79,360.00		79,360.00	100%	-
27	30" GRAVITY MAIN (24-26')	116.00	LF	710.00	82,360.00	116.00	82,360.00		82,360.00	100%	-
28	30" GRAVITY MAIN (26-28')	125.00	LF	760.00	95,000.00	125.00	95,000.00		95,000.00	100%	-
29	30" GRAVITY MAIN (28-30')	176.00	LF	810.00	142,560.00	176.00	142,560.00		142,560.00	100%	-
30	30" GRAVITY MAIN (30-32')	179.00	LF	850.00	152,150.00	179.00	152,150.00		152,150.00	100%	-
31	12" GRAVITY MAIN (STUB OUT A 12-16)	57.00	LF	112.00	6,384.00	57.00	6,384.00		6,384.00	100%	-
32	8" GRAVITY MAIN (STUB OUT A 10-14)	71.00	LF	105.00	7,455.00	71.00	7,455.00		7,455.00	100%	-
33	12" GRAVITY MAIN (STUB OUT A 20-22)	51.00	LF	265.00	13,515.00	51.00	13,515.00		13,515.00	100%	-

EJCDC C-620 Contractor's Application for Payment
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Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: City of Dripping Springs
Engineer: Burgess & Niple, Inc.
Contractor: C.C. Carlton Industries, LTD.
Project: City of Dripping Springs East Interceptor
Contract: TWDB CW-SRF No. 73819

Owner's Project No.: 73819
Engineer's Project No.: PR39677
Contractor's Project No.: 24-027

Application No.: 8 **Application Period:** From 05/01/25 to 05/31/25 **Application Date:** 05/25/25

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
34	18" GRAVITY MAIN (STUB OUT A 16-18)	43.00	LF	225.00	9,675.00	43.00	9,675.00		9,675.00	100%	-
35	8" GRAVITY MAIN (STUB OUT A 12-14)	10.00	LF	90.00	900.00	10.00	900.00		900.00	100%	-
36	8" GRAVITY MAIN (STUB OUT A 12-14)	10.00	LF	90.00	900.00	10.00	900.00		900.00	100%	-
37	8" GRAVITY MAIN (STUB OUT A 18-20)	10.00	LF	210.00	2,100.00	10.00	2,100.00		2,100.00	100%	-
38	6' VENTED MANHOLE	3.00	EA	10,800.00	32,400.00	3.00	32,400.00		32,400.00	100%	-
39	6' MANHOLE	3.00	EA	11,000.00	33,000.00	3.00	33,000.00		33,000.00	100%	-
40	6' POLYMER CONCRETE INTERIOR DROP MANHOLE RELINER 48/24 W/ HOOD	2.00	EA	60,000.00	120,000.00	2.00	120,000.00		120,000.00	100%	-
41	6' INTERIOR DROP MANHOLE RELINER A6 DROP BOWL W/ HOOD	1.00	EA	12,980.00	12,980.00	1.00	12,980.00		12,980.00	100%	-
42	6' INTERIOR DROP MANHOLE RELINER B10 DROP BOWL W/ HOOD	1.00	EA	13,030.00	13,030.00	1.00	13,030.00		13,030.00	100%	-
43	6' MANHOLE EXTRA DEPTH	126.00	VF	1,020.00	128,520.00	126.00	128,520.00		128,520.00	100%	-
44	BORE INCLUDING 36" HDPE CASING, 24" CARRIER PIPE, AND BORE & RECEIVING PITS	417.00	LF	1,025.00	427,425.00	417.00	427,425.00		427,425.00	100%	-
45	36" IPS DR 47 HDPE CASING	26.00	LF	275.00	7,150.00	26.00	7,150.00		7,150.00	100%	-
					-		-		-		-
				Original Contract Totals	$ 1,991,125.20		$ 1,991,125.20	$ -	$ 1,991,125.20	100%	$ -

EJCDC C-620 Contractor's Application for Payment
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Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner:	City of Dripping Springs
Engineer:	Burgess & Niple, Inc.
Contractor:	C.C. Carlton Industries, LTD.
Project:	City of Dripping Springs East Interceptor
Contract:	TWDB CW-SRF No. 73819

Owner's Project No.:	73819
Engineer's Project No.:	PR39677
Contractor's Project No.:	24-027

Application No.: 8 **Application Period:** From 05/01/25 to 05/31/25 **Application Date:** 05/25/25

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
	Change Orders										
001	EXTRA COST FOR 36" STEEL BORE CASING MATERIAL IN LIEU OF HDPE	417.00	LF	70.00	29,190.00	417.00	29,190.00		29,190.00	100%	-
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				Change Order Totals	$ 29,190.00		$ 29,190.00	$ -	$ 29,190.00	100%	$ -
	Original Contract and Change Orders										
				Project Totals	$ 2,020,315.20		$ 2,020,315.20	$ -	$ 2,020,315.20	100%	$ -

EJCDC C-620 Contractor's Application for Payment
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DRIPPING SPRINGS
Texas

CITY OF DRIPPING SPRINGS, TEXAS
MAINTENANCE BONDS CHECKLIST
FOR APPROVAL OF BONDS BY STAFF

NAIC #21113	City Staff	City Atty
1. Check to be sure the bonding company is qualified to do business in Texas and is listed on the U.S. Department of the Treasury list of approved sureties. (check rating) –Bond needs to list NAIC number of company https://www.fiscal.treasury.gov/fsreports/ref/suretyBnd/c570_a-z.htm	☑	☐
2. The name of the contractor (the Principal) must be stated as it was in the contract, or if a subdivision, be the developer of the contractor.	☑	☐
3. The name of the surety on the bond (the bonding company) must be the same on the bonds and on the power of attorney.	☑	☐
4. The amount of the bond must be the same amount stated as the full price of the contract or amount approved by the city engineer (i.e. engineer's opinion of probable cost).	☑	☐
15% was approved by Ginger and the Mayor and was also approved in the executed contract.		
5. The date the bond is signed cannot be prior to the date of the contract, i.e. the date the bond is signed must be the same or a later date.	☑	☐
6. The items stated in the bond as the work to be done must exactly match the description of the work to be done stated in the construction contract. In most contracts there is a blank for a brief description of the work such as "improvements to Walnut Street, City of Dripping Springs." This frequently is on the cover of the contract documents. The same description should appear on the bond. Or, if for a subdivision, should list the subdivision's name.	☑	☐
7. On the bond: (a) The date that the Principal(s) and surety(s) sign cannot precede the date the contract was "made and entered into" or the date approved by the engineer.	☑	☐

	City Staff	City Atty
(b) The person who is authorized to sign the contract, and did sign the contract, should sign the bond as principal.	☑	☐
(c) Type the name of the officer signing.	☑	☐
(d) The Agent for Service should be located in the State of Texas. The agent may be either a person or business.	☑	☐
(e) Surety's seal (which is the seal of the bond company) must appear under the surety's signature. All corporate sureties have seals.	☑	☐
(f) Make sure the seal is the bond company's seal, not a notary's seal. The seal may be a facsimile seal, unless the instrument states otherwise.	☑	☐
(g) The writing on the surety's seal must be legible.	☑	☐
(h) Digital seals will only be accepted if accompanied by a link to a verification source.	☐	☐
(i) All bonds with a digital seal must be immediately routed to the City Attorney's office for contemporaneous review.	☐	☐
(h) + (I) is not relevant as their is a physical seal.(b)--> confirmed with authorized signature list		
8. All maintenance bonds must be in the forms acceptable to the City Administrator and the City Secretary.	☑	☐
9. All maintenance bonds must be signed by an agent, and must be accompanied by a certified copy of the authority for him or her to act.	☑	☐
10. Approval of bonding company based on the company's financial ratings.	☑	☐
UNDERWRITING LIMITATION b/: $251,791,000		
11. Inspector has confirmed that improvements are complete and acceptable.	☑	☐
12. Term of two years as required by ordinance.	☑	☐
The contract was approved with the term of one year warranty period.		
13. Create resolution approving bond and accepting improvements.	☑	☐
14. Attach the resolution accepting the bond.	☑	☐
15. The attached resolution: (a) Accepts the maintenance bond.	☑	☐

	City Staff	City Atty
(b) Accepts the improvements listed in the bond.	☑	☐
(c) Releases the construction board.	☑	☐

Remarks:

City Staff: Micaela Betts

City Attorney:

Outlook

RE: East Interceptor Segment - Wastewater Improvements Maintenance Bond

From Charla Rogers <CRogers@cccarlton.com>
Date Fri 9/26/2025 4:53 PM
To Hunter Dickehut <HDickehut@cccarlton.com>; Micaela Betts <MBetts@cityofdrippingsprings.com>; Byron Dupre <bdupre@cccarlton.com>
Cc Dane Sorensen <DSorensen@cityofdrippingsprings.com>

The only authorized signatories for bonds are:
C. Craig Carlton, Mgr of the GP
Benjamin Lyon, CEO

Thank you,

Charla Rogers
Project Management Administrator
C.C. Carlton Industries, Ltd.
512-476-4282 x119

C.C. Carlton Industries, Ltd.
Site Work since 1993

From: Hunter Dickehut <HDickehut@cccarlton.com>
Sent: Friday, September 26, 2025 4:46 PM
To: Micaela Betts <MBetts@cityofdrippingsprings.com>; Charla Rogers <CRogers@cccarlton.com>; Byron Dupre <bdupre@cccarlton.com>
Cc: Dane Sorensen <DSorensen@cityofdrippingsprings.com>
Subject: RE: East Interceptor Segment - Wastewater Improvements Maintenance Bond

Adding Charla and Byron to assist with the request below.

Hunter Dickehut
VP of Operations
512-525-5087

C.C. Carlton Industries, Ltd.
Site Work since 1993

From: Micaela Betts <MBetts@cityofdrippingsprings.com>
Sent: Friday, September 26, 2025 10:51 AM
To: Hunter Dickehut <HDickehut@cccarlton.com>
Cc: Dane Sorensen <DSorensen@cityofdrippingsprings.com>
Subject: East Interceptor Segment - Wastewater Improvements Maintenance Bond

Hi Hunter,

I am currently in the process of reviewing the East Interceptor Segment maintenance bond. Could you email me a list of authorized signatures so I can verify who signed the bond is authorized to do so?

Thank you,
Micaela

DRIPPING SPRINGS
Texas
Open spaces, friendly faces.

Micaela Betts
Public Works Administrative Assistant

mbetts@cityofdrippingsprings.com
512.858.4725 City Hall
512.939.3195 Mobile

511 Mercer Street • PO Box 384
Dripping Springs, TX 78620

cityofdrippingsprings.com

24-07

THE STATE OF TEXAS §

COUNTY OF Hays §

MAINTENANCE BOND

BOND NO. 602-208635-4

KNOW ALL MEN BY THESE PRESENTS:

That CC Carlton Industries, Ltd. of Travis County, Texas, hereinafter called Principal, and United States Fire Insurance Company, a corporation legally authorized to do business and act as a surety in the State of Texas, hereinafter called Surety, are held and firmly bound unto the City of Dripping Springs, of Hays County, Texas, hereinafter called City, in the penal sum of $303,047.28 Three Hundred Three Thousand Two Forty Seven & 28/100's), the said sum being fifteen percent (15%) of the total amount paid for the hereinafter mentioned work, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.
THE Condition of this Obligation is such that:

WHEREAS, the Principal was engaged to perform the following

work: East Interceptor Segment Wastewater Improvements

, in the proper performance of which the City has an interest.

NOW, THEREFORE, if the Principal shall well, truly, and faithfully maintain and keep in good repair the work contracted to be done and performed for a period of One (1) year from the date of acceptance in writing by the City and do all necessary work and repair of any defective conditions growing out of or arising from the improper work of the same, including, but not limited to, any settling, breaking, cracking or other defective condition of any of the work or part thereof arising from improper excavation, backfilling, compacting or any other cause or condition, known or unknown, at any time during the period of this bond, which the city engineer, whose judgment shall be final and conclusive, determines to be the result of defective work, materials or labor; then this obligation shall be void, otherwise to remain in full force and effect.

In case the Principal shall fail to maintain, repair, or reconstruct any defective condition of the work as determined herein within thirty (30) days notice of same, it is agreed that the City may do said work and supply such materials as necessary and charge the sum against the Principal and Surety on this obligation.

It is further agreed that this obligation shall be a continued one against the Principal and Surety and that successive recoveries may be had hereon for successive breaches of the conditions herein provided until the full amount of this bond shall have been exhausted, and it is further

understood that the obligation to maintain said work shall continue throughout said maintenance period, and the same shall not be changed, diminished, or in any manner affected from any cause during said time.

PROVIDED, further, that if any legal action be filed on this bond, venue shall lie in Hays County, Texas.

SIGNED and sealed this the 2nd day of July, 2025

IN THE PRESENCE OF:

CC Carlton Industries, Ltd.
Principal

By: Benjamin Lyon
Benjamin Lyon, CEO

United States Fire Insurance Company
Surety

By: Steven W. Dobson
Steven W. Dobson, Attorney-in-fact

NOTE: POWER OF ATTORNEY OF SURETY MUST BE ATTACHED
COPY OF ANY WRITTEN CONSTRUCTION CONTRACT, AGREEMENT, OR ESTIMATE MUST BE ATTACHED
(Date of Bond must ***not*** be prior to date of contract)

POWER OF ATTORNEY
UNITED STATES FIRE INSURANCE COMPANY
PRINCIPAL OFFICE - MORRISTOWN, NEW JERSEY

08338

KNOW ALL MEN BY THESE PRESENTS: That United States Fire Insurance Company, a corporation duly organized and existing under the laws of the state of Delaware, has made, constituted and appointed, and does hereby make, constitute and appoint:

Steven W. Dobson, John W. Schuler

each, its true and lawful Attorney(s)-In-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver: Any and all bonds and undertakings of surety and other documents that the ordinary course of surety business may require, and to bind United States Fire Insurance Company thereby as fully and to the same extent as if such bonds or undertakings had been duly executed and acknowledged by the regularly elected officers of United States Fire Insurance Company at its principal office, in amounts or penalties: **Unlimited**

This Power of Attorney limits the act of those named therein to the bonds and undertakings specifically named therein, and they have no authority to bind United States Fire Insurance Company except in the manner and to the extent therein stated.

This Power of Attorney is granted pursuant to Article IV of the By-Laws of United States Fire Insurance Company as now in full force and effect, and consistent with Article III thereof, which Articles provide, in pertinent part:

> Article IV, Execution of Instruments - Except as the Board of Directors may authorize by resolution, the Chairman of the Board, President, any Vice-President, any Assistant Vice President, the Secretary, or any Assistant Secretary shall have power on behalf of the Corporation:
>
> (a) to execute, affix the corporate seal manually or by facsimile to, acknowledge, verify and deliver any contracts, obligations, instruments and documents whatsoever in connection with its business including, without limiting the foregoing, any bonds, guarantees, undertakings, recognizances, powers of attorney or revocations of any powers of attorney, stipulations, policies of insurance, deeds, leases, mortgages, releases, satisfactions and agency agreements;
> (b) to appoint, in writing, one or more persons for any or all of the purposes mentioned in the preceding paragraph (a), including affixing the seal of the Corporation.
>
> Article III, Officers, Section 3.11, Facsimile Signatures. The signature of any officer authorized by the Corporation to sign any bonds, guarantees, undertakings, recognizances, stipulations, powers of attorney or revocations of any powers of attorney and policies of insurance issued by the Corporation may be printed, facsimile, lithographed or otherwise produced. In addition, if and as authorized by the Board of Directors, dividend warrants or checks, or other numerous instruments similar to one another in form, may be signed by the facsimile signature or signatures, lithographed or otherwise produced, of such officer or officers of the Corporation as from time to time may be authorized to sign such instruments on behalf of the Corporation. The Corporation may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Corporation, notwithstanding the fact that he may have ceased to be such at the time when such instruments shall be issued.

IN WITNESS WHEREOF, United States Fire Insurance Company has caused these presents to be signed and attested by its appropriate officer and its corporate seal hereunto affixed this 21st day of April, 2025.

UNITED STATES FIRE INSURANCE COMPANY

Matthew E. Lubin, President

State of New Jersey }
County of Morris }

On this 21st day of April, 2025, before me, a Notary public of the State of New Jersey, came the above named officer of United States Fire Insurance Company, to me personally known to be the individual and officer described herein, and acknowledged that he executed the foregoing instrument and affixed the seal of United States Fire Insurance Company thereto by the authority of his office.

ETHAN SCHWARTZ
NOTARY PUBLIC
STATE OF NEW JERSEY
MY COMMISSION EXPIRES 6/25/2029
COMMISSION: #50223171

Ethan Schwartz (Notary Public)

I, the undersigned officer of United States Fire Insurance Company, a Delaware corporation, do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy is still in force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of United States Fire Insurance Company on the 2nd day of July 20 25

UNITED STATES FIRE INSURANCE COMPANY

Michael C. Fay, Senior Vice President

CONTACT INFORMATION: Bond Verifications: surety@cfins.com / Claims: SuretyClaimsSupport@cfins.com

CRUM & FORSTER
A FAIRFAX COMPANY

TEXAS COMPLAINT NOTICE
AVISO DE QUEJA DE TEXAS

IMPORTANT NOTICE

To obtain Information or make a complaint:

You may call Crum & Forster's toll-free number for information or to make a complaint at:

1-888-890-1500

You may write to Crum & Forster at:

Crum & Forster
305 Madison Avenue
Morristown, NJ 07962

Web: www.cfins.com
E-mail: info@cfins.com

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

1-800-252-3439

You may write the Texas Department of Insurance:

PO Box 149104
Austin, TX 78714-9104
Fax: (512) 490-1007

Web: www.tdi.texas.gov
E-mail: ConsumerProtection@tdi.tx.gov

PREMIUM OR CLAIM DISPUTES:

Should you have a dispute concerning your premium or about a claim you should contact the agent first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR POLICY: This notice is for information only and does not become a part or condition of the attached document.

AVISO IMPORTANTE

Para obtener información o para presentar una queja:

Usted puede llamar al número de teléfono gratuito de Crum & Forster's para obtener información o para presentar una queja al:

1-888-890-1500

Usted también puede escribir a Crum & Forster:

Crum & Forster
305 Madison Avenue
Morristown, NJ 07962

Sitio web: www.cfins.com
E-mail: info@cfins.com

Usted puede comunicarse con el Departamento de Seguros de Texas para obtener información sobre compañías, coberturas, derechos, o quejas al:

1-800-252-3439

Usted puede escribir al Departamento de Seguros de Texas a:

P. O. Box 149104
Austin, TX 78714-9104
Fax: (512) 490-1007

Sitio web: www.tdi.texas.gov
E-mail: ConsumerProtection@ tdi.tx.gov

DISPUTAS POR PRIMAS DE SEGUROS O RECLAMACIONES:

Si tiene una disputa relacionada con su prima de seguro o con una reclamación, usted debe comunicarse con el agente primero. Si la disputa no es resuelta, usted puede comunicarse con el Departamento de Seguros de Texas.

ADJUNTE ESTE AVISO A SU PÓLIZA: Este aviso es solamente para propósitos informativos y no se convierte en parte o en condición del documento adjunto.

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78620

Submitted By: Laura Mueller, City Attorney

Council Meeting Date: October 7, 2025

Agenda Item Wording: **Approval of a Resolution of the City of Dripping Springs Consenting to the Issuance of Bonds by Headwaters Municipal Utility District of Hays County for Series 2025A.** *Applicant: Matt Matthews*

Agenda Item Requestor: Matt Matthews

Summary/Background: This resolution is to approve an additional three million in Road Bonds. This is part of the amount authorized by the registered voters in 2015. The bonds are solely the obligation of the Headwaters Municipal Utility District. The costs to be paid by the bonds are listed in the attached Summary of Costs.

The District has previously issued its $3,000,000 Unlimited Tax Road Bonds, Series 2017 (the "Series 2017 Bonds"), its $2,685,000 Unlimited Tax Road Bonds, Series 2018 (the "Series 2018 Bonds"), its $4,500,000 Unlimited Tax Road Bonds, Series 2020 (the "Series 2020 Bonds"), its $3,740,000 Unlimited Tax Road Bonds, Series 2020A (the "Series 2020A Bonds"), its $5,805,000 Unlimited Tax Road Bonds, Series 2021 (the "Series 2021 Bonds") and its $13,900,000 Unlimited Tax Road Bonds, Series 2024 (the "Series 2024 Bonds") based on the election held on November 3, 2015. The 2024 tax rate remains the same at $0.90. The 2024 certified is $547,813,196 and the debt to AV ratio is 16.15%. After this issue, the debt outstanding will be $88,490,000.

The 2025 tax rate will remain at $.90 is the total district tax rate for maintenance and debt. The 2025 certified is $626,009,880 and the debt to AV ratio is 15.52% direct debt and 22.52% including all the overlapping debt.

Commission Recommendations: N/A

Recommended Council Actions: Approval

Attachments: Resolution; Summary of Costs

Next Steps/Schedule:

CITY OF DRIPPING SPRINGS

RESOLUTION 2025-R____

A RESOLUTION OF THE CITY OF DRIPPING SPRINGS CONSENTING TO THE ISSUANCE OF BONDS BY HEADWATERS MUNICIPAL UTILITY DISTRICT OF HAYS COUNTY

WHEREAS, Headwaters Municipal Utility District of Hays County (the "*District*") is a conservation and reclamation district, a body corporate and politic and governmental agency of the State of Texas, created under Article XVI, Sec. 59 of the Texas Constitution by order of the Texas Commission on Environmental Quality, and the District operates under Chapters 49 and 54 of the Texas Water Code, as amended;

WHEREAS, the District, Headwaters Development Company, the Townes Family Trust and the City of Dripping Springs entered into that certain "Agreement Concerning Creation and Operation of Headwaters Municipal Utility District" dated to be effective February 8, 2005, as subsequently amended by that certain "First Amendment to Agreement Concerning Creation and Operation of Headwaters Municipal Utility District" dated June 10, 2008; that certain "Second Amendment to Agreement Concerning Creation and Operation of Headwaters Municipal Utility District" last executed on February 3, 2015; and that certain "Third Amendment to Agreement Concerning Creation and Operation of Headwaters Municipal Utility District" last executed on May 29, 2020 (collectively, the "*Consent Agreement*");

WHEREAS, among other matters, the Consent Agreement provides that all bonds of the District shall be approved by the City Council of the City of Dripping Springs prior to issuance;

WHEREAS, on November 6, 2007, the registered voters within the District authorized the issuance of water, sewer and drainage system facilities bonds by the District in a maximum amount not to exceed $64,700,000 and the levy of a tax for payment of debt service on such bonds;

WHEREAS, the District now desires to proceed with the issuance of its water, sewer and drainage facilities system bonds in a principal amount equal to $3,000,000 in order to finance costs of the District's water, wastewater and drainage systems, and to pay costs of issuance of the bonds (the "*Bonds*"); and

WHEREAS, the Bonds will be obligations solely of the District, and the City of Dripping Springs will not be responsible for payment of the Bonds.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DRIPPING SPRINGS THAT:

Section 1. This meeting of the City Council of the City of Dripping Springs has been properly posted in accordance with the Texas Open Meetings Act.

Section 2. The City Council of the City of Dripping Springs hereby approves the issuance by the District of the Bonds in a par amount not to exceed $3,000,000.

Section 3. This Resolution shall be effective upon the date of its approval.

PASSED AND APPROVED this _____ day of _____, 2025, by a vote of ___ (ayes) to ___ (nays) to ___ (abstentions) of the City Council of the City of Dripping Springs.

CITY OF DRIPPING SPRINGS:

_____
Bill Foulds, Jr., Mayor

ATTEST:

_____
Diana Boone, City Secretary

ORDER OF HEADWATERS MUNICIPAL UTILITY DISTRICT OF HAYS COUNTY LEVYING DEBT SERVICE AND MAINTENANCE TAXES FOR 2025 TAX YEAR

WHEREAS, Headwaters Municipal Utility District of Hays County (the "District") is a duly created and existing municipal utility district created and operating under Chapters 49 and 54 of the Texas Water Code, as amended;

WHEREAS, Section 54.601 of the Texas Water Code provides that at the time bonds payable in whole or in part from taxes are issued, the board of a water district shall levy a continuing direct annual ad valorem tax for each year while all or part of the bonds are outstanding on all taxable property within the district in sufficient amounts to pay the interest on the bonds as it becomes due and to create a sinking fund for the payment of the principal of the bonds when due;

WHEREAS, Section 49.107 of the Texas Water Code provides that a district may levy and collect a tax for operation and maintenance purposes;

WHEREAS, at an election properly conducted in accordance with all applicable laws, the eligible residents of the District previously authorized the issuance of District tax bonds, and the levy and collection of District debt service and maintenance taxes;

WHEREAS, the District has issued its unlimited tax bonds pursuant to the foregoing authorization;

WHEREAS, the Board of Directors of the District approved a proposed ad valorem tax rate for the 2025 tax year at a meeting conducted on July 17, 2025;

WHEREAS, in accordance with the requirements set forth at Section 49.236 of the Texas Water Code and other applicable laws, the District has given proper notice and conducted a public hearing regarding the adoption of ad valorem tax rates for the 2025 tax year;

WHEREAS, after conducting the public hearing, the Board of Directors of the District desires to proceed with the levy and collection of a debt service tax and a maintenance tax for the 2025 tax year; and

WHEREAS, the District has complied with the applicable requirements of the Texas Water Code and other statutes relating to the procedures for establishing ad valorem taxes by municipal utility districts. Now, therefore,

BE IT ORDERED BY THE BOARD OF DIRECTORS OF HEADWATERS MUNICIPAL UTILITY DISTRICT OF HAYS COUNTY THAT:

Section 1. The facts and recitations found in the preamble of this Order are hereby found and declared to be true and correct, and are incorporated by reference herein and expressly made a part hereof, as if copied verbatim.

Section 2. There is hereby levied for the 2025 tax year the following ad valorem taxes:

(i) An ad valorem debt service tax rate of $0.8750 on each $100 of taxable value on all taxable property within the District; and

(ii) An ad valorem maintenance tax rate of $0.0250 on each $100 of taxable value on all taxable property within the District.

Section 3. The Board of Directors hereby finds and declares that the tax rates adopted and levied by this Order do not exceed the maximum tax rates authorized by the voters of the District.

Section 4. All taxes collected pursuant to this Order, after paying reasonable costs of levying, assessing and collecting same, shall be used for authorized purposes, as may be specified by the Board of Directors in accordance with applicable laws.

PASSED AND APPROVED this 27th day of August, 2025.

By: _____

Name: Brian Tucker

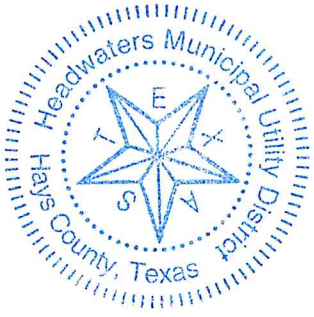
Title: President

ATTEST:

By: _____

Name: Drax Marlow

Title: Secretary



Texas Commission on Environmental Quality

TECHNICAL MEMORANDUM

To: Justin P. Taack, Manager
Districts Section
9/2/2025

Date: September 2, 2025

Thru: Dan Finnegan, Team Lead
Districts Bond Team

From: Pirainder Lall
Districts Bond Team

Subject: Headwaters Municipal Utility District; Application for Approval of $3,000,000 Unlimited Tax Bonds; Fifth Issue 5.45% Net Effective Interest Rate; Pursuant to Texas Water Code Section 49.181.
TCEQ Internal Control No. D-06302025-073 (TC)
CN: 603042979 RN: 105387187

A. GENERAL INFORMATION

The Texas Commission on Environmental Quality (TCEQ) received an application from Headwaters Municipal Utility District (District) of Hays County requesting approval of the issuance of $3,000,000 in unlimited tax bonds to finance the District's share of the following projects:

1. Additional engineering on previously funded projects; and
2. Purchase a portion of the Headwaters WRF Drip Irrigation System Phase 4A.

The District's previous bond issues funded utilities to serve 1,010 ESFCs on 902.27 acres. Including this bond issue, the District is not requesting to fund any internal facilities. At ultimate development, the District is projected to serve 1,400 ESFCs on 1,503.57 total acres.

B. ECONOMIC ANALYSIS

Tax Rate Analysis

The financial feasibility of this bond issue is based on no-growth to an estimated taxable assessed valuation (AV) of $626,009,880 as of January 1, 2025. A market study has not been provided and is not required since the feasibility of the proposed bond issue is based on no-growth.

According to a Hays Central Appraisal District certificate, the District's January 1, 2025, estimated taxable AV is $626,009,880. The annual debt service requirement for the proposed bond amount of $3,000,000 and existing debt averages $5,793,570 for the 25-year life of the District's bond debt. The District levied a maintenance tax of $0.10 in 2024, and according to the engineering report, is projecting to levy a maintenance tax of $0.0243 in the future.

The District's financial advisor submitted a cash flow schedule considering the requested $3,000,000 bond issue, no-growth to the estimated taxable AV of $626,009,880 as of January 1, 2025, six months capitalized interest, a bond interest rate of 5.25%, a 3.0% bond discount, a 98% collection rate, and a projected tax rate of $0.985 ($0.57 for utilities and $0.415 for roads) per $100 AV.

A TCEQ District Section's financial analyst has reviewed the financial information submitted and concluded that the following level debt service tax rate would be sufficient.

Taxing Jurisdiction	Projected Tax Rate
District	
Debt Service Utilities	$0.5700 (1)(2)
Debt Service Road	$0.4150
Maintenance	$0.0243
Total District Taxes	$1.0093 (3)

Notes:
(1) Based on a bond issue of $3,000,000, existing debt, a net effective interest rate of 5.45%, a 98% collection rate, six months of capitalized interest, no-growth to a January 1, 2025, estimated taxable AV of $626,009,880, and at least a 25% ending debt service fund balance.
(2) The term "Commission-approved tax rate" in 30 Texas Administrative Code (30 TAC) Section 293.85 refers to an initial ad valorem debt service tax of at most $0.57 per $100 AV.
(3) Represents the combined projected tax rate as defined by in 30 TAC Section 293.59(f).

Additional Financial Comments

The District is exempt from the 75% and 25% build-out requirements of 30 TAC Section 293.59(l)(4) and Section 293.59(k)(7), respectively, based on its combined no-growth tax rate of $1.0093 per $100 assessed valuation being less than $1.20 pursuant to 30 TAC Section 293.59(l) and Section 293.59(k)(11)(C).

C. ENGINEERING ANALYSIS

Water Supply

Water supply for the District is provided by the WTCPUA, as successor to the Lower Colorado River Authority (LCRA), through a "Wholesale Water Services Agreement" dated September 15, 2008, (Wholesale Supply Contract) originally entered into by LCRA and the City of Dripping Springs (City). The District is within the City's CCN area however the City has agreed to contract with the District so that the District operates the system and acts as the retail provider on behalf of the City. By agreement with the District dated effective March 31, 2016, the City assigned its interest in the Wholesale Water Services Agreement to the District. The Wholesale Supply Contract was amended on May 12, 2010, and September 19, 2019. Under the Wholesale Supply Contract, as amended, the WTCPUA is obligated to provide all treated water needed and requested by the District for service to lands within the District up to a maximum daily flow rate of 1,612,800 gallons per day (gpd).

The WTCPUA indicates that sufficient water capacity exists to serve the District.

The District's contractual existing water supply facilities appear adequate to serve the existing 885 ESFCs (801 single family plus 84 multi-family) existing as of January 1, 2025, upon which the feasibility of this bond issue is based.

Wastewater Treatment

The District is permitted under Texas Pollutant Discharge Elimination System Permit No. WQ0014587001 that authorizes final phase treatment and disposal of 325,000 gpd of wastewater effluent. Pursuant to a letter dated November 24, 2020, the TCEQ approved a flow reduction to 175 gpd/ESFC. The plant is currently operating at Phase IV of the permit, or 0.20 million gallons per day (MGD). Based on 175 gpd/ESFC, the plant currently has sufficient capacity for 1,142 ESFCs.

The District's existing wastewater treatment capacity appears adequate to serve the existing 885 ESFCs (801 single family plus 84 multi-family) existing as of January 1, 2025, upon which the feasibility of this bond issue is based.

Storm Water Drainage

Storm water from the District drains through an underground system of lines flowing in a southerly direction leading to detention ponds then eventually to the Little Barton Creek.

Purchase of Existing Facilities and/or Assumption of Existing Contracts

Project Description	Contractor	% Complete (Date)	Contract Amount[1]	Amt. Subj. to District Contribution
WRF Drip Irrigation Phase 4A	C.C. Carlton Industries, LTD.	100% (3/14/24)	$1,910,914	$1,777,000[2]

Notes: (1) Based on original contract amount plus or minus any change orders and final quantity adjustments.
(2) Due to bond amount limitations, only a portion of the construction costs and all of the engineering costs are included in this application. The remaining construction costs ($133,914) will be included in a future application.

Facilities to be Constructed

None.

Inspection

The District was investigated by the TCEQ's Districts Section staff on August 26, 2025. The District appeared as represented in the engineering report. District name signs were properly posted.

D. SUMMARY OF COSTS

Construction Costs	District's Share[1]
A. Developer Contribution Items	
1. Additional Engineering on Previously Funded Projects	$ 465,830
Total Developer Contribution Items	**$ 465,830**
B. District Items	
1. Headwaters WRF Drip Irrigation System Phase 4A	$ 1,777,000

Total District Items	**$**	**1,777,000**
TOTAL CONSTRUCTION COSTS (74.8% of Bond Issue Requirement)	**$**	**2,242,830**
Non-Construction Costs		
A. Bond Counsel Fees	$	65,000 (3)
B. Specialized Tax Counsel Fees (0.2%)		7,500 (3)
C. Fiscal Advisor Fees (1.5%)		56,250 (4)
D. Interest		
1. Capitalized Interest		78,750
2. Developer Interest		352,870 (5)
E. Underwriter's Discount (3.0%)		90,000
G. Bond Issuance Expense		56,300
H. Bond Engineering Report		40,000
I. Attorney General's Fee (0.10% or $9,500 max.)		3,000
J. TCEQ Fee (0.25% of BIR)		7,500
TOTAL NON-CONSTRUCTION COSTS	**$**	**757,170**
TOTAL BOND ISSUE REQUIREMENT	**$**	**3,000,000**

Notes:
(1) The District has requested a waiver of the 30% developer contribution requirement. See Special Consideration No. 1 below.
(2) Pursuant to the contract provided, bond counsel fees are 2.5% of the first $1,000,000 of bonds issued, plus 2% of bonds issued between $1,000,000 and $3,000,000, plus 1% of bonds issued over $3,000,000.
(3) Pursuant to the contract provided, special tax counsel fees are 0.2% of bonds issued, with a minimum of $7,500.
(4) Pursuant to the contract provided, the fiscal advisor fees are 1.5% of the bonds issued, plus a multiplier of 1.25.
(5) Estimated at 5.25% with a proposed funding date of December 15, 2025, or a maximum of five years. The District has requested to reimburse more than two years interest in accordance with 30 TAC Section 293.50(b). See Special Consideration No. 3.

E. SPECIAL CONSIDERATIONS

1. Waiver of the 30% Developer Contribution Requirement

By board resolution, the District has requested a waiver of the 30% developer contribution requirement pursuant to 30 TAC Section 293.47(a)(2), based on obtaining an acceptable credit rating on the bonds. By letter dated April 10, 2025, the District's financial advisor has indicated that the District anticipates that the proposed bonds should receive an acceptable credit rating. Accordingly, staff recommends a waiver of the 30% developer contribution requirement pursuant to 30 TAC Section 293.47(a)(2).

2. Less Than One Year Capitalized Interest

In compliance with 30 TAC Section 293.50(b)(2), the District has requested authorization to sell the bonds with less than one year of capitalized interest. TCEQ staff is in receipt of the District's letter dated April 10, 2025, stating concurrence with the District's request.

3. Developer Interest in Excess of Two Years

In accordance with 30 TAC Section 293.50(b), the District has requested that developer interest be accrued for a period in excess of two years for construction costs associated with projects contained in this bond issue. For the bond amount of $3,000,000, the requested interest of $431,620 ($78,750 capitalized interest and $352,870 developer interest) is less than $630,000 ($3,000,000 x 5.25%/year x 4 years), the estimated four-year interest on the utility bond amount. Therefore, the District's request should be approved pursuant to 30 TAC Section 293.50(b).

F. CONCLUSIONS

1. Based on $64,700,000 in unlimited tax bonds authorized by voters on November 6, 2007, for water, wastewater, and drainage facilities, and $49,090,000 previously approved by the TCEQ and issued by the District for water, wastewater, and drainage facilities, the District has sufficient voter-authorized bonds ($15,610,000) for the proposed utility bond issue.

2. Based on the review of the engineering report, plans, specifications, and supporting documents, the bond issue is considered feasible and meets the economic feasibility criteria established by 30 TAC Section 293.59.

3. The recommendations are made under authority delegated by the Executive Director of the TCEQ.

G. RECOMMENDATIONS

1. Approve the bond issue in the amount of $3,000,000, in accordance with the recommended summary of costs, at a maximum net effective interest rate of 5.45%. Further, direct that the bonds are to be sold only upon the District receiving an acceptable credit rating on the bonds as defined in 30 TAC Section 293.47(b).

2. Grant a waiver of the 30% developer contribution requirement pursuant to 30 TAC Section 293.47(a)(2) if the District obtains an acceptable credit rating on the bonds as defined in 30 TAC Section 293.47(b).

3. The District's request to fund more than two years of developer interest should be approved in accordance with 30 TAC Section 293.50(b).

4. Standard recommendations purchase of facilities, developer interest, consultant fees, surplus proceeds, time of approval, and bond proceeds fee apply.

OFFICIAL NOTICE OF SALE

$3,000,000
HEADWATERS MUNICIPAL UTILITY DISTRICT OF HAYS COUNTY
(A Political Subdivision of the State of Texas Located in Hays County, Texas)
UNLIMITED TAX BONDS, SERIES 2025A

Selling (Bids Due): Thursday, October 16, 2025 at 9:00 A.M., CDT
Award Expected: 12:00 P.M., CDT

THE DISTRICT WILL NOT DESIGNATE THE BONDS AS "QUALIFIED TAX-EXEMPT OBLIGATIONS" FOR FINANCIAL INSTITUTIONS.

The Bonds are obligations solely of Headwaters Municipal Utility District of Hays County (the "District") and are not obligations of the City of Dripping Springs, Texas; Dripping Springs Independent School District, Hays County, Texas; the State of Texas or any entity other than the District.

THE SALE

BONDS OFFERED FOR SALE AT COMPETITIVE BIDDING . . . The Board of Directors (the "Board") of the District is inviting competitive bids for the purchase of $3,000,000 Unlimited Tax Bonds, Series 2025A (the "Bonds"). Sealed bids may be submitted by either of three alternative procedures: (1) written bids; (2) electronic bids; or (3) telephone or facsimile bids. Prospective bidders may select one of the three alternative bidding procedures in their sole discretion. Neither the District nor its Financial Advisor, Specialized Public Finance Inc., assumes any responsibility or liability for a prospective bidding procedure.

The District and Specialized Public Finance Inc. assume no responsibility or liability with respect to any irregularities associated with the submission of bids by telephone, facsimile or electronic options.

Specialized Public Finance Inc. will not be responsible for submitting any bids received after the deadline. For the purpose of determining compliance with any and all time deadlines set forth in this Official Notice of Sale, for all alternative bidding procedures, the official time shall be the time maintained only by the Parity Electronic Bid Submission System ("PARITY").

PROCEDURE NUMBER 1: SEALED, WRITTEN BIDS DELIVERED IN PERSON . . . Bids, plainly marked "Bid for Bonds" should be addressed to "Board of Directors of Headwaters Municipal Utility District of Hays County" and should be delivered to the District's Financial Advisor, Garry Kimball, Specialized Public Finance Inc., at 248 Addie Roy Road, Suite B-103, Austin, Texas 78746, by 9:00 A.M., CDT, on March 24, 2025 ("the date of the bid opening").

PROCEDURE NUMBER 2: ELECTRONIC BIDDING PROCEDURES . . . Any prospective bidder that intends to submit an electronic bid must submit its electronic bid through the facilities of PARITY by 9:00 A.M., CDT, on the date of the bid opening.

Subscription to the i-Deal LLC's BIDCOMP Competitive Bidding System is required in order to submit an electronic bid through PARITY. Further information about PARITY, including any fee charged, may be obtained from Dalcomp/Parity, 395 Hudson Street, New York, New York 10014, attention: Jennifer Emery (212) 806-8304.

The District will neither confirm any subscription nor be responsible for the failure of any prospective bidder to subscribe to the bidding system. An electronic bid made through the facilities of PARITY shall be deemed an irrevocable offer to purchase the Bonds on the terms provided in this Official Notice of Sale, and shall be binding upon the bidder as if made by a signed, sealed bid delivered to the District. Neither Specialized Public Finance Inc. nor the District shall be responsible for any malfunction or mistake made by, or as a result of the use of the facilities of PARITY, the use of such facilities being the sole risk of the prospective bidder.

All electronic bids shall be deemed to incorporate the provisions of this Official Notice of Sale and Official Bid Form. If any provision of this Official Notice of Sale conflicts with information provided by PARITY as the approved provider of electronic bidding services, this Official Notice of Sale shall control.

For information purposes only, bidders are requested to state in their electronic bids the net interest cost to the District, as described under "Basis of Award" below.

PROCEDURE NUMBER 3: BIDS BY TELEPHONE OR FACSIMILE . . . Bidders must submit by 9:00 A.M., CDT, on the date of the bid opening, SIGNED Official Bid Forms to Garry Kimball, Specialized Public Finance Inc., at 248 Addie Roy Road, Suite B-103, Austin, Texas 78746, and submit their bid by telephone or facsimile (fax) by 9:00 A.M., CDT, on the date of the bid opening.

Telephone bids will be accepted at (512) 275-7300, between 8:30 A.M. and 9:00 A.M., CDT on the date of the bid opening.

Fax bids must be received between 8:30 A.M. and 9:00 A.M., CDT, on the date of the bid opening at (512) 275-7305, attention: Garry Kimball.

SIGNED OFFICIAL BID FORM . . . The bidder whose bid is the winning bid in accordance with this Notice of Sale will be notified immediately by Specialized Public Finance, Inc. and must submit a Signed Official Bid Form in connection with the sale, by 9:30 AM, CDT, on the date of the sale to Monica Melvin, Specialized Public Finance Inc., monica@spfmuni.com.

PLACE AND TIME OF BID OPENING . . . The Board will publicly review and award the sale of the Bonds at the designated meeting place outside the boundaries of the District, at the offices of McLean & Howard, L.L.P., 4301 Bull Creek Road, Suite 150, Austin, Texas 78731 at 12:00 P.M., CDT on Thursday, October 16, 2025. All bids, including those being hand delivered, must be received by 9:00 A.M., CDT on the date of the bid opening. Any bid received after the scheduled time for receipt will not be accepted by the Board and will be returned unopened.

AWARD OF BONDS . . . The District will take action to award the Bonds or reject any or all bids promptly upon the opening of bids. Upon awarding the Bonds to the winning bidder (the "Initial Purchaser"), the Board will adopt an order authorizing the issuance of the Bonds (the "Bond Order"). Sale of the Bonds will be made subject to the terms, conditions and provisions of the Bond Order, to which Bond Order reference is hereby made for all purposes. The District reserves the right to reject any and all bids and to waive any irregularities, except the time of filing.

WITHDRAWAL OF THE BIDS . . . Any bid may be withdrawn by an authorized representative of the bidder at any time prior to the time set for receipt of bids. Thereafter, all bids shall remain firm for six hours after the time for receipt of the bids. The award of or rejection of bids will occur within this time period.

EXTENSION OF SALE DATE . . . The District reserves the right to extend the date and/or time for the receipt of bids by giving notice, by Bond Buyer Wire Service, and by posting a notice at the place established for receipt of bids, not later than 3:00 PM, CDT, on Wednesday, October 15, 2025 of the new date and time for receipt of bids. Such notice shall be considered an amendment to this Official Notice of Sale.

THE BONDS

DESCRIPTION OF BONDS . . . The Bonds will be dated November 25, 2025, and interest will accrue from the date of Initial Delivery (as defined herein), will be payable on February 15, 2026, and on each August 15 and February 15 thereafter until the earlier of maturity or prior redemption and will be calculated on the basis of a 360-day year consisting of twelve 30-day months. The definitive Bonds will be initially registered and delivered only to Cede & Co., the nominee of The Depository Trust Company, New York, New York ("DTC") pursuant to the book-entry-only system described herein. **No physical delivery of the Bonds will be made to the beneficial owners thereof.** The Bonds will be issued in fully registered form only, in denominations of $5,000 or any integral multiple of $5,000 for any one maturity, and principal and interest will be paid by BOKF, NA (the "Paying Agent/Registrar") which will make distribution of the amounts so paid to the participating members of DTC for subsequent payment to the beneficial owners of the Bonds. See the Preliminary Official Statement (made a part hereof) for a more complete description of the Bonds, including redemption provisions. The Bonds will mature on August 15 in the years and amounts as follows:

MATURITY SCHEDULE

Maturity (August 15)	Principal Amount	Maturity (August 15)	Principal Amount
2028	$ 70,000	2040	$ 130,000
2029	75,000	2041	135,000
2030	80,000	2042	145,000
2031	80,000	2043	150,000
2032	85,000	2044	160,000
2033	90,000	2045	170,000
2034	95,000	2046	175,000
2035	100,000	2047	185,000
2036	105,000	2048	195,000
2037	110,000	2049	205,000
2038	120,000	2050	215,000
2039	125,000		

OPTIONAL REDEMPTION PROVISIONS . . . Bonds maturing on and after August 15, 2033, are subject to redemption prior to maturity, at the option of the District, as a whole or, from time to time in part, on August 15, 2032, or on any date thereafter, at a price of par plus unpaid accrued interest from the most recent interest payment date to the date fixed for redemption. If less than all of the Bonds are redeemed at any time, the maturities of the Bonds to be redeemed shall be selected by the District.

MANDATORY SINKING FUND REDEMPTION . . . If the successful bidder designates principal amounts to be combined into one or more term bonds ("Term Bonds"), each such Term Bond shall be subject to mandatory sinking fund redemption commencing on August 15 of the first year which has been combined to form such Term Bond and continuing on August 15 in each year thereafter until the stated maturity date of that Term Bond. The amount redeemed in any year shall be equal to the principal amount for such year set forth above under the captioned "MATURITY SCHEDULE." Bonds to be redeemed in any year by mandatory sinking fund redemption shall be redeemed at par by lot or other customary method. The principal amount of Term Bonds to be mandatorily redeemed in each year shall be reduced by the principal amount of Term Bonds that have been redeemed in such year and have not been the basis for any prior optional redemption.

OTHER TERMS AND COVENANTS . . . Other terms of the Bonds and various covenants of the District are contained in the Bond Order, which is described in the Preliminary Official Statement, to which reference is made for all purposes.

SOURCE AND SECURITY OF PAYMENT . . . The Bonds will constitute valid and legally binding obligations of the District, with principal and interest payable solely from the proceeds of a continuing, direct, annual ad valorem tax levied against all taxable property located within the District, without legal limitation as to rate or amount. The Bonds are obligations solely of the District and are not obligations of the City of Dripping Springs, Texas; Dripping Springs Independent School District; Hays County, Texas; the State of Texas or any entity other than the District.

BOOK-ENTRY-ONLY SYSTEM . . . The District intends to utilize the book-entry-only system of DTC. See "BOOK-ENTRY-ONLY SYSTEM" in the Preliminary Official Statement.

REGISTERED FORM REQUIREMENT . . . Section 149(a) of the Internal Revenue Code of 1986, as amended, requires that all tax-exempt obligations (with certain exceptions that do not include the Bonds) must be in registered form in order for the interest payable on such obligations to be excluded from the Registered Owners' income for federal income tax purposes.

SUCCESSOR PAYING AGENT/REGISTRAR . . . Provision is made in the Bond Order for replacement of the Paying Agent/Registrar. If the Paying Agent/Registrar is replaced by the District, the new paying agent/registrar shall act in the same capacity as the previous Paying Agent/Registrar. Any paying agent/registrar selected by the District shall be a corporation organized and doing business under the laws of the United States of America or any state thereof subject to supervision or examination by federal or state banking authorities.

MUNICIPAL BOND RATING . . . The Bonds have been rated "BBB+" by S&P Global Ratings ("S&P") without regard to credit enhancement.

MUNICIPAL BOND INSURANCE . . . An application has been made to qualify the Bonds for municipal bond insurance. In the event the Bonds are qualified for municipal bond insurance, and the Initial Purchaser desires to purchase such insurance, the cost therefor will be paid by the Initial Purchaser. It will be the responsibility of the Initial Purchaser to disclose the existence of insurance, its terms and the effect thereof with respect to the reoffering of the Bonds. Any downgrade by a rating agency of the bond insurance provider shall not relieve the Initial Purchaser of its obligation under the heading "DELIVERY AND ACCOMPANYING DOCUMENTS."

CONDITIONS OF SALE

TYPES OF BIDS AND INTEREST RATES . . . The Bonds will be sold in one block on an "all or none" basis at a price of not less than ninety-seven percent (97%) of the par value. Bidders are to name the rate or rates of interest to be borne by the Bonds, provided that each interest rate bid must be in a multiple of 1/8 of 1% or 1/20 of 1%. The net effective interest rate on the Bonds may not exceed a rate which is three percentage points (3.00%) above the highest "20 Bond Index" as reported by the "Bond Buyer" during the thirty (30) day period prior to the date of this Official Notice of Sale. Subject to the conditions below, no limitation will be imposed upon bidders as to the number of interest rates that may be used, but the highest interest rate bid may not exceed the lowest interest rate bid by more than 2.5% in rate. For Bonds having stated maturities on and after August 15, 2033, no reoffering yield producing a dollar price less than 95% for any individual maturities will be accepted. All Bonds maturing within a single year must bear the same rate of interest. No bids for the Bonds involving supplemental interest rates will be considered. Each bidder shall state in its bid the total and net interest cost in dollars and the net effective interest rate determined thereby, which shall be considered informative only and not as a part of the bid. No bid generating a cash premium greater than $5,000 will be considered.

POST BID MODIFICATION OF PRINCIPAL AMOUNTS PER MATURITY . . . After selecting the winning bid, the aggregate principal amount of the Bonds per maturity and the principal amortization schedule may be adjusted as determined by the District and its Financial Advisor in $5,000 increments to reflect the actual interest rates. Such adjustments will not change the aggregate principal amount of the Bonds and will not change the aggregate principal amount per maturity by more than 15% from the amount set forth herein. The dollar amount bid for the Bonds by the winning bidder will be adjusted proportionately to reflect any increase or decrease in the aggregate principal amount of the Bonds finally determined to be issued. The District will use its best efforts to communicate to the winning bidder any such adjustments within three (3) hours after the opening of bids. Purchaser's compensation will be based upon the final par amount after any adjustments thereto, subsequent to the receipt and tabulation of the winning bid, within the aforementioned parameters.

In the event of any adjustment of the maturity schedule for the Bonds as described above, no rebidding or recalculation of the proposals submitted will be required or permitted. The bid price for such an adjustment will reflect changes in the dollar amount per maturity of the par amount of the Bonds from the selling compensation that would have been received based on the purchase price in the winning bid and the initial reoffering terms. Any such adjustments of the aggregate principal amount of the Bonds per maturity and/or of the maturity schedule for the Bonds made by the District or its Financial Advisor shall be subsequent to the award of the Bonds to the winning bidder as determined pursuant to conditions herein and shall not affect such determination. The winning bidder may not withdraw its bid as a result of any changes made within the aforementioned limits.

BASIS OF AWARD . . . For the purpose of awarding the sale of the Bonds, the total interest cost of each bid will be computed by determining, at the interest rates specified therein, the total dollar value of all interest on the Bonds from the date of Initial Delivery to their respective maturities and adding thereto the dollar amount of the discount bid, if any, or deducting therefrom the premium bid, if any. Subject to the right of the District to reject any or all bids, the Bonds will be awarded to the bidder whose bid, based on the above computation, produces the lowest net effective interest cost to the District. In the event of mathematical discrepancies between the interest rates and the interest cost determined therefrom, as both appear on the "Official Bid Form," the bid will be determined solely from the interest rates shown on the "Official Bid Form."

DISCLOSURE OF INTERESTED PARTY FORM 1295 . . . In accordance with Texas Government Code Section 2252.908 (the "Interested Party Disclosure Act"), the District may not award the Bonds to a bidder unless the winning bidder either:

(i) submits a Certificate of Interested Parties Form 1295 (the "TEC Form 1295") to the District as prescribed by the Texas Ethics Commission ("TEC"), or

(ii) certifies in the Official Bid Form that it is exempt from filing the TEC Form 1295 by virtue of being a publicly traded business entity or a wholly owned subsidiary of a publicly traded business entity.

In the event that the bidder's bid for the Bonds is the best bid received, the District, acting through its financial advisor, will promptly notify the winning bidder. That notification will serve as the District's conditional verbal acceptance of the bid, and, unless the bidder is exempt from filing a TEC Form 1295, such notification will obligate the winning bidder to promptly file a completed TEC Form 1295, as described below. The District reserves the right to reject any bid that does not comply with the requirements prescribed herein.

For purposes of completing the TEC Form 1295, box 2 is name of the governmental entity (*Headwaters Municipal Utility District of Hays County*) and box 3 is the identification number assigned to this contract by the District (*HeadwatersMUD-UTB2025A-Bid*) and description of the goods or services (*Purchase of Unlimited Tax Bonds, Series 2025A*). **The Interested Party Disclosure Act and the rules adopted by the TEC with respect thereto (the "Disclosure Rules") require certain business entities contracting with the District to complete the TEC Form 1295 electronically at https://www.ethics.state.tx.us/main/file.htm, print, complete the unsworn declaration, sign, and deliver, in physical form, the certified TEC Form 1295 that is generated by the TEC's "electronic portal" to the District. The completed and signed TEC Form 1295 must be sent by email, to the District's financial advisor at garry@spfmuni.com, as soon as possible following the notification of conditional verbal acceptance and prior to the final written award.** Upon receipt of the final written award, the winning bidder must submit the TEC Form 1295 with original signatures by email to Bond Counsel as follows: tcorbett@mcleanhoward.com.

To the extent that the bidder is not exempt from filing a TEC Form 1295 and therefor makes such filing with the District, the Interested Party Disclosure Act and the TEC Form 1295 provide that such declaration is made "under penalty of perjury." Consequently, a bidder should take appropriate steps prior to completion of the TEC Form 1295 to familiarize itself with the Interested Party Disclosure Act, the Disclosure Rules and the TEC Form 1295. **Time will be of the essence in submitting the form to the District. The District reserves the right to reject any bid that does not satisfy the requirement of a completed TEC Form 1295.** Neither the District nor its consultants have the ability to verify the information included in a TEC Form 1295, and neither party has an obligation nor undertakes responsibility for advising any bidder with respect to the proper completion of the TEC Form 1295. Consequently, an entity intending to bid on the Bonds should consult its own advisors to the extent it deems necessary and be prepared to submit the completed form promptly upon notification from the District that its bid is the conditional winning bid. Instructional videos on logging in and creating a certificate are provided on the TEC's website at https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm.

VERIFICATIONS OF STATUTORY REPRESENTATIONS AND COVENANTS . . . The winning bidder will be required to make the following representations and covenants (the "Required Verifications") pursuant to Chapters 2252, 2271, 2274, and 2276, Texas Government Code, as heretofore amended (the "Government Code"), in entering into the Official Bid Form. (The Official Bid Form, once submitted by the bidder and accepted by the District, constitutes a contract for purposes of such verifications.) As used in such verifications, "affiliate" means an entity that controls, is controlled by, or is under common control with the winning bidder within the meaning of Securities and Exchange Commission Rule 405, 17 C.F.R. § 230.405, and exists to make a profit. Liability for breach of any such verification during the term of the Official Bid Form shall survive until barred by the applicable statute of limitations, and shall not be liquidated or otherwise limited by any provision of the Official Bid Form or Official Notice of Sale (collectively, the "Agreement"), notwithstanding anything in the Agreement to the contrary.

(a) **Not a Sanctioned Company**. The winning bidder will be required to represent that neither it nor any of its parent company, wholly- or majority-owned subsidiaries, and other affiliates is a company identified on a list prepared and maintained by the Texas Comptroller of Public Accounts under Section 2252.153 or Section 2270.0201, Government Code. The foregoing representation excludes the winning bidder and each of its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, that the United States government has affirmatively declared to be excluded from its federal sanctions regime relating to Sudan or Iran or any federal sanctions regime relating to a foreign terrorist organization.

(b) **No Boycott of Israel**. The winning bidder will be required to verify that it and its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, do not boycott Israel and will not boycott Israel during the term of the Agreement. As used in the foregoing verification, "boycott Israel" has the meaning provided in Section 2271.001, Government Code.

(c) **No Discrimination Against Firearm Entities**. The winning bidder will be required to verify that it and its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, do not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association and will not discriminate against a firearm entity or firearm trade association during the term of the Agreement. As used in the foregoing verification, "discriminate against a firearm entity or firearm trade association" has the meaning provided in Section 2274.001(3), Government Code.

(d) **No Boycott of Energy Companies**. The winning bidder will be required to verify that it and its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, do not boycott energy companies and will not boycott energy companies during the term of the Agreement. As used in the foregoing verification, "boycott energy companies" has the meaning provided in Section 2276.001(1), Government Code.

COMPLIANCE VERIFICATION . . . By submitting a bid, each bidder or syndicate member, as applicable, confirms that it has on file with the Municipal Advisory Council of Texas and Public Finance Division of the Texas Office of Attorney General ("OAG") a standing letter in the form included as Exhibit A to the All Bond Counsel Letter of the OAG dated November 1, 2023 and any supplement thereto (the "All Bond Counsel Letter"). In submitting a bid, a bidder confirms that each bidder or syndicate member, as applicable, can make the unqualified verifications as set forth above, as required under the All Bond Counsel Letter of the OAG dated November 1, 2023 (a "Standing Letter") and that it has no reason to believe that the District and the OAG may not be entitled to rely on such Standing Letter through the delivery date of the Bonds. The winning bidder and each syndicate member listed on an Official Bid Form agree that it will not rescind any applicable Standing Letter any time before the delivery of the Bonds unless same is immediately replaced with a standing letter meeting the requirements of the OAG.

The District will not accept a bid from a bidder that does not have such standing letter on file as of the deadline for bids for the Bonds. If requested by the District, the Purchaser agrees to provide such further representations, certifications or assurances in connection with the Covered Verifications (defined below), as of the delivery date of the Bonds or such other date requested by the District including, but not limited to, a bring down certification as provided by the All Bond Counsel Letter.

THE DISTRICT RESERVES THE RIGHT, IN ITS SOLE DISCRETION, TO REJECT THE BID OF ANY BIDDER WHO IS, OR WHOSE PARENT COMPANY, SUBSIDIARIES OR AFFILIATES ARE, ON A LIST MAINTAINED BY THE TEXAS COMPTROLLER OR THE TEXAS ATTORNEY GENERAL OR HAS RECEIVED A LETTER OR OTHER INQUIRY FROM THE TEXAS COMPTROLLER, OR THE TEXAS ATTORNEY GENERAL RELATED TO ITS INCLUSION ON ANY LIST OF FINANCIAL COMPANIES BOYCOTTING ENERGY COMPANIES OR DISCRIMINATING AGAINST FIREARM ENTITIES.

BY SUBMITTING A BID, EACH BIDDER AGREES, SHOULD IT BE THE WINNING BIDDER, TO COOPERATE WITH THE DISTRICT AND TAKE ANY ACTION NECESSARY TO FURTHER VERIFY AND CONFIRM COMPLIANCE WITH STATE LAW.

To the extent the Purchaser and each syndicate member listed on the Official Bid Form is unable to provide a standing letter in a form satisfactory to the Texas Office of the Attorney General, the District reserves the right to cash and accept the Good Faith Deposit (see "CONDITIONS OF SALE – Good Faith Deposit"). **THE LIABILITY OF THE BIDDER FOR BREACH OF ANY OF THE VERIFICATIONS MADE IN CONNECTION WITH CHAPTERS 2252, 2271, 2274, AND 2276, TEXAS GOVERNMENT CODE, AS AMENDED (COLLECTIVELY, THE "COVERED VERIFICATIONS") SHALL SURVIVE UNTIL BARRED BY THE STATUTE OF LIMITATIONS, AND SHALL NOT BE LIQUIDATED OR OTHERWISE LIMITED BY ANY PROVISION OF THE AGREEMENT. ADDITIONALLY, THE DISTRICT RESERVES AND RETAINS ALL RIGHTS AND REMEDIES AT LAW AND IN EQUITY FOR PURSUIT AND RECOVERY OF DAMAGES, IF ANY, RELATING TO THE COVERED VERIFICATIONS.**

GOOD FAITH DEPOSIT . . . A Good Faith Deposit, payable to the "Headwaters Municipal Utility District of Hays County" in the amount of $60,000, is required. Such Good Faith Deposit shall be a wire transfer, bank cashier's check or certified check (which is to be retained uncashed by the District pending the Initial Purchaser's compliance with the terms of the bid and this Notice of Sale and Bidding Instructions). The Good Faith Deposit may be provided to the District via wire transfer (the District will provide wire instructions to the winning bidder), or in the form of a certified or cashier's check. The Good Faith Deposit will be retained

by the District and (a) (i) if the Initial Purchaser utilizes a cashier's check as its Good Faith Deposit, said cashier's check will be returned to the Initial Purchaser after delivery of the Bonds, (ii) if the Initial Purchaser utilizes a wire transfer method for its Good Faith Deposit, said wire transfer will be applied to the purchase price at the delivery of the Bonds; or (b) will be retained by the District if the Initial Purchaser defaults with respect to its purchase of the Bonds in accordance with its bid; or (c) will be returned to the Initial Purchaser if the Bonds are not issued by the District for any reason which does not constitute a default by the Initial Purchaser; provided, however, if the District cashes the purchaser's Good Faith Deposit as described in this section or in "Compliance Verification" above, such action or amount does not constitute complete or liquidated damages related to the Initial Purchaser's breach of any of the Required Verifications.

OFFICIAL STATEMENT

By accepting the winning bid, the District agrees to the following representations and covenants to assist the Initial Purchaser in complying with Rule 15c2-12 of the United States Securities and Exchange Commission ("SEC").

FINAL OFFICIAL STATEMENT . . . The District has prepared the accompanying Preliminary Official Statement for dissemination to potential purchasers of the Bonds, but will not prepare any other document or version for such purpose except as described below. The District will be responsible for completing the Official Statement by inserting the interest rates bid, the purchase price bid, the ratings assigned to the Bonds (if not currently included) if applicable, the purchase of municipal bond insurance, if any, the initial public offering yields as set forth in the Official Bid Form, or otherwise supplied by the Initial Purchaser, and for preparing and inserting the final debt service schedule. The District does not intend to amend or supplement the Official Statement otherwise, except to take into account certain subsequent events, if any, as described below. Accordingly, the District deems the accompanying Preliminary Official Statement to be final as of its date, within the meaning of SEC Rule 15c2-12(b)(1), except for the omission of the foregoing items. By delivering the final Official Statement or any amendment or supplement thereto in the requested quantity to the Initial Purchaser on or after the sale date, the District represents the same to be complete as of such date, within the meaning of SEC Rule 15c2-12(e)(3). Notwithstanding the foregoing, the only representations concerning the absence of material misstatements or omissions from the Official Statement which are or will be made by the District are those described in the Official Statement under "OFFICIAL STATEMENT – Certification as to Official Statement."

CHANGES TO OFFICIAL STATEMENT DURING UNDERWRITING PERIOD . . . If, subsequent to the date of the Official Statement to and including the date the Initial Purchaser is no longer required to provide an Official Statement to potential customers who request the same pursuant to 15c2-12 of the federal Securities Exchange Act of 1934 (the "Rule") (the earlier of (i) 90 days from the "end of the underwriting period" (as defined in the Rule) and (ii) the time when the Official Statement is available to any person from a nationally recognized repository but in no case less than 25 days after the "end of the underwriting period"), the District learns or is notified by the Initial Purchaser of any adverse event which causes any of the key representations in the Official Statement to be materially misleading, the District will promptly prepare and supply to the Initial Purchaser a supplement to the Official Statement which corrects such representation to the reasonable satisfaction of the Initial Purchaser, unless the Initial Purchaser elects to terminate its obligation to purchase the Bonds as described below. See "DELIVERY OF THE BONDS AND ACCOMPANYING DOCUMENTS – Delivery." The obligation of the District to update or change the Official Statement will terminate when the District delivers the Bonds to the Initial Purchaser (the "end of the underwriting period" within the meaning of the Rule), unless the Initial Purchaser provides written notice to the District that less than all of the Bonds have been sold to ultimate customers on or before such date, in which case the obligation to update or change the Official Statement will extend for an additional period of time of 25 days after all of the Bonds have been sold to ultimate customers. In the event the Initial Purchaser provides written notice to the District that less than all of the Bonds have been sold to ultimate customers, the Initial Purchaser agrees to notify the District in writing following the occurrence of the "end of the underwriting period" as defined in the Rule.

DELIVERY OF OFFICIAL STATEMENTS . . . The District will furnish to the Initial Purchaser (and to each other participating underwriter of the Bonds, within the meaning of SEC Rule 15c2-12(a), designated by the Initial Purchaser), within seven (7) business days after the sale date, the aggregate number of Official Statements requested but not in excess of 250 copies. The District will also furnish to the Initial Purchaser a like number of any supplement or amendment prepared by the District for dissemination to potential purchasers of the Bonds as described above in "OFFICIAL STATEMENT – Changes to Official Statement During Underwriting Period" as well as such additional copies of the Official Statement or any supplement or amendment as the Initial Purchaser may request prior to the 25th day after the "end of the underwriting period" within the meaning of the Rule. The District will pay the expense of preparing up to 250 copies of the Official Statement and all copies of any supplement or amendment issued on or before the delivery date, but the Initial Purchaser must pay for all other copies of the Official Statement or any supplement or amendment thereto.

RULE G-36 REQUIREMENTS . . . It is the responsibility of the Initial Purchaser to comply with the Municipal Securities Rulemaking Board's Rule G-36 within the required time frame. The Initial Purchaser must send two copies of the "Official Statement" along with two complete Form G-36's to the appropriate address.

DELIVERY AND ACCOMPANYING DOCUMENTS

INITIAL DELIVERY OF INITIAL BOND . . . Initial delivery ("Initial Delivery") will be accomplished by the issuance of one initial bond payable in installments (collectively, the "Initial Bond"), either in typed or printed form, in the aggregate principal amount of $3,000,000, registered in the name of the Initial Purchaser, manually signed by the President or Vice President and Secretary or Assistant Secretary of the Board, or executed by the facsimile signatures of the President or Vice President and Secretary or Assistant Secretary of the Board, and approved by the Attorney General of Texas, and registered and manually signed by the Comptroller of Public Accounts of Texas or his authorized deputy. Upon delivery of the Initial Bond, the Paying Agent/Registrar shall immediately cancel the Initial Bond and one definitive Bond for each maturity will be registered and delivered only to Cede & Co. in connection with DTC's book-entry-only system. Initial Delivery will be at a corporate trust office of the Paying Agent/Registrar in Dallas, Texas. Payment for the Bonds must be made in immediately available funds for unconditional credit to the District, or as otherwise directed by the District. The Initial Purchaser will be given six (6) business days' notice of the time fixed for delivery of the Bonds. It is anticipated that Initial Delivery can be made on or about November 25, 2025, and subject to the aforementioned notice it is understood and agreed that the Initial Purchaser will accept delivery of and make payment for the Bonds by 10:00 A.M., CDT, on November 25, 2025, or thereafter on the date the Bonds are tendered for delivery, up to and including December 9, 2025. If for any reason the District is unable to make delivery on or before December 9, 2025, then the District shall immediately contact the Initial Purchaser and offer to allow the Initial Purchaser to extend its offer for an additional thirty (30) days. If the Initial Purchaser does not elect to extend its offer within six (6) business days thereafter, then its Good Faith Deposit will be returned, and both the District and the Initial Purchaser shall be relieved of any further obligation.

DTC DEFINITIVE BONDS . . . The Bonds will be issued in book-entry-only form and registered in the name of Cede & Co. as the nominee for DTC. All reference herein and in the Official Statement to the bondholders or registered owners of the Bonds shall mean Cede & Co. and not the beneficial owners of the Bonds. Purchases of beneficial interests in the Bonds will be made in book-entry form in the denomination of $5,000 principal amounts or any integral multiple thereof. Under certain limited circumstances, the District may determine to forego immobilization of the Bonds at DTC, or another securities depository, in which case, such beneficial interests would become exchangeable for definitive printed obligations of like principal amount.

CUSIP NUMBERS . . . It is anticipated that CUSIP identification numbers will be printed on the Bonds, but neither the failure to print such number on any Bond nor any error with respect thereto shall constitute cause for a failure or refusal by the Initial Purchaser to accept delivery of and pay for the Bonds in accordance with the terms of this Official Notice of Sale. The Financial Advisor will obtain CUSIP identification numbers from the CUSIP Service Bureau, New York, New York prior to the date of sale. CUSIP identification numbers will be made available to the Initial Purchaser at the time the Bonds are awarded or as soon thereafter as practicable.

CONDITIONS TO DELIVERY . . . The obligation to take up and pay for the Bonds is subject to the following conditions: issuance of an approving opinion of the Attorney General of Texas, the Initial Purchaser's receipt of typewritten bonds, the legal opinions of Bond Counsel and Special Tax Counsel, and the No-Litigation Certificate, all of which are described herein, and the non-occurrence of the events described below under the caption "No Material Adverse Change." In addition, if the District fails to comply with its obligations described in the Preliminary Official Statement, the Initial Purchaser may terminate its contract to purchase the Bonds by delivering written notice to the District within five (5) days thereafter.

LEGAL OPINIONS . . . The District will furnish without cost to the Initial Purchaser a transcript of certain certified proceedings incident to the issuance and authorization of the Bonds, including a certified copy of the unqualified approving legal opinion of the Attorney General of Texas, as recorded in the Bond Register of the Comptroller of Public Accounts of the State of Texas, to the effect that the Bonds are valid and binding obligations of the District, payable from the proceeds of an annual ad valorem tax levied, without legal limit as to rate or amount, upon all taxable property within the District, and, based upon an examination of such transcript of proceedings, the approving legal opinion of McLean & Howard, L.L.P., Austin, Texas, to the effect that the Bonds are valid and binding obligations of the District payable from the sources and enforceable in accordance with the terms and conditions described therein, except to the extent that the enforceability thereof may be affected by governmental immunity, bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting creditors' rights or the exercise of judicial discretion in accordance with general principal of equity and the tax opinion of McCall, Parkhurst and Horton L.L.P. to the effect that the interest on the Bonds is excludable from gross income for federal income tax purposes under statutes, regulations, published rulings and court decisions existing on the date thereof, subject to the matters described under "TAX MATTERS."

ESTABLISHING THE ISSUE PRICE FOR THE BONDS . . . The Issuer intends to rely on Treasury Regulation section 1.148-1(f)(3)(i) (defining "competitive sale" for purposes of establishing the issue price of municipal bonds), which require, among other things, that the Issuer receives bids from at least three underwriters of municipal bonds who have established industry reputations for underwriting new issuances of municipal bonds (the "Competitive Sale Requirement").

In the event that the bidding process does not satisfy the Competitive Sale Requirement, bids will not be subject to cancellation and the winning bidder (i) agrees to promptly report to the District the first prices at which at least 10% of each maturity of the Bonds (the "First Price Maturity") have been sold to the Public on the Sale Date (the "10% Test") (if different interest rates apply within a maturity, each separate CUSIP number within that maturity will be subject to the 10% Test) and (ii) agrees to hold-the-offering-price of each maturity of the Bonds that does not satisfy the 10% Test ("Hold-the-Price Maturity"), as described below.

In order to provide the District with information that enables it to comply with the establishment of the issue price of the Bonds under the Internal Revenue Code of 1986, as amended, the winning bidder agrees to complete, execute, and timely deliver to the District or to the District's financial advisor (the "District's Financial Advisor") a certification as to the Bonds' "issue price" (the "Issue Price Certificate") substantially in the form and to the effect attached hereto or accompanying this Notice of Sale, within 5 business days prior to the Closing Date if the Competitive Sale Requirement is satisfied or within 5 business days of the date on which the 10% Test is satisfied with respect to all of the First Price Maturities. In the event the winning bidder will not reoffer any maturity of the Bonds for sale to the Public (as defined herein) by the Closing Date, the Issue Price Certificate may be modified in a manner approved by the District. It will be the responsibility of the winning bidder to institute such syndicate reporting requirements, to make such investigation, or otherwise to ascertain such facts necessary to enable it to make such certification with reasonable certainty. Any questions concerning such certification should be directed to Bond Counsel (identified in the Preliminary Official Statement).

For purposes of this section of this Notice of Sale:

(i) "Public" means any person (including an individual, trust, estate, partnership, association, company, or corporation) other than an Underwriter or a Related Party to the Underwriter,

(ii) "Underwriter" means (A) any person that agrees pursuant to a written contract with the Issuer (or with the lead Underwriter to form an underwriting syndicate) to participate in the initial sale of the Bonds to the Public and (B) any person that agrees pursuant to a written contract directly or indirectly with a person described in clause (A) to participate in the initial sale of the Bonds to the Public (including a member of a selling group or a party to a retail distribution agreement participating in the initial sale of the Bonds to the Public),

(iii) "Related Party" means any two or more persons (including an individual, trust, estate, partnership, association, company, or corporation) that are subject, directly or indirectly, to (i) more than 50% common ownership of the voting power or the total value of their stock, if both entities are corporations (including direct ownership by one corporation of another), (ii) more than 50% common ownership of their capital interests or profits interests, if both entities are partnerships (including direct ownership by one partnership of another), or (iii) more than 50% common ownership of the value of the outstanding stock of the corporation or the capital interests or profit interests of the partnership, as applicable, if one entity is a corporation and the other entity is a partnership (including direct ownership of the applicable stock or interests by one entity of the other), and

(iv) "Sale Date" means the date that the Bonds are awarded by the Issuer to the winning bidder.

All actions to be taken by the Issuer under this Notice of Sale to establish the issue price of the Bonds may be taken on behalf of the Issuer by the Issuer's Municipal Advisor, and any notice or report to be provided to the Issuer may be provided to the Issuer's Municipal Advisor.

The Issuer will consider any bid submitted pursuant to this Notice of Sale to be a firm offer for the purchase of the Bonds, as specified in the bid and, if so stated, in the Official Bid Form.

By submitting a bid, each bidder confirms that: (i) any agreement among underwriters, any selling group agreement and each third-party distribution agreement (to which the bidder is a party) relating to the initial sale of the Bonds to the Public, together with the related pricing wires, contains or will contain language obligating each Underwriter, each dealer who is a member of the selling group, and each broker-dealer that is a party to such third-party distribution agreement, as applicable, (A) to report the prices at which it sells to the Public the unsold Bonds of each maturity allocated to it until either all such Bonds have been sold or it is notified by the winning bidder that either the 10% Test has been satisfied as to the Bonds of that maturity, (B) to promptly notify the winning bidder of any sales of Bonds that, to its knowledge, are made to a purchaser who is a Related Party to an Underwriter, and (C) to acknowledge that, unless otherwise advised by the underwriter, dealer or broker-dealer, the winning bidder will assume that based on such agreement each order submitted by the underwriter, dealer or broker-dealer is a sale to the Public; and (ii) any agreement among underwriters or selling group agreement relating to the initial sale of the Bonds to the Public, together with the related pricing wires, contains or will contain language obligating each Underwriter that is a party to a third-party distribution agreement to be employed in connection with the initial sale of the Bonds to the Public to require each underwriter or dealer that is a party to such third-party distribution agreement to report the prices at which it sells to the Public the unsold Bonds of each maturity allocated to it until either all such Bonds have been sold or it is notified by the winning bidder or such Underwriter that either the 10% Test has been satisfied as to the Bonds of that maturity. Sales of any Bonds to any person that is a Related Party to an Underwriter shall not constitute sales to the public for purposes of this Notice of Sale.

By submitting a bid, the winning bidder agrees, on behalf of each Underwriter participating in the purchase of the Bonds, that each Underwriter will neither offer nor sell any Hold-the-Price Maturity to any person at a price that is higher than the initial offering price to the Public during the period starting on the Sale Date and ending on the earlier of (1) the close of the fifth (5th) business day after the Sale Date; or (2) the date on which the Underwriters have sold at least 10% of that Hold-the-Price Maturity to the Public at a price that is no higher than the initial offering price to the Public. The winning bidder shall promptly advise the Issuer when the Underwriters have sold 10% of a Hold-the-Price Maturity to the Public at a price that is no higher than the initial offering price to the Public, if that occurs prior to the close of the fifth (5th) business day after the Sale Date.

TEXAS BOND REVIEW BOARD INFORMATION . . . In order to provide the District with information required to be submitted to the Texas Bond Review Board pursuant to Section 1202.008, Texas Government Code, as amended, the Initial Purchaser will be required to provide the District with a breakdown of its "underwriting spread" among the following categories: Takedown, Management Fee (if any), Legal Counsel Fee (if any) and Spread Expenses (if any).

NO MATERIAL ADVERSE CHANGE . . . The obligations of the District to deliver the Bonds and of the Initial Purchaser to accept delivery of and pay for the Bonds are subject to the condition that at the time of delivery of and receipt of payment for the Bonds, there shall have been no material adverse change in the condition of the District from those set forth in or contemplated by the "Preliminary Official Statement" as it may have been supplemented or amended through the date of sale.

NO-LITIGATION CERTIFICATE . . . On the date of delivery of the Bonds to the Initial Purchaser, the District will deliver to the Initial Purchaser a certificate, as of the same date, to the effect that to the best of the District's knowledge no litigation of any nature is pending or, to the best of the certifying officers' knowledge or belief, threatened against the District, contesting or affecting the Bonds; restraining or enjoining the authorization, execution, or delivery of the Bonds; affecting the provision made for the payment of or security for the Bonds; in any manner questioning the authority or proceedings for the issuance, execution or delivery of the Bonds; or affecting the validity of the Bonds or the title of the present officers and directors of the District.

CONTINUING DISCLOSURE

The District will agree in the Bond Order to provide certain periodic information and notices of certain events in accordance with the Rule, as described in the Preliminary Official Statement under "CONTINUING DISCLOSURE OF INFORMATION." The Initial Purchaser's obligation to accept and pay for the Bonds is conditioned upon delivery to the Initial Purchaser(s) or its (their) agent of a certified copy of the Bond Order containing the agreement described under such heading.

GENERAL CONSIDERATIONS

RECORD DATE . . . The record date ("Record Date") for the interest payable on any interest payment date means the last calendar day of the month (whether or not a business day) next preceding such interest payment date.

RECORD DATE FOR BONDS TO BE REDEEMED . . . Neither the District nor the Paying Agent shall be required (1) to issue, transfer, or exchange any Bond during the period commencing with the close of business on any Record Date and ending with the opening of business on the next following principal on interest payment date or (2) to transfer or exchange, in whole or in part, any Bond or any portion thereof selected for redemption prior to maturity, within forty-five (45) calendar days prior to its redemption date.

RISK FACTORS . . . The Bonds involve certain risk factors. Prospective bidders are urged to examine carefully the entire Preliminary Official Statement, made a part hereof, with respect to the investment security of the Bonds. Particular attention should be given to the information set forth therein under the caption "RISK FACTORS."

RESERVATION OF RIGHTS . . . The District reserves the right to reject any and all bids and to waive any and all irregularities except time of filing.

NOT AN OFFER TO SELL . . . This Official Notice of Sale does not alone constitute an offer to sell the Bonds but is merely notice of sale of the Bonds. The invitation for bids on the Bonds is being made by means of this Official Notice of Sale, the Preliminary Official Statement and the Official Bid Form.

REGISTRATION AND QUALIFICATION UNDER SECURITIES LAWS . . . The offer and sale of the Bonds have not been registered or qualified under the Securities Act of 1933, as amended, in reliance upon the exemptions provided thereunder; the Bonds have not been registered or qualified under the Securities Act of Texas in reliance upon various exemptions contained therein; nor have the Bonds been registered or qualified under the securities laws of any other jurisdiction. The District assumes no responsibility for registration or qualification of the Bonds under the securities laws of any jurisdiction in which the Bonds may be sold, assigned, pledged, hypothecated or otherwise transferred. This disclaimer of responsibility for registration or qualification for sale or other disposition of the Bonds shall not be construed as an interpretation of any kind with regard to the availability of any exemption from securities registration or qualification provisions.

By submission of a bid, the Initial Purchaser represents that its sale of the Bonds in states other than Texas will be made only pursuant to exemptions from registration or qualification or, where necessary, the Initial Purchaser will register and qualify the Bonds in accordance with the securities laws of any jurisdiction which so requires. The District agrees to cooperate, at the Initial Purchaser's written request and expense, in registering or qualifying the Bonds, or in obtaining exemption from registration or qualification, in any state where such action is necessary, provided that the District shall not be required to file a general or special consent to service of process in any jurisdiction.

COPIES OF DOCUMENTS . . . Copies of the Official Notice of Sale, the Preliminary Official Statement, the Official Bid Form, Audits, and the pro forma Bond Order may be obtained at the offices of Specialized Public Finance Inc., 248 Addie Roy Road, Suite B-103, Austin, Texas 78746, Financial Advisor to the District.

President
Board of Directors
Headwaters Municipal Utility District of Hays County

October 10, 2025

OFFICIAL BID FORM

President and Board of Directors
Headwaters Municipal Utility District of Hays County
c/o Specialized Public Finance Inc.
248 Addie Roy Road, Suite B-103
Austin, Texas 78746

Board of Directors:

We have read in detail your Official Notice of Sale and accompanying Preliminary Official Statement dated October 10, 2025, relating the Headwaters Municipal Utility District of Hays County (the "District") and its $3,000,000 Unlimited Tax Bonds, Series 2025A (the "Bonds"), as made a part hereof. We realize that the Bonds involve certain risk factors, and we have made inspections and investigations as we deem necessary relating to the District and to the investment quality of the Bonds.

For your legally issued Bonds, in the aggregate principal amount of $3,000,000, we will pay you a price of $_____, representing approximately _____% of the par value. Such Bonds mature August 15, in each of the years and in the amounts and interest rates shown below:

Maturity (August 15)	Principal Amount	Interest Rate	Maturity (August 15)	Principal Amount	Interest Rate
2028	$ 70,000	%	2040	$ 130,000	%
2029	75,000	%	2041	135,000	%
2030	80,000	%	2042	145,000	%
2031	80,000	%	2043	150,000	%
2032	85,000	%	2044	160,000	%
2033	90,000	%	2045	170,000	%
2034	95,000	%	2046	175,000	%
2035	100,000	%	2047	185,000	%
2036	105,000	%	2048	195,000	%
2037	110,000	%	2049	205,000	%
2038	120,000	%	2050	215,000	%
2039	125,000	%			

Of the principal maturities set forth in the table above, we have created term bonds as indicated in the following table (which may include multiple term bonds, one term bond or no term bond if none is indicated). For those years which have been combined into a term bond, the principal amount shown in the table above shall be the mandatory sinking fund redemption amounts in such years except that the amount shown in the year of the term bond maturity date shall mature in such year. The term bonds created are as follows:

Term Bonds Maturing August 15	Year of First Mandatory Redemption	Principal Amount	Interest Rate
			%
			%
			%
			%
			%

Our calculation (which is not a part of this bid) of the interest cost from the above is:

TOTAL INTEREST COST FROM 11/25/2025	$_____
PLUS DOLLAR AMOUNT OF DISCOUNT	$_____
NET INTEREST COST	$_____
NET EFFECTIVE INTEREST RATE	_____%

We are having the Bonds insured by _____ at a premium of $_____, **said premium to be paid by the Initial Purchaser.** Any fees to be paid to the rating agency as a result of said insurance **will be paid by the District.**

A wire transfer or a cashiers or certified check to the District in the amount of $60,000 will be made available in accordance with the Notice of Sale made a part hereof. Should we fail or refuse to make payment for the Bonds in accordance with the terms and conditions set forth in the Notice of Sale, the proceeds of this deposit shall be retained by the District as complete liquidated damages against us, except with respect to the Required Verifications (defined below). Please check the box below to designate your Good Faith Deposit option.

The undersigned agrees to complete, execute, and deliver to the District, by the date of delivery of the Bonds, a certificate relating to the "issue price" of the Bonds in the form accompanying the Official Notice of Sale, with such changes thereto as may be acceptable to the District.

We understand the sale of the Bonds has not been registered under the United States Securities Act of 1933, as amended, in reliance upon the exemptions provided thereunder; the Bonds have not been registered or qualified under the Securities Act of Texas in reliance upon various exemptions contained therein; nor have the Bonds been registered or qualified under the securities acts of any other jurisdiction. We hereby represent the sale of the Bonds in jurisdictions other than Texas will be made only pursuant to exemptions from registration or qualification and that where necessary, we will register or qualify the Bonds in accordance with the securities laws and regulations of the jurisdiction in which the Bonds are offered or sold.

We further understand that the District assumes no responsibility or obligation for the distribution or delivery of any copies of the Official Statement or other information concerning the District and the Bonds to anyone other than to us.

We agree to provide in writing the initial reoffering prices and other terms, if any, together with the pricing wire, to the Financial Advisor by the close of the next business day after the award.

The bidder makes the following representations and covenants (the "Required Verifications") pursuant to Chapters 2252, 2271, 2274, and 2276, Texas Government Code, as heretofore amended (the "Government Code"), in entering into this Official Bid Form. As used in such verifications, "affiliate" means an entity that controls, is controlled by, or is under common control with the winning bidder within the meaning of Securities and Exchange Commission Rule 405, 17 C.F.R. § 230.405, and exists to make a profit. Liability for breach of any such verification during the term of this Official Bid Form shall survive until barred by the applicable statute of limitations, and shall not be liquidated or otherwise limited by any provision of this Official Bid Form or Official Notice of Sale (collectively, the "Agreement"), notwithstanding anything in this Official Bid Form to the contrary.

(i) The bidder represents that neither it nor any of its parent company, wholly- or majority-owned subsidiaries, and other affiliates is a company identified on a list prepared and maintained by the Texas Comptroller of Public Accounts under Section 2252.153 or Section 2270.0201, Government Code. The foregoing representation excludes the bidder and each of its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, that the United States government has affirmatively declared to be excluded from its federal sanctions regime relating to Sudan or Iran or any federal sanctions regime relating to a foreign terrorist organization.

(ii) The bidder hereby verifies that it and its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, do not boycott Israel and will not boycott Israel during the term of this Agreement. As used in the foregoing verification, "boycott Israel" has the meaning provided in Section 2271.001, Government Code.

(iii) The bidder hereby verifies that it and its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, do not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association and will not discriminate against a firearm entity or firearm trade association during the term of the Agreement. As used in the foregoing verification, "discriminate against a firearm entity or firearm trade association" has the meaning provided in Section 2274.001(3), Government Code.

(iv) The bidder hereby verifies that it and its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, do not boycott energy companies and will not boycott energy companies during the term of the Agreement. As used in the foregoing verification, "boycott energy companies" has the meaning provided in Section 2276.001(1), Government Code.

By submitting a bid, each bidder or syndicate member, as applicable, confirms that it has on file with the Public Finance Division of the Texas Office of Attorney General ("OAG") a standing letter confirming that each bidder or syndicate member, as applicable, can make the unqualified verifications required by Sections 2252, 2271, 2274, and 2276 of the Government Code set forth above, as required and in the form required pursuant to the All Bond Counsel Letter of the OAG dated November 1, 2023 (a "Standing Letter"), and that it has no reason to believe that the District and the OAG may not be entitled to rely on such Standing Letter through the date of delivery of the Bonds. The bidder and each syndicate member listed on an Official Bid Form agree that it will not rescind any applicable Standing Letter at any time before the delivery of the Bonds unless same is immediately replaced with a standing letter meeting the requirements of the OAG.

In addition, as required under the All Bond Counsel Letters of the OAG dated April 27, 2022, November 1, 2023 and November 16, 2023, the winning bidder and each syndicate member listed on the Official Bid Form shall immediately notify the District if its Standing Letter is under review by the Texas Comptroller of Public Accounts (the "Comptroller") pursuant to Section 809.051 of the Texas Government Code (or by the OAG, as the case may be) (a "bidder under review"). If such Standing Letter becomes subject to review as described above, at any time prior to the date of delivery of the Bonds upon request of the District or Bond Counsel, the bidder under review shall provide the District or Bond Counsel with written confirmation to the effect that (i) it and/or its affiliate intends to timely comply with the Comptroller's request for written verification pursuant to Chapter 809 of the Texas Government Code and (ii) the applicable Standing Letter remains in effect and may be relied upon by the District and the OAG. The District and Bond Counsel may provide such written certifications to the OAG in connection with the issuance of the Bonds.

To the extent the date of delivery of the Bonds occurs before the end of the Comptroller's review period pursuant to Section 809.051 of the Texas Government Code, and the bidder under review is unable to satisfy the OAG or Comptroller verifications as described above, the District, pursuant to the All Bond Counsel Letters of the OAG dated April 27, 2022, November 1, 2023 and November 16, 2023 (requiring a new Standing Letter and the Required Verifications), reserves the right to find a replacement purchaser for the Bonds. Furthermore, the District may cash and accept the Good Faith Deposit as described in the Official Notice of Sale under "CONDITIONS OF SALE – Verifications of Statutory Representations and Covenants"). The District shall be under no further liability as a result of such bidder's inability to satisfy the Required Verifications. Liability for breach of the verifications required under Chapters 2252, 2271, 2274, and 2276, Government Code, as heretofore amended, during the term of this Official Bid Form shall survive until barred by the applicable statute of limitations, and shall not be liquidated or otherwise limited by any provision of this Official Bid Form, notwithstanding anything in this Official Bid Form to the contrary.

By submitting this bid, the undersigned agrees to cooperate with the District and to take any and all action necessary to further verify and confirm compliance with the State law.

By submitting this bid, the undersigned understands and agrees that if the undersigned should fail or refuse to take up and pay for the Bonds in accordance with this bid, or it is determined that after the acceptance of this bid by the District that the undersigned was found not to satisfy the requirements described in the Official Notice of Sale under the heading "CONDITIONS OF THE SALE" and as a result the Texas Attorney General will not deliver its approving opinion of the Bonds, then the amount submitted herewith as the undersigned's Good Faith Deposit may be cashed and accepted by the District ; provided, however, if the District cashes the purchaser's Good Faith Deposit as described above, such action or amount does not constitute complete or liquidated damages related to the bidder's breach of any of the Required Verifications

The undersigned certifies that it [is]/[is not] exempt from filing the Texas Ethics Commission (the "TEC") Certificate of Interested Parties Form 1295 (the "Form 1295") by virtue of being a publicly traded business entity or a wholly owned subsidiary of a publicly traded business entity.

Respectfully submitted,

_____
Name of Initial Purchaser or Manager

_____
Authorized Representative

_____
Phone Number

_____
Signature

ACCEPTANCE CLAUSE

The above and foregoing bid is hereby in all things accepted by Headwaters Municipal Utility District of Hays County this the 16th day of October, 2025.

ATTEST:

_____
Secretary, Board of Directors
Headwaters Municipal Utility District of Hays County

_____
President, Board of Directors
Headwaters Municipal Utility District of Hays County

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ISSUE PRICE CERTIFICATE

(sales where 3 bids are received)

The undersigned, as the underwriter or the manager of the syndicate of underwriters ("Purchaser"), with respect to the purchase at competitive sale of the Unlimited Tax Bonds, Series 2025A issued by the Headwaters Municipal Utility District of Hays County ("Issuer") in the aggregate principal amount of $3,000,000 ("Bonds"), hereby certifies and represents, based on its records and information, as follows:

(a) On the first day on which there was a binding contract in writing for the purchase of the Bonds by the Purchaser, the Purchaser's reasonably expected initial offering prices of each maturity of the Bonds with the same credit and payment terms (the "Expected Offering Prices") to a person (including an individual, trust, estate, partnership, association, company, or corporation) other than an Underwriter are as set forth in the pricing wire or equivalent communication for the Bonds, as attached to this Certificate as Schedule A. The Expected Offering Prices are the prices for the Bonds used by the Purchaser in formulating its bid to purchase the Bonds.

(b) The Purchaser had an equal opportunity to bid to purchase the Bonds and it was not given the opportunity to review other bids that was not equally given to all other bidders (i.e., no last look).

(c) The bid submitted by the Purchaser constituted a firm bid to purchase the Bonds.

(d) The Purchaser [has]/[has not] purchased bond insurance for the Bonds. [The bond insurance has been purchased from _____ (the "Insurer") for a fee of $_____ (net any nonguarantee cost, e.g., rating agency fees). The amount of such fee is set forth in the Insurer's commitment and does not include any payment for any direct or indirect services other than the transfer of credit risk, unless the compensation for those other services is separately stated, reasonable, and excluded from such fee. Such fee does not exceed a reasonable, arm's-length charge for the transfer of credit risk and it has been paid to a person who is not exempt from federal income taxation and who is not a user or related to the user of any proceeds of the Bonds. The present value of the debt service savings expected to be realized as a result of such insurance exceeds the amount of the fee set forth above. For this purpose, present value is computed using the yield on the Bonds, determined by taking into account the amount of the fee set forth above, as the discount rate. No portion of the fee payable to the Insurer is refundable upon redemption of any of the Bonds in an amount which would exceed the portion of such fee that has not been earned.]

For purposes of this Issue Price Certificate, the term "Underwriter" means (1) (i) a person that agrees pursuant to a written contract with the Issuer (or with the lead underwriter to form an underwriting syndicate) to participate in the initial sale of the Bonds to the Public, or (ii) any person that agrees pursuant to a written contract directly or indirectly with a person described in clause (1)(i) of this paragraph (including a member of a selling group or a party to a retail distribution agreement participating in the initial sale of the Bonds to the Public) to participate in the initial sale of the Bonds to the Public, and (2) any person who has more than 50% common ownership, directly or indirectly, with a person described in clause (1) of this paragraph.

The undersigned understands that the foregoing information will be relied upon by the Issuer with respect to certain of the representations set forth in the Federal Tax Certificate and with respect to compliance with the federal income tax rules affecting the Bonds, and by McCall, Parkhurst and Horton L.L.P. in connection with rendering its opinion that the interest on the Bonds is excluded from gross income for federal income tax purposes, the preparation of the Internal Revenue Service Form 8038-G, and other federal income tax advice that it may give to the Issuer from time to time relating to the Bonds. Notwithstanding anything set forth herein, the Purchaser is not engaged in the practice of law and makes no representation as to the legal sufficiency of the factual matters set forth herein.

EXECUTED and DELIVERED as of this _____.

_____, as Purchaser

By: _____

Name:_____

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ISSUE PRICE CERTIFICATE

(sales where 3 bids are not received)

The undersigned, as the underwriter or the manager of the syndicate of underwriters ("Purchaser"), with respect to the purchase at competitive sale of the Unlimited Tax Bonds, Series 2025A issued by the Headwaters Municipal Utility District of Hays County ("Issuer") in the aggregate principal amount of $3,000,000 ("Bonds"), hereby certifies and represents, based on its records and information, as follows:

(a) Other than the Bonds maturing in ____ ("Hold-the-Price Maturities"), if any, the first prices at which at least ten percent ("Substantial Amount") of the principal amount of each maturity of the Bonds having the same credit and payment terms ("Maturity") was sold on the date of sale of the Bonds (the "Sale Date") to a person (including an individual, trust, estate, partnership, association, company, or corporation) other than an Underwriter ("Public") are their respective initial offering prices (the "Initial Offering Prices"), as listed in the pricing wire or equivalent communication for the Bonds that is attached to this Certificate as Schedule A.

(b) On or before the Sale Date, the Purchaser offered to the Public each Maturity of the Hold-the-Price Maturities at their respective Initial Offering Prices, as set forth in Schedule A hereto.

(c) As set forth in the Notice of Sale, the Purchaser agreed in writing to neither offer nor sell any of the Hold-the-Price Maturities to any person at any higher price than the Initial Offering Price for such Hold-the-Price Maturity until the earlier of the close of the fifth business day after the Sale Date or the date on which the Purchaser sells a Substantial Amount of a Hold-the-Price Maturity of the Bonds to the Public at no higher price than the Initial Offering Price for such Hold-the-Price Maturity.

(d) The Purchaser [has]/[has not] purchased bond insurance for the Bonds. [The bond insurance has been purchased from _____ (the "Insurer") for a fee of $_____ (net any nonguarantee cost, e.g., rating agency fees). The amount of such fee is set forth in the Insurer's commitment and does not include any payment for any direct or indirect services other than the transfer of credit risk, unless the compensation for those other services is separately stated, reasonable, and excluded from such fee. Such fee does not exceed a reasonable, arm's-length charge for the transfer of credit risk and it has been paid to a person who is not exempt from federal income taxation and who is not a user or related to the user of any proceeds of the Bonds. The present value of the debt service savings expected to be realized as a result of such insurance exceeds the amount of the fee set forth above. For this purpose, present value is computed using the yield on the Bonds, determined by taking into account the amount of the fee set forth above, as the discount rate. No portion of the fee payable to the Insurer is refundable upon redemption of any of the Bonds in an amount which would exceed the portion of such fee that has not been earned.]

For purposes of this Issue Price Certificate, the term "Underwriter" means (1) (i) a person that agrees pursuant to a written contract with the Issuer (or with the lead underwriter to form an underwriting syndicate) to participate in the initial sale of the Bonds to the Public, or (ii) any person that agrees pursuant to a written contract directly or indirectly with a person described in clause (1)(i) of this paragraph (including a member of a selling group or a party to a retail distribution agreement participating in the initial sale of the Bonds to the Public) to participate in the initial sale of the Bonds to the Public, and (2) any person who has more than 50% common ownership, directly or indirectly, with a person described in clause (1) of this paragraph.

The undersigned understands that the foregoing information will be relied upon by the Issuer with respect to certain of the representations set forth in the Federal Tax Certificate and with respect to compliance with the federal income tax rules affecting the Bonds, and by McCall, Parkhurst and Horton L.L.P. in connection with rendering its opinion that the interest on the Bonds is excluded from gross income for federal income tax purposes, the preparation of the Internal Revenue Service Form 8038-G, and other federal income tax advice that it may give to the Issuer from time to time relating to the Bonds. Notwithstanding anything set forth herein, the Purchaser is not engaged in the practice of law and makes no representation as to the legal sufficiency of the factual matters set forth herein.

EXECUTED and DELIVERED as of this _____.

_____, as Purchaser

By:_____

Name:_____

SCHEDULE A

PRICING WIRE OR EQUIVALENT COMMUNICATION

(*Attached*)

This Preliminary Official Statement and the information contained herein are subject to completion or amendment without notice. These securities may not be sold nor may offers to buy be accepted prior to the time the Official Statement is delivered in final form. Under no circumstances shall this Preliminary Official Statement constitute an offer to sell or the solicitation of an offer to buy nor shall there be any sale of these securities in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction.

PRELIMINARY OFFICIAL STATEMENT
Dated October 10, 2025

DELIVERY OF THE BONDS IS SUBJECT TO THE OPINION OF BOND COUNSEL THAT THE BONDS BE VALID OBLIGATIONS OF THE DISTRICT AND OF THE OPINION OF SPECIAL TAX COUNSEL TO THE DISTRICT, INTEREST ON THE BONDS WILL BE EXCLUDABLE FROM GROSS INCOME FOR FEDERAL INCOME TAX PURPOSES UNDER STATUTES, REGULATIONS, PUBLISHED RULINGS AND COURT DECISIONS EXISTING ON THE DATE THEREOF, SUBJECT TO THE MATTERS DESCRIBED UNDER "TAX MATTERS" HEREIN, INCLUDING THE ALTERNATIVE MINIMUM TAX ON CERTAIN CORPORATIONS.

THE DISTRICT WILL NOT DESIGNATE THE BONDS AS "QUALIFIED TAX-EXEMPT OBLIGATIONS" FOR FINANCIAL INSTITUTIONS.

Rating:
S&P: "BBB+"
Insurance: Applied For

NEW ISSUE – BOOK-ENTRY-ONLY

$3,000,000
HEADWATERS MUNICIPAL UTILITY DISTRICT OF HAYS COUNTY
(A Political Subdivision of the State of Texas Located in Hays County, Texas)
UNLIMITED TAX BONDS, SERIES 2025A

Dated: November 25, 2025 **Due: August 15, as shown on the inside cover page**
Interest to accrue from the date of Initial Delivery (as defined below)

The bonds described above (the "Bonds") are obligations solely of Headwaters Municipal Utility District of Hays County (the "District") and are not obligations of the State of Texas ("State"), Hays County (the "County"), the City of Dripping Springs (the "City"), Dripping Springs Independent School District or any entity other than the District.

The Bonds, when issued, will constitute valid and legally binding obligations of the District and will be payable from the proceeds of an annual ad valorem tax, without legal limitation as to rate or amount, levied against all taxable property within the District. THE BONDS ARE SUBJECT TO SPECIAL RISK FACTORS DESCRIBED HEREIN. See "RISK FACTORS."

PAYMENT TERMS . . .Principal of the Bonds is payable at maturity or earlier redemption at the principal payment office of the paying agent/registrar, initially BOKF, NA, Dallas, Texas, (the "Paying Agent" or the "Paying Agent/Registrar") upon surrender of the Bonds for payment. Interest on the Bonds will accrue from the date of Initial Delivery and will be payable each February 15 and August 15, commencing February 15, 2026, until maturity or prior redemption. Interest on the Bonds will be payable on the basis of a 360-day year consisting of twelve 30-day months. The Bonds will be issued only in fully registered form in denominations of $5,000 each or integral multiples thereof. The Bonds are subject to redemption prior to their maturity as provided on the inside cover page.

The Bonds will be registered in the name of Cede & Co., as nominee for The Depository Trust Company, New York, New York ("DTC"), which will act as securities depository for the Bonds. Beneficial owners of the Bonds will not receive physical certificates representing the Bonds but will receive a credit balance on the books of the nominees of such beneficial owners. So long as Cede & Co. is the registered owner of the Bonds, the principal of and interest on the Bonds will be paid by the Paying Agent/Registrar directly to DTC, which will, in turn, remit such principal and interest to its participants for subsequent disbursement to the beneficial owners of the Bonds. See "THE BONDS – Book-Entry-Only System."

PURPOSE . . . The proceeds of the Bonds will be used to finance the following projects: (i) engineering costs and (ii) treated wastewater drip irrigation fields. The remaining Bond proceeds will be used to: (i) pay Developer interest; and (ii) pay issuance costs associated with the Bonds. See "USE AND DISTRIBUTION OF BOND PROCEEDS."

CUSIP PREFIX: 42211H
MATURITY SCHEDULE
SEE INSIDE COVER PAGE

LEGALITY . . . The Bonds are offered by the Initial Purchaser subject to prior sale, when, as and if issued by the District and accepted by the Initial Purchaser, subject, among other things, to the approval of the Initial Bond by the Attorney General of Texas and McLean & Howard, L.L.P., Bond Counsel, Austin, Texas, and McCall, Parkhurst and Horton L.L.P., Dallas, Texas, Special Tax Counsel (see "APPENDIX B – Form of Bond Counsel's Opinion" and "APPENDIX C – Form of Special Tax Counsel's Opinion").

DELIVERY . . . Delivery of the Bonds is expected through the facilities of DTC on November 25, 2025 ("Initial Delivery").

BIDS DUE ON THURSDAY, OCTOBER 16, 2025, BY 9:00 A.M., CDT

MATURITY SCHEDULE

8/15 Maturity	Principal Amount	Interest Rate	Initial Yield[(a)]	CUSIP Numbers[(b)]
2028	$ 70,000			
2029	75,000			
2030	80,000			
2031	80,000			
2032	85,000			
2033	90,000			
2034	95,000			
2035	100,000			
2036	105,000			
2037	110,000			
2038	120,000			
2039	125,000			
2040	130,000			
2041	135,000			
2042	145,000			
2043	150,000			
2044	160,000			
2045	170,000			
2046	175,000			
2047	185,000			
2048	195,000			
2049	205,000			
2050	215,000			

(Interest to accrue from the date of Initial Delivery)

(a) Initial yield represents the initial offering yield to the public, which has been established by the Initial Purchaser for offers to the public and which subsequently may be changed.

(b) CUSIP is a registered trademark of the American Bankers Association. CUSIP data herein are provided by CUSIP Global Services, managed by FactSet Research Systems Inc. on behalf of the American Bankers Association. This data is not intended to create a database and does not serve in any way as a substitute for the CUSIP services provided by CUSIP Global Services. Neither the Initial Purchaser, the District, nor Specialized Public Finance Inc., the District's financial advisor (the "Financial Advisor") is responsible for the selection or correctness of the CUSIP numbers set forth herein. The CUSIP number for a specific maturity is subject to being changed after the issuance of the Bonds as a result of various subsequent actions including, but not limited to, a refunding in whole or in part as a result of the procurement of secondary market portfolio insurance or other similar enhancements by investors that is applicable to all or a portion of certain maturities of the Bonds.

REDEMPTION PROVISIONS . . . The District reserves the right to redeem, prior to maturity, in integral multiples of $5,000, those Bonds maturing on and after August 15, 2033 in whole or from time to time in part, on August 15, 2032, or on any date thereafter at a price of par plus accrued interest from the most recent interest payment date to the date fixed for redemption. Additionally, the Bonds may be subject to mandatory sinking fund redemption in the event the Initial Purchaser elects to aggregate two or more consecutive maturities as term Bonds. See "THE BONDS – Redemption."

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For purposes of compliance with Rule 15c2-12 of the United States Securities and Exchange Commission, this document constitutes a Preliminary Official Statement of the District with respect to the Bonds that has been "deemed final" by the District as of its date except for the omission of no more than the information permitted by Rule 15c2-12.

The Official Statement, when further supplemented by adding information specifying the interest rates and certain other information relating to the Bonds, shall constitute a "FINAL OFFICIAL STATEMENT" of the District with respect to the Bonds, as that term is defined in the Rule.

This Official Statement, which includes the cover page and the Appendices hereto, does not constitute an offer to sell or the solicitation of an offer to buy in any jurisdiction to any person to whom it is unlawful to make such offer, solicitation or sale. No dealer, broker, salesman or other person has been authorized by the District to give any information, or to make any representations other than those contained in this Official Statement, and, if given or made, such other information or representations must not be relied upon. This Official Statement does not constitute an offer to sell Bonds in any jurisdiction to any person to whom it is unlawful to make such an offer in such jurisdiction.

The information set forth herein has been obtained from the District and other sources believed to be reliable, but such information is not guaranteed as to accuracy or completeness and is not to be construed as the promise or guarantee of the Financial Advisor. This Official Statement contains, in part, estimates and matters of opinion which are not intended as statements of fact, and no representation is made as to the correctness of such estimates and opinions, or that they will be realized.

The information and expressions of opinion contained herein are subject to change without notice, and neither the delivery of this Official Statement nor any sale made hereunder shall, under any circumstances, create any implication that there has been no change in the affairs of the District or other matters described.

THE BONDS ARE EXEMPT FROM REGISTRATION WITH THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION AND, CONSEQUENTLY, HAVE NOT BEEN REGISTERED THEREWITH. THE REGISTRATION, QUALIFICATION, OR EXEMPTION OF THE BONDS IN ACCORDANCE WITH APPLICABLE SECURITIES LAW PROVISIONS OF THE JURISDICTION IN WHICH THE BONDS HAVE BEEN REGISTERED, OR EXEMPTED, SHOULD NOT BE REGARDED AS A RECOMMENDATION THEREOF.

NEITHER THE DISTRICT NOR THE FINANCIAL ADVISOR MAKE ANY REPRESENTATION OR WARRANTY WITH RESPECT TO THE INFORMATION CONTAINED IN THIS OFFICIAL STATEMENT REGARDING THE DEPOSITORY TRUST COMPANY OR ITS BOOK-ENTRY-ONLY SYSTEM.

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The cover and inside cover page hereof, this page, the appendices included herein and any addenda, supplement or amendment hereto, are part of the Official Statement.

SALE AND DISTRIBUTION OF THE BONDS

AWARD OF THE BONDS . . . After requesting competitive bids for the Bonds, the District accepted the bid resulting in the lowest net effective interest rate, which bid was tendered by _____ (the "Initial Purchaser") bearing the interest rates shown on the inside cover page hereof, at a price of approximately _____% of the par value thereof which resulted in a net effective interest rate of _____% as calculated pursuant to Chapter 1204 of the Texas Government Code, as amended (the "IBA" method).

PRICES AND MARKETABILITY . . . The delivery of the Bonds is conditioned upon the receipt by the District of a certificate executed and delivered by the Initial Purchaser on or before the date of delivery of the Bonds stating the prices at which a substantial amount of the Bonds of each maturity has been sold to the public. For this purpose, the term "public" shall not include any person who is a bond house, broker or similar person acting in the capacity of underwriter or wholesaler. Otherwise, the District has no understanding with the Initial Purchaser regarding the reoffering yields or prices of the Bonds. Information concerning reoffering yields or prices is the responsibility of the Initial Purchaser. Additionally, there are no assurances that if a secondary market for the Bonds were to develop, that it will not be disrupted by negative events. Consequently, investors may not be able to resell the Bonds purchased should they need or wish to do so for emergency or other purposes.

The prices and other terms with respect to the offering and sale of the Bonds may be changed from time-to-time by the Initial Purchaser after the Bonds are released for sale, and the Bonds may be offered and sold at prices other than the initial offering prices, including sales to dealers who may sell the Bonds into investment accounts. In connection with the offering of the Bonds, the Initial Purchaser may over-allot or effect transactions which stabilize or maintain the market prices of the Bonds at levels above those which might otherwise prevail in the open market. Such stabilizing, if commenced, may be discontinued at any time.

The District has no control over trading of the Bonds in the secondary market. Moreover, there is no guarantee that a secondary market will be made in the Bonds. In such a secondary market, the difference between the bid and asked price of utility district bonds may be greater than the difference between the bid and asked price of bonds of comparable maturity and quality issued by more traditional municipal entities, as bonds of such entities are more generally bought, sold or traded in the secondary market.

SECURITIES LAWS . . . No registration statement relating to the offer and sale of the Bonds has been filed with the United States Securities and Exchange Commission under the Securities Act of 1933, as amended, in reliance upon the exemptions provided thereunder. The Bonds have not been registered or qualified under the Securities Act of Texas in reliance upon various exemptions contained therein and the Bonds have not been registered or qualified under the securities laws of any other jurisdiction. The District assumes no responsibility for registration or qualification of the Bonds under the securities laws of any other jurisdiction in which the Bonds may be offered, sold or otherwise transferred. This disclaimer of responsibility for registration or qualification for sale or other disposition of the Bonds shall not be construed as an interpretation of any kind with regard to the availability of any exemption from securities registration or qualification provisions in such other jurisdiction.

MUNICIPAL BOND RATING AND INSURANCE

The Bonds have been rated "BBB+" by S&P Global Ratings ("S&P") without regard to credit enhancement. An application has been made to qualify the Bonds for municipal bond insurance. In the event the Bonds are qualified for municipal bond insurance, and the Initial Purchaser desires to purchase such insurance, the cost therefor will be paid by the Initial Purchaser. It will be the responsibility of the Initial Purchaser to disclose the existence of insurance, its terms and the effect thereof with respect to the reoffering of the Bonds. See "RISK FACTORS – Bond Insurance Risks."

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OFFICIAL STATEMENT SUMMARY

The following material is qualified in its entirety by the more detailed information and financial statements appearing elsewhere in this Official Statement. The offering of the Bonds to potential investors is made only by means of this entire Official Statement. No person is authorized to detach this summary from this Official Statement or to otherwise use it without the entire Official Statement.

THE DISTRICT

THE ISSUER..... Headwaters Municipal Utility District of Hays County (the "District"), a political subdivision of the State of Texas, was created by order of the Texas Commission on Environmental Quality (the "TCEQ" or the "Commission"), effective August 8, 2007 and confirmed pursuant to an election held within the District on November 6, 2007. The District was created for the purpose of providing, operating, and maintaining facilities to control storm water, distribute potable water, collect and treat wastewater and operates pursuant to Chapters 49 and 54 of the Texas Water Code, as amended, and Article XVI, Section 59 of the Texas Constitution, as amended. The District also has road powers under Section 52, Article III of the Texas Constitution and Chapter 7951, Texas Special District Local Laws Code. See "THE DISTRICT – General."

LOCATION..... The District is located in Hays County, Texas. A portion of the District is located within the corporate limits of the City of Dripping Springs, Texas ("City"), and the remainder of the District is located within the extraterritorial jurisdiction of the City. The District is located within the boundaries of the Dripping Springs Independent School District. All lands within the District are located on the north side of State Highway 290. See "THE DISTRICT – Location" and "LOCATION MAP."

THE DEVELOPER ..... WFC Headwaters Owner VII, L.P., a Delaware limited partnership ("Residential Developer") is the developer of approximately 1,035 acres of real property within the District being developed for single family residential purposes (the "Residential Tract"). WFC Headwaters GP VII, L.L.C., a Delaware limited liability company, is the General Partner of the Residential Developer, and WFC Headwaters Holdings JV VII, L.L.C., a Delaware limited liability company, is the limited partner of the Residential Developer.

Approximately 168 acres within the District is being developed for commercial and residential purposes by Oryx Land Holdings, LLC, a Texas limited liability company. The Commercial Developer sold 9.629 acres to Ridge at Headwaters, ltd., which has completed construction of a 168-unit market rate multifamily project on this site (the "Ridge Apartments"). The Commercial Developer has completed construction of 13,092 square feet of office space on 3.46 acres with an additional 7450 sq. ft building to be built. Additionally, the Commercial Developer is developing the 11,450 square feet Oakwood Public Market, a mixture of retail, restaurant and event uses, currently under construction on 1.229 acres and expects to commence operations in the spring of 2025. The Commercial Developer sold 2.131 acres to R & S Prep School Holding Three, LLC to develop the Prep Pre School which is under construction and expected to commence operations in the spring of 2025. The Commercial Developer sold 1.426 acres to Hays County EMS for construction of a fire station. Construction of the fire station is expected in 2027. The commercial developer sold 14.002 acres to 55 Resort at Dripping Springs, LLC for the construction of a 173-unit market rate senior multifamily project (the "55 Resort at Dripping Springs") expected to commence construction in 2025. The Commercial Developer currently retains a 0.7 acre, 2.2 acre and 1.440 acre commercial lots in inventory. In total the Commercial Developer has completed construction of trunk utility facilities and access roads to serve approximately 45 acres of the 168 acre Commercial Tract. Future commercial development is currently being planned on 33 additional acres of the commercial property which will include approximately 280,000 square feet of a mixture of commercial, retail, restaurant and sports lifestyle uses which is expected to break ground the second half of 2026. The Commercial Developer has contracted with the District for future facilities reimbursements. See "THE DEVELOPERS – Description of Developers" and "THE DISTRICT – Current Status of Development."

DEVELOPMENT WITHIN THE DISTRICT..... Of the approximately 1,503 acres within the District, approximately 451 acres have been developed by the Residential Developer with utility facilities as a single-family residential subdivision. The District also expects the Commercial Tract within the District to be developed for commercial and residential purposes by the Commercial Developer. As of September 1, 2025, the development in the District consisted of 866 completed homes, 17 homes under construction and 117 vacant developed lots within the Residential Tract. A 168-unit multifamily complex has also been completed by the Ridge at Headwaters, Ltd., which purchased 9.629 acres within the Commercial Tract for the Ridge Apartments from the Commercial Developer. As of September 1, 2025, approximately 160 of the 168 multi-family units have been leased.

Following the issuance of the Bonds, the District will still owe the Residential Developer approximately $33,064,267 for water, wastewater and drainage facilities which have been constructed to date. See "THE DISTRICT – Current Status of Development."

HOMEBUILDERS..... As of September 1, 2025, there are currently three homebuilders in the District, including David Weekley Homes, Coventry Homes and Toll Brothers Homes. The homes generally range in price from approximately $490,000 to $1,000,000. See "THE DEVELOPERS – Homebuilders within the District."

THE BONDS

DESCRIPTION..... The Bonds in the aggregate principal amount of $3,000,000 mature serially in varying amounts on August 15 of each year from 2028 through 2050, inclusive, in the principal amounts set forth on the inside cover page hereof. Interest accrues from the date of Initial Delivery and is payable February 15, 2026 and each August 15 and February 15 thereafter until maturity or earlier redemption. The Bonds are offered in fully registered form in integral multiples of $5,000 for any one maturity. See "THE BONDS – General Description."

REDEMPTION..... The District reserves the right to redeem, prior to maturity, in integral multiples of $5,000, those Bonds maturing on and after August 15, 2033 in whole or from time to time in part, on August 15, 2032, or on any date thereafter at a price of par plus accrued interest from the most recent interest payment date to the date fixed for redemption. Additionally, the Bonds may be subject to mandatory sinking fund redemption in the event the Initial Purchaser elects to aggregate two or more consecutive maturities as term Bonds. See "THE BONDS – Redemption."

SOURCE OF PAYMENT..... Principal of and interest on the Bonds are payable from the proceeds of a continuing direct annual ad valorem tax levied upon all taxable property within the District, which under Texas law is not legally limited as to rate or amount. See "TAXING PROCEDURES." **The Bonds are obligations solely of the District and are not obligations of the City of Dripping Springs; Dripping Springs Independent School District; Hays County, Texas; the State of Texas; or any entity other than the District.** See "THE BONDS – Source of and Security for Payment."

PAYMENT RECORD..... The Bonds constitute the thirteenth installment of bonds issued by the District. The District has never defaulted on the payment of its outstanding debt. See "FINANCIAL STATEMENT – Unlimited Tax Bonds Authorized but Unissued."

AUTHORITY FOR ISSUANCE..... The Bonds are issued pursuant to Article XVI, Section 59 of the Texas Constitution and the general laws of the State of Texas including Chapters 49 and 54 of the Texas Water Code, a bond election held within the District on November 3, 2015, the approving order of the TCEQ, and an order (the "Bond Order") adopted by the Board of Directors of the District on the date of the sale of the Bonds. See "THE BONDS – Authority for Issuance."

USE OF PROCEEDS	The proceeds of the Bonds will be used to finance the following projects: (i) engineering costs and (ii) treated wastewater drip irrigation fields. The remaining Bond proceeds will be used to: (i) pay Developer interest; and (ii) pay issuance costs associated with the Bonds. The estimated use and distribution of Bond proceeds is set forth below. Of the proceeds to be received from the sale of the Bonds, $2,242,830 is estimated to be required to finance construction costs, and $757,170 is estimated to be required to finance non-construction costs. See "USE AND DISTRIBUTION OF BOND PROCEEDS."
BONDS AUTHORIZED BUT UNISSUED	At an election held within the District on November 6, 2007, the voters within the District approved the issuance of $64,700,000 in bonds for water, wastewater and drainage system facilities. After the sale of the Bonds, the District will have $12,610,000 remaining in authorized but unissued utility bonds.. See "FINANCIAL STATEMENT – Outstanding Bonds" and "THE BONDS – Future Debt."
MUNICIPAL BOND RATING	The Bonds have been rated "BBB+" by S&P Global Ratings ("S&P") without regard to credit enhancement.
MUNICIPAL BOND INSURANCE	An application has been made to qualify the Bonds for municipal bond insurance. In the event the Bonds are qualified for municipal bond insurance, and the Initial Purchaser desires to purchase such insurance, the cost therefor will be paid by the Initial Purchaser. It will be the responsibility of the Initial Purchaser to disclose the existence of insurance, its terms and the effect thereof with respect to the reoffering of the Bonds. See "RISK FACTORS – Bond Insurance Risks."
BOND COUNSEL AND GENERAL COUNSEL	McLean & Howard, L.L.P., Austin, Texas (see "APPENDIX C – Form of Bond Counsel's Opinion").
SPECIAL TAX COUNSEL AND DISCLOSURE COUNSEL	McCall, Parkhurst and Horton L.L.P., Austin, Texas
FINANCIAL ADVISOR	Specialized Public Finance Inc., Austin, Texas
ENGINEER	Malone Wheeler, Inc. (the "Engineer"), Austin, Texas

RISK FACTORS

The purchase and ownership of the Bonds involve certain risk factors and all prospective purchasers are urged to examine carefully the Official Statement, including particularly the section captioned "RISK FACTORS," with respect to investment in the Bonds.

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SELECTED FINANCIAL INFORMATION
(Unaudited as of August 27, 2025)

2022 Certified Taxable Assessed Valuation	$	336,731,315	(a)
2023 Certified Taxable Assessed Valuation	$	504,272,856	(a)
2024 Certified Taxable Assessed Valuation	$	547,813,196	(a)
2025 Certified Taxable Assessed Valuation	$	586,961,017	(a)
Gross Direct Debt Outstanding	$	91,120,000	(b)
Estimated Overlapping Debt		41,074,287	(c)
Gross Direct Debt Outstanding and Estimated Overlapping Debt	$	132,194,287	
Ratios of Gross Direct Debt Outstanding to:			
2025 Certified Taxable Assessed Valuation		15.52%	
Ratios of Gross Direct Debt Outstanding and Estimated Overlapping Debt to:			
2025 Certified Taxable Assessed Valuation		22.52%	
2025 Tax Rate:			
Debt Service	$	0.8750	
Maintenance & Operation		0.0250	
Total	$	0.9000	(d)
General Operating Fund Balance as of August 27, 2025 (unaudited)	$	3,807,743	
Debt Service Fund Balance as of August 27, 2025 (unaudited)	$	2,733,051	(e)
Capital Project Fund Balance as of August 27, 2025 (unaudited)	$	46,917	
Projected Average Annual Debt Service Requirement on the Bonds and outstanding debt (2026-2050)	$	5,694,457	(b)
Projected Maximum Annual Debt Service Requirement on the Bonds and outstanding debt (2042)	$	6,676,352	(b)
Tax Rates Required to Pay Projected Average Annual Debt Service (2026-2050) at a 95% Collection Rate Based upon 2025 Certified Taxable Assessed Valuation	$	1.0213	
Tax Rates Required to Pay Projected Maximum Annual Debt Service (2042) at a 95% Collection Rate Based upon 2025 Certified Taxable Assessed Valuation	$	1.1974	

Number of Active Connections as of September 1, 2025:	
Total Developed Single Family Lots	1,000
Single Family Homes– Completed & Occupied	866
Single Family Homes – Completed & Unoccupied	0
Single Family Homes – Under Construction	17
Single Family – Vacant Developed Lots	117
Estimated Population as of September 1, 2025	3,031 (f)

(a) Assessed valuation of the District as certified by the Hays Central Appraisal District ("HCAD"). See "TAXING PROCEDURES."
(b) Includes the Bonds. See "DEBT SERVICE REQUIREMENTS."
(c) See "FINANCIAL STATEMENTS – Estimated Overlapping Debt."
(d) The District levied a 2025 total tax rate of $0.9000. See "Table 9 – District Tax Rates."
(e) Does not include approximately twelve months of capitalized interest ($78,750) which is projected to be deposited into the Debt Service Fund at closing from the proceeds of the Bonds. Neither Texas law nor the Bond Order requires that the District maintain any particular sum in the District's Debt Service Fund. Preliminary, subject to change.
(f) Based upon 3.5 residents per completed and occupied single family home.

OFFICIAL STATEMENT
Relating to

$3,000,000
HEADWATERS MUNICIPAL UTILITY DISTRICT OF HAYS COUNTY
(A Political Subdivision of the State of Texas Located in Hays County, Texas)
UNLIMITED TAX BONDS, SERIES 2025A

INTRODUCTION

This Official Statement provides certain information in connection with the issuance by the Headwaters Municipal Utility District of Hays County (the "District"), a political subdivision of the State of Texas (the "State"), of its $3,000,000 Unlimited Tax Bonds, Series 2025A (the "Bonds").

The Bonds are issued pursuant to an order (the "Bond Order") adopted by the Board of Directors of the District on the date of the sale of the Bonds, pursuant to Article III, Section 52 of the Constitution and general laws of the State including Chapter 7951 of the Texas Special District Local Laws Code, and a bond election held within the District on November 3, 2015.

Unless otherwise indicated, capitalized terms used in this Official Statement have the same meaning assigned to such terms in the Bond Order.

Included in this Official Statement are descriptions of the Bonds and certain information about the District and its finances. ALL DESCRIPTIONS OF DOCUMENTS CONTAINED HEREIN ARE SUMMARIES ONLY AND ARE QUALIFIED IN THEIR ENTIRETY BY REFERENCE TO EACH SUCH DOCUMENT. Copies of such documents may be obtained from the District c/o McLean & Howard, L.L.P., 4301 Bull Creek Road, Suite 150, Austin, Texas 78731 or from the District's Financial Advisor, Specialized Public Finance Inc., 248 Addie Roy Road, Suite B-103, Austin, Texas, 78746, upon payment of reasonable copying, mailing and handling charges.

THE BONDS

GENERAL DESCRIPTION . . . The Bonds are dated November 25, 2025 and will mature on August 15 of the years and in the principal amounts, and will bear interest at the rates per annum, set forth on the inside cover page hereof. Interest on the Bonds will accrue from the date of Initial Delivery, will be paid on February 15, 2026 and each August 15 and February 15 thereafter until maturity or earlier redemption and will be calculated on the basis of a 360-day year composed of twelve 30-day months. The Bonds will be issued in fully registered form only, without coupons, in denominations of $5,000 or any integral multiple thereof, and when issued, will be registered in the name of Cede & Co., as registered owner and nominee for The Depository Trust Company ("DTC"), New York, New York, acting as securities depository for the Bonds until DTC resigns or is discharged. The Bonds initially will be available to purchasers in book-entry form only. So long as Cede & Co., as the nominee of DTC, is the registered owner of the Bonds, principal of and interest on the Bonds will be payable by the paying agent to DTC, which will be solely responsible for making such payment to the beneficial owners of the Bonds. The initial paying agent for the Bonds is BOKF, NA, Dallas, Texas (the "Paying Agent" or "Paying Agent/Registrar").

REDEMPTION . . . The District reserves the right, at its option, to redeem the Bonds maturing on and after August 15, 2033, prior to their scheduled maturities, in whole or in part, in integral multiples of $5,000 on August 15, 2032, or any date thereafter, at a price of par value plus accrued interest on the principal amounts called for redemption to the date fixed for redemption. If less than all of the Bonds are redeemed at any time, the maturities of the Bonds to be redeemed will be selected by the District. If less than all the Bonds of a certain maturity are to be redeemed, the particular Bonds to be redeemed shall be selected by the Paying Agent/Registrar by lot or other random method (or by DTC in accordance with its procedures while the Bonds are in book-entry-only form).

Notice of Redemption . . . At least 30 calendar days prior to the date fixed for any optional redemption of Bonds or portions thereof prior to maturity a written notice of such redemption shall be sent by the Paying Agent by United States mail, first-class postage prepaid, at least 30 calendar days prior to the date fixed for redemption, to the registered owner of each Bond to be redeemed at its address as it appeared on the 45th calendar day prior to such redemption date and to major securities depositories and bond information services.

The Bonds of a denomination larger than $5,000 may be redeemed in part ($5,000 or any multiple thereof). Any Bond to be partially redeemed must be surrendered in exchange for one or more new Bonds of the same maturity for the unredeemed portion of the principal of the Bonds so surrendered. In the event of redemption of less than all of the Bonds, the particular Bonds to be redeemed shall be selected by the District, if less than all of the Bonds of a particular maturity are to be redeemed, the Paying Agent is required to select the Bonds of such maturity to be redeemed by lot.

With respect to any optional redemption of the Bonds, unless certain prerequisites to such redemption required by the Bond Order have been met and money sufficient to pay the principal of and premium, if any, and interest on the Bonds to be redeemed will have been received by the Paying Agent prior to the giving of such notice of redemption, such notice will state that said redemption

may, at the option of the District, be conditional upon the satisfaction of such prerequisites and receipt of such money by the Paying Agent on or prior to the date fixed for such redemption, or upon any prerequisite set forth in such notice of redemption. If a conditional notice of redemption is given and such prerequisites to the redemption are not fulfilled, such notice will be of no force and effect, the District will not redeem such Bonds, and the Paying Agent will give notice in the manner in which the notice of redemption was given, to the effect that the Bonds have not been redeemed.

DTC REDEMPTION PROVISION . . . The Paying Agent/Registrar and the District, so long as a book-entry-only system ("Book-Entry-Only-System") is used for the Bonds, will send any notice of redemption, notice of proposed amendment to the Bond Order or other notices with respect to the Bonds only to DTC. Any failure by DTC to advise any DTC Participant, as herein defined, or of any Direct Participant or Indirect Participant, as herein defined, to notify the beneficial owner, shall not affect the validity of the redemption of Bonds called for redemption or any other action premised on any such notice. Redemption of portions of the Bonds by the District will reduce the outstanding principal amount of such Bonds held by DTC. In such event, DTC may implement, through its Book-Entry-Only System, a redemption of such Bonds held for the account of DTC Participants in accordance with its rules or other agreements with DTC Participants and then Direct Participants and Indirect Participants may implement a redemption of such Bonds and such redemption will not be conducted by the District or the Paying Agent/Registrar. Neither the District nor the Paying Agent/Registrar will have any responsibility to the DTC Participants.

Indirect Participants or the persons for whom DTC Participants act as nominees with respect to the payments on the Bonds or the providing of notice to Direct Participants, Indirect Participants, or beneficial owners of the selection of portions of the Bonds for redemption.

TERMINATION OF BOOK-ENTRY-ONLY SYSTEM . . . The District is initially utilizing the Book-Entry-Only System of DTC. See "BOOK-ENTRY-ONLY SYSTEM." In the event that the Book-Entry-Only System is discontinued by DTC or the District, the following provisions will be applicable to the Bonds.

Payment . . . Principal of the Bonds will be payable at maturity to the registered owners as shown by the registration books maintained by the Paying Agent upon presentation and surrender of the Bonds to the Paying Agent at the designated office for payment of the Paying Agent in Dallas, Texas (the "Designated Payment/Transfer Office"). Interest on the Bonds will be payable by check or draft, dated as of the applicable interest payment date, sent by the Paying Agent by United States mail, first-class, postage prepaid, to the registered owners at their respective addresses shown on such records, or by such other method acceptable to the Paying Agent requested by registered owner at the risk and expense of the registered owner. If the date for the payment of the principal of or interest on the Bonds shall be a Saturday, Sunday, legal holiday, or day on which banking institutions in the city where the Designated Payment/Transfer Office of the Paying Agent is located are required or authorized by law or executive order to close, then the date for such payment shall be the next succeeding day which is not a Saturday, Sunday, legal holiday, or day on which banking institutions are required or authorized to close, and payment on such date shall for all purposes be deemed to have been made on the original date payment was due.

Registration . . . If the Book-Entry-Only System is discontinued, the Bonds may be transferred and re-registered on the registration books of the Paying Agent only upon presentation and surrender thereof to the Paying Agent at the Designated Payment/Transfer Office. A Bond also may be exchanged for a Bond or Bonds of like maturity and interest and having a like aggregate principal amount or maturity amount, as the case may, upon presentation and surrender at the Designated Payment/Transfer Office. All Bonds surrendered for transfer or exchange must be endorsed for assignment by the execution by the registered owner or his duly authorized agent of an assignment form on the Bonds or other instruction of transfer acceptable to the Paying Agent. Transfer and exchange of Bonds will be without expense or service charge to the registered owner, except for any tax or other governmental charges required to be paid with respect to such transfer or exchange. A new Bond or Bonds, in lieu of the Bond being transferred or exchanged, will be delivered by the Paying Agent to the registered owner, at the Designated Payment/Transfer Office of the Paying Agent or by United States mail, first-class, postage prepaid. To the extent possible, new Bonds issued in an exchange or transfer of Bonds will be delivered to the registered owner not more than three (3) business days after the receipt of the Bonds to be canceled in the exchange or transfer in the denominations of $5,000 or any integral multiple thereof.

Limitation on Transfer of Bonds . . . Neither the District nor the Paying Agent shall be required to make any transfer, conversion or exchange to an assignee of the registered owner of the Bonds (i) during the period commencing on the close of business on the last calendar day of the month (whether or not a business day) preceding each interest payment date (the "Record Date") and ending with the opening of business on the next following principal or interest payment date or (ii) with respect to any Bond called for redemption, in whole or in part, within forty-five (45) days of the date fixed for redemption; provided, however, such limitation of transfer shall not be applicable to an exchange by the registered owner of the uncalled balance of a Bond.

Replacement Bonds . . . If a Bond is mutilated, the Paying Agent will provide a replacement Bond in exchange for the mutilated bond. If a Bond is destroyed, lost or stolen, the Paying Agent will provide a replacement Bond upon (i) the filing by the registered owner with the Paying Agent of evidence satisfactory to the Paying Agent of the destruction, loss or theft of the Bond and the authenticity of he registered owner's ownership and (ii) the furnishing to the Paying Agent of indemnification in an amount satisfactory to hold the District and the Paying Agent harmless. All expenses and charges associated with such indemnity and with the preparation, execution and delivery of a replacement Bond must be borne by the registered owner. The provisions of the Bond Order relating to the replacement Bonds are exclusive and to the extent lawful, preclude all other rights and remedies with respect to the replacement and payment of mutilated, destroyed, lost or stolen Bonds.

AUTHORITY FOR ISSUANCE . . . At an election held within the District on November 6, 2007, voters within the District authorized the issuance of a total of $64,700,000 in unlimited tax bonds for water, wastewater and drainage system facilities. The Bonds constitute the thirteenth installment of bonds issued by the District, but will be the fifth installment of bonds issued for water, wastewater and drainage system facilities. After the sale of the Bonds, $12,610,000 principal amount of District bonds will remain authorized but unissued for water, wastewater and drainage system facilities. The Bonds are issued pursuant to the terms and provisions of the Bond Order; Chapters 49 and 54 of the Texas Water Code, as amended, and Article XVI, Section 59 of the Texas Constitution. The issuance of the Bonds has been approved by an order of the TCEQ.

SOURCE OF AND SECURITY FOR PAYMENT . . . The Bonds will be payable from and secured by a pledge of the proceeds of a continuing, direct, annual ad valorem tax without legal limitation as to rate or amount levied against all taxable property located within the District. The Board covenants in the Bond Order that, while any of the Bonds are outstanding and the District is in existence, it will levy an annual ad valorem tax and will undertake to collect such a tax against all taxable property within the District at a rate from year to year sufficient, full allowance being made for anticipated delinquencies, together with revenues and receipts from other sources which are legally available for such purposes, to pay interest on the Bonds as it becomes due, to provide a sinking fund for the payment of principal of the Bonds when due or the redemption price at any earlier required redemption date, to pay when due any other contractual obligations of the District payable in whole or in part from taxes, and to pay the expenses of assessing and collecting such tax. The net proceeds from taxes levied to pay debt service on the Bonds are required to be placed in a special account of the District designated its "Debt Service Fund" for the Bonds.

Under existing Texas law, since the District lies partially within the corporate boundaries and partially within the extraterritorial jurisdiction of the City of Dripping Springs, Texas (the "City"), the District may be annexed by the City without the District's consent; however, the City may not annex the District unless (i) such annexation has been approved by a majority of those voting in an election held for that purpose within the area to be annexed, and (ii) if the registered voters in the area to be annexed do not own more than 50 percent of the land in the area, a petition has been signed by more than 50 percent of the landowners consenting to the annexation. If a municipal utility district is annexed, the municipality must assume the assets, functions, and obligations of the District, including outstanding bonds, and the pledge of taxes will terminate. Under the Amended and Restated Development Agreement dated to be effective as of April 14, 2005, Dripping Springs agreed that it would not annex any residential land within the District until: (a) water, wastewater and drainage facilities have been completed to serve at least ninety percent (90%) of the developable acreage within the District; and (b) the Residential Developer and Commercial Developer have been reimbursed by the District for the water, wastewater, drainage or other facilities serving the District in accordance with the rules of the Texas Commission on Environmental Quality. Annexation of territory by Dripping Springs is a policy-making matter within the discretion of the Mayor and City Council of Dripping Springs and therefore, the District makes no representation that Dripping Springs will ever annex the District and assume its debt. No representation is made concerning the ability of the City to make debt service payments on the Bonds should dissolution of the District occur.

The Bonds are obligations solely of the District and are not obligations of the City of Dripping Springs; Dripping Springs Independent School District; Hays County, Texas; the State of Texas; or any political subdivision or entity other than the District.

PAYMENT RECORD . . . The Bonds constitute the thirteenth installment of bonds issued by the District, but will be the fifth installment of bonds issued for water, wastewater and drainage system facilities. The District has never defaulted on the payment of its outstanding debt.

FLOW OF FUNDS . . . The Bond Order creates the establishment and maintenance by the District of a Debt Service Fund and a Capital Projects Fund.

Each fund shall be kept separate and apart from all other funds of the District. The Debt Service Fund shall constitute a trust fund which shall be held in trust for the benefit of the registered owner of the Bonds.

Any cash balance in any fund must be continuously secured by a valid pledge to the District of securities eligible under the laws of Texas to secure the funds of water control and improvement districts having an aggregate market value, exclusive of accrued interest, at all times equal to the cash balance in the fund to which such securities are pledged.

Debt Service Fund . . . The Bond Order establishes the Debt Service Fund to be used to pay principal and interest on and Paying Agent fees in respect to the Bonds. The Bond Order requires that the District deposit to the credit of the Debt Service Fund (i) from the delivery of the Bonds to the Initial Purchaser, the amount received from proceeds of the Bonds representing accrued interest, if any, and approximately twelve months' capitalized interest on the Bonds, (ii) District ad valorem taxes (and penalties and interest thereon) levied to pay debt service requirements on (or fees and expenses of the Paying Agent with respect of) the Bonds, and (iii) such other funds as the Board shall, at its option, deem advisable. The Bond Order requires that the Debt Service Fund be applied solely to provide for the payment of the principal or redemption price of and interest on the Bonds when due, and to pay fees to Paying Agent when due.

Capital Projects Fund . . . The Capital Projects Fund is the capital improvements fund of the District. The Bond Order requires the District to deposit to the credit of the Capital Projects Fund the balance of the proceeds of the Bonds remaining after the deposits to the Debt Service Fund provided in the Bond Order. The Capital Projects Fund may be applied solely to (i) pay the costs necessary or appropriate to accomplish the purposes for which the Bonds are issued, (ii) pay the costs of issuing the Bonds and (iii) to the extent the proceeds of the Bonds and investment income attributable thereto are in excess of the amounts required to acquire and

construct road facilities, then in the discretion of the District to transfer such unexpended proceeds or income to the Debt Service Fund.

DEFEASANCE OF OUTSTANDING BONDS . . . *General* . . . The Bond Order provides for the defeasance of the Bonds and the termination of the pledge of taxes and all other general defeasance covenants in the Bond Order under certain circumstances. Any Bond and the interest thereon shall be deemed to be paid, retired, and no longer outstanding within the meaning of the Bond Order (a "Defeased Bond"), except to the extent provided below for the Paying Agent to continue payments, when the payment of all principal and interest payable with respect to such Bond to the due date or dates thereof (whether such due date or dates be by reason of maturity, upon redemption, or otherwise) either (i) shall have been made or caused to be made in accordance with the terms thereof (including the giving of any required notice of redemption) or (ii) shall have been provided for on or before such due date by irrevocably depositing with or making available to the Paying Agent or an eligible trust company or commercial bank for such payment (1) lawful money of the United States of America sufficient to make such payment, (2) Defeasance Securities (defined below) that mature as to principal and interest in such amounts and at such times as will ensure the availability, without reinvestment, of sufficient money to provide for such payment, or (3) any combination of (1) and (2) above, and when proper arrangements have been made by the District with the Paying Agent or an eligible trust company or commercial bank for the payment of its services until after all Defeased Bonds shall have become due and payable. At such time as a Bond shall be deemed to be a Defeased Bond, such Bond and the interest thereon shall no longer be secured by, payable from, or entitled to the benefits of, the ad valorem taxes levied and pledged, as provided in the Bond Order and such principal and interest shall be payable solely from such money or Defeasance Securities, and shall not be regarded as outstanding under the Bond Order.

Any money so deposited with or made available to the Paying Agent or an eligible trust company or commercial bank also may be invested at the written direction of the District in Defeasance Securities, maturing in the amounts and times as hereinbefore set forth, and all income from such Defeasance Securities received by the Paying Agent or an eligible trust company or commercial bank that is not required for the payment of the Bonds and interest thereon, with respect to which such money has been so deposited, shall be remitted to the District or deposited as directed in writing by the District.

Until all Defeased Bonds shall have become due and payable, the Paying Agent shall perform the services of Registrar for such Defeased Bonds the same as if they had not been defeased, and the District shall make proper arrangements to provide and pay for such services as required by the Bond Order.

For purposes of these provisions, "Defeasance Securities" means (i) direct non-callable obligations of the United States of America, including obligations that are unconditionally guaranteed by the United States of America, (ii) non-callable obligations of an agency or instrumentality of the United States of America, including obligations that are unconditionally guaranteed or insured by the agency or instrumentality and that, on the date the Board of Directors adopts or approves proceedings authorizing the issuance of refunding bonds or otherwise provide for the funding of an escrow to effect the defeasance of the Bonds, are rated as to investment quality by a nationally recognized investment rating firm not less than "AAA" or its equivalent, (iii) non-callable obligations of a state or an agency or a county, municipality, or other political subdivision of a state that have been refunded and that, on the date the Board of Directors adopts or approves proceedings authorizing the issuance of refunding bonds or otherwise provide for the funding of an escrow to effect the defeasance of the Bonds, are rated as to investment quality by a nationally recognized investment rating firm not less than "AAA" or its equivalent and (iv) any other then authorized securities or obligations under applicable State law that may be used to defease obligations such as the Bonds.

Any such obligations must be certified by an independent public accounting firm of national reputation to be of such maturities and interest payment dates and bear such interest as will, without further investment or reinvestment of either the principal amount thereof or the interest earnings therefrom, be sufficient to provide all debt service payments on the Bonds.

Retention of Rights . . . To the extent that, upon the defeasance of any Defeased Bond to be paid at its maturity, the District retains the right under Texas law to later call the Defeased Bond for redemption in accordance with the provisions of the order authorizing its issuance, the District may call such Defeased Bond for redemption upon complying with the provisions of Texas law and upon satisfaction of the provisions set forth above regarding such Defeased Bond as though it was being defeased at the time of the exercise of the option to redeem the Defeased Bond and the effect of the redemption is taken into account in determining the sufficiency of the provisions made for the payment of the Defeased Debt.

Investments . . . Any escrow agreement or other instrument entered into between the District and the Paying Agent or an eligible trust company or commercial bank pursuant to which money and/or Defeasance Securities are held by the Paying Agent or an eligible trust company or commercial bank for the payment of Defeased Bonds may contain provisions permitting the investment or reinvestment of such moneys in Defeasance Securities or the substitution of other Defeasance Securities upon the satisfaction of certain requirements. All income from such Defeasance Securities received by the Paying Agent or an eligible trust company or commercial bank which is not required for the payment of the Bonds and interest thereon, with respect to which such money has been so deposited, will be remitted to the District or deposited as directed in writing by the District.

PAYING AGENT/REGISTRAR . . . Principal of and semiannual interest on the Bonds will be paid by BOKF, NA having an office for payment in Dallas, Texas, the Paying Agent. The Paying Agent must be either a bank, trust company, financial institution or other entity duly qualified and equally authorized to serve and perform the duties as paying agent and registrar for the Bonds.

Provision is made in the Bond Order for the District to replace the Paying Agent by a resolution of the District giving notice to the Paying Agent of the termination of the appointment, stating the effective date of the termination and appointing a successor Paying Agent. If the Paying Agent is replaced by the District, the new Paying Agent shall be required to accept the previous Paying Agent's records and act in the same capacity as the previous Paying Agent. Any successor paying agent/registrar selected by the District shall be subject to the same qualification requirements as the Paying Agent. The successor paying agent/registrar, if any, shall be determined by the Board of Directors and written notice thereof, specifying the name and address of such successor paying agent/registrar will be sent by the District or the successor paying agent/registrar to each registered owner by first-class mail, postage prepaid.

RECORD DATE . . . The Record Date for payment of the interest on Bonds on any regularly scheduled interest payment date is defined as the last calendar day of the month (whether or not a business day) preceding such interest payment date.

ISSUANCE OF ADDITIONAL DEBT . . . The District may issue bonds or other obligations necessary to provide those improvements and facilities for which the District was created, with the approval of the TCEQ (except in the case of road improvements) and, in the case of bonds payable from taxes, the District's voters. According to the District's engineer, the $64,700,000 in principal amount of bonds authorized but unissued should be sufficient to reimburse the Residential Developer for the water, wastewater and drainage system facilities required for development within the District. On November 6, 2007, voters within the District authorized the issuance of unlimited tax bonds in the principal amounts of $64,700,000 for the purpose of providing water, wastewater, and drainage system facilities to meet the needs of the residents and customers of the District as well as $97,050,000 in refunding bonds. Following the issuance of the Bonds, $12,610,000 in unlimited tax bonds authorized by the District voters will remain authorized but unissued for water, wastewater and drainage system facilities. The District also has voter authority to issue $54,545,000 for road purposes, of which $12,135,000 is currently outstanding and $81,817,500 for refunding purposes. See "FINANCIAL STATEMENT – Authorized But Unissued Bonds." Neither Texas law nor the Bond Order imposes a limitation on the amount of additional bonds which may be issued by the District. Any additional bonds issued by the District may dilute the security of the Bonds. See "RISK FACTORS."

LEGAL INVESTMENT AND ELIGIBILITY TO SECURE PUBLIC FUNDS IN TEXAS . . . Pursuant to Section 49.186 of the Texas Water Code, bonds, notes or other obligations issued by a municipal utility district "shall be legal and authorized investments for all banks, trust companies, building and loan associations, savings and loan associations, insurance companies of all kinds and types, fiduciaries, and trustees, and for all interest and sinking funds and other public funds of the State, and all agencies, subdivisions, and instrumentalities of the State, including all counties, cities, towns, villages, school districts and all other kinds and types of districts, public agencies and bodies politic." Additionally, Section 49.186 of the Texas Water Code provides that bonds, notes or other obligations issued by a municipal utility district are eligible and lawful security for all deposits of public funds of the State and all agencies, subdivisions and instrumentalities of the State. For political subdivisions in Texas which have adopted investment policies and guidelines in accordance with the Public Funds Investment Act (Texas Government Code, Chapter 2256), the Bonds may have to be assigned a rating of not less than "A" or its equivalent as to investment quality by a national rating agency before such obligations are eligible investments for sinking funds and other public funds.

The District makes no representation that the Bonds will be acceptable to banks, savings and loan associations, or public entities for investment purposes or to secure deposits of public funds. The District has made no investigation of other laws, regulations or investment criteria which might apply to or otherwise limit the availability of the Bonds for investment or collateral purposes. Prospective purchasers are urged to carefully evaluate the investment quality of the Bonds and as to the acceptability of the Bonds for investment or collateral purposes.

SPECIFIC TAX COVENANTS . . . In the Bond Order the District has covenanted with respect to, among other matters, the use of the proceeds of the Bonds and the manner in which the proceeds of the Bonds are to be invested. The District may omit to comply with any such covenant if it has received a written opinion of a nationally recognized bond counsel to the effect that regulations or rulings hereafter promulgated modify or expand provisions of the Internal Revenue Code of 1986, as amended (the "Code"), so that such covenant is ineffective or inapplicable or non-compliance with such covenant will not adversely affect the exemption from federal income taxation of interest on the Bonds under Section 103 of the Code.

ADDITIONAL COVENANTS . . . The District has additionally covenanted in the Bond Order that it will keep accurate records and accounts and employ an independent certified public accountant to audit and report on its financial affairs at the close of each fiscal year, such audits to be in accordance with applicable law, rules and regulations and open to inspection in the office of the District.

REMEDIES IN EVENT OF DEFAULT . . . The Bond Order establishes specific events of default with respect to the Bonds. If the District defaults in the payment of the principal of or interest on the Bonds when due, or the District defaults in the observance or performance of any of the covenants, conditions, or obligations of the District, the failure to perform which materially, adversely affects the rights of the owners, including but not limited to, their prospect or ability to be repaid in accordance with the Bond Order, and the continuation thereof for a period of 60 days after notice of such default is given by any owner to the District, the Bond Order and Chapter 51 of the Texas Water Code provides that any registered owner is entitled to seek a writ of mandamus from a court of proper jurisdiction requiring the District to make such payment or observe and perform such covenants, obligations, or conditions. The issuance of a writ of mandamus may be sought if there is no other available remedy at law to compel performance of the Bonds or the Bond Order and the District's obligations are not uncertain or disputed. The remedy of mandamus is controlled by equitable principles, subject to the discretion of the court, but may not be arbitrarily refused. There is no acceleration of maturity of the Bonds in the event of default and, consequently, the remedy of mandamus may have to be relied upon from year to year.

The Bond Order does not provide for the appointment of a trustee to represent the interest of the Bondholders upon any failure of the District to perform in accordance with the terms of the Bond Order, or upon any other condition and accordingly all legal actions to enforce such remedies would have to be undertaken at the initiative of, and be financed by, the registered owners. On June 30, 2006, the Texas Supreme Court ruled in *Tooke v. City of Mexia*, 49 Tex. Sup. CT. J. 819 (Tex. 2006), that a waiver of sovereign immunity in a contractual dispute must be provided for by statute in "clear and unambiguous" language. Because it is unclear whether the Texas legislature has effectively waived the District's sovereign immunity from a suit for money damages, Bondholders may not be able to bring such a suit against the District for breach of the Bonds or Bond Order covenants. Even if a judgment against the District could be obtained, it could not be enforced by direct levy and execution against the District's property. Further, the registered owners cannot themselves foreclose on property within the District or sell property within the District to enforce the tax lien on taxable property to pay the principal of and interest on the Bonds. Furthermore, the District is eligible to seek relief from its creditors under Chapter 9 of the U.S. Bankruptcy Code ("Chapter 9"). Although Chapter 9 provides for the recognition of a security interest represented by a specifically pledged source of revenues, the pledge of ad valorem taxes in support of a general obligation of a bankrupt entity is not specifically recognized as a security interest under Chapter 9. Chapter 9 also includes an automatic stay provision that would prohibit, without Bankruptcy Court approval, the prosecution of any other legal action by creditors or Bondholders of an entity which has sought protection under Chapter 9. Therefore, should the District avail itself of Chapter 9 protection from creditors, the ability to enforce would be subject to the approval of the Bankruptcy Court (which could require that the action be heard in Bankruptcy Court instead of other federal or state court); and the Bankruptcy Code provides for broad discretionary powers of a Bankruptcy Court in administering any proceeding brought before it. The opinion of Bond Counsel will note that all opinions relative to the enforceability of the Bonds are qualified with respect to the customary rights of debtors relative to their creditors.

CONSOLIDATION . . . A district (such as the District) has the legal authority to consolidate with other districts and, in connection therewith, to provide for the consolidation of its water system with the water system(s) of the district(s) with which it is consolidating. The revenues of the consolidated system may be pledged equally to all first lien bonds of the consolidating districts. No representation is made that the District will consolidate its water system with any other district.

ANNEXATION . . . The District lies partially within the corporate limits and partially within the extraterritorial jurisdiction of the City of Dripping Springs, Texas ("Dripping Springs"). Under existing Texas law, since the District lies partially within the corporate boundaries and partially within the extraterritorial jurisdiction of the City of Dripping Springs, Texas (the "City"), the District may be annexed by the City without the District's consent; however, the City may not annex the District unless (i) such annexation has been approved by a majority of those voting in an election held for that purpose within the area to be annexed, and (ii) if the registered voters in the area to be annexed do not own more than 50 percent of the land in the area, a petition has been signed by more than 50 percent of the landowners consenting to the annexation. If a municipal utility district is annexed, the municipality must assume the assets, functions, and obligations of the District, including outstanding bonds, and the pledge of taxes will terminate. Under the Amended and Restated Development Agreement dated to be effective as of April 14, 2005, Dripping Springs agreed that it would not annex any residential land within the District until: (a) water, wastewater and drainage facilities have been completed to serve at least ninety percent (90%) of the developable acreage within the District; and (b) the Residential Developer and Commercial Developer have been reimbursed by the District for the water, wastewater, drainage or other facilities serving the District in accordance with the rules of the Texas Commission on Environmental Quality. Annexation of territory by Dripping Springs is a policy-making matter within the discretion of the Mayor and City Council of Dripping Springs, subject to the voter and/or landowner approval requirements discussed above, and therefore, the District makes no representation that Dripping Springs will ever annex the District and assume its debt. No representation is made concerning the ability of the City to make debt service payments on the Bonds should dissolution of the District occur.

ALTERATION OF BOUNDARIES . . . In certain circumstances, under Texas law the District may alter its boundaries to: i) upon satisfying certain conditions, annex additional territory; and ii) exclude land subject to taxation within the District that does not need to utilize the service of District facilities if certain conditions are satisfied including the District simultaneously annexes land of at least equal value that may be practicably served by District facilities. Such land substitution is subject to the approval of the TCEQ. No representation is made concerning the likelihood that the District would effect any change in its boundaries.

APPROVAL OF THE BONDS . . . The Attorney General of Texas must approve the legality of the Bonds prior to their delivery. The Attorney General of Texas does not pass upon or guarantee the quality of the Bonds as an investment, nor does he pass upon the adequacy or accuracy of the information contained in this Official Statement.

AMENDMENTS TO THE BOND ORDER . . . The District may, without the consent of or notice to any registered owners, amend the Bond Order in any manner not detrimental to the interest of the registered owners, including the curing of an ambiguity, inconsistency, or formal defect or omission therein. In addition, the District may, with the written consent of the owners of a majority in principal amount of the Bonds then outstanding affected thereby, amend, add to, or rescind any of the provisions of the Bond Order, except that, without the consent of the owners of all of the Bonds affected, no such amendment, addition, or rescission may (i) extend the time or times of payment of the principal of and interest on the Bonds, reduce the principal amount thereof or the rate of interest therein, change the place or places at, or the coin or currency in which, any Bond or the interest thereon is payable, or in any other way modify the terms of payment of the principal of or interest on the Bonds, (ii) give any preference to any Bond over any other Bond, or (iii) reduce the aggregate principal amount of Bonds required for consent to any such amendment, addition, or rescission. In addition, a state, consistent with federal law, may within the exercise of its police powers make such modifications in the terms and conditions of contractual covenants relating to the payment of indebtedness of its political subdivisions as are reasonable and necessary for attainment of an important public purpose.

BOOK-ENTRY-ONLY SYSTEM

This section describes how ownership of the Bonds is to be transferred and how the principal of, premium, if any, and interest on the Bonds are to be paid to and credited by the DTC while the Bonds are registered in its nominee's name. The information in this section concerning DTC and the Book-Entry-Only System has been provided by DTC for use in disclosure documents such as this Official Statement. The District believes the source of such information to be reliable but takes no responsibility for the accuracy or completeness thereof.

The District cannot and does not give any assurance that (i) DTC will distribute payments of debt service on the Bonds, or redemption or other notices, to DTC Participants, (ii) DTC Participants or others will distribute debt service payments paid to DTC or its nominee (as the registered owner of the Bonds), or redemption or other notices, to the Beneficial Owners, or that they will do so on a timely basis, or (iii) DTC will serve and act in the manner described in this Official Statement. The current rules applicable to DTC are on file with the Securities and Exchange Commission, and the current procedures of DTC to be followed in dealing with DTC Participants are on file with DTC.

DTC will act as securities depository for the Bonds. The Bonds will be issued as fully-registered securities in the name of Cede & Co. (DTC's partnership nominee) or such other name as may be requested by an authorized representative of DTC. One fully-registered certificate will be issued for the Bonds, in the aggregate principal amount of such issue, and will be deposited with DTC.

DTC, the world's largest depository, is a limited-purpose trust company organized under the New York Banking Law, a "banking organization" within the meaning of the New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Securities Exchange Act of 1934. DTC holds and provides asset servicing for over 3.5 million issues of U.S. and non-U.S. equity issues, corporate and municipal debt issues, and money market instruments (from over 100 countries) that DTC's participants ("Direct Participants") deposit with DTC. DTC also facilitates the post-trade settlement among Direct Participants of sales and other securities transactions in deposited securities, through electronic computerized book-entry transfers and pledges between Direct Participants' accounts. This eliminates the need for physical movement of certificates. Direct Participants include both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations. DTC is a wholly-owned subsidiary of The Depository Trust & Clearing Corporation ("DTCC"). DTCC is the holding company for DTC, National Securities Clearing Corporation and Fixed Income Clearing Corporation all of which are registered clearing agencies. DTCC is owned by the users of its regulated subsidiaries. Access to the DTC system is also available to others such as both U.S. and non-U.S. securities brokers and dealers, banks, trust companies, and clearing corporations that clear through or maintain a custodial relationship with a Direct Participant, either directly or indirectly ("Indirect Participants"). DTC has a Standard & Poor's rating of "AA+." The DTC Rules applicable to its Participants are on file with the Securities and Exchange Commission. More information about DTC can be found at www.dtcc.com.

Purchases of Bonds under the DTC system must be made by or through Direct Participants, which will receive a credit for the Bonds on DTC's records. The ownership interest of each actual purchaser of each Bond ("Beneficial Owner") is in turn to be recorded on the Direct and Indirect Participants' records. Beneficial Owners will not receive written confirmation from DTC of their purchase. Beneficial Owners are, however, expected to receive written confirmations providing details of the transaction as well as periodic statements of their holdings, from the Direct or Indirect Participant through which the Beneficial Owner entered into the transaction. Transfers of ownership interests in the Bonds are to be accomplished by entries made on the books of Direct and Indirect Participants acting on behalf of Beneficial Owners. Beneficial Owners will not receive certificates representing their ownership interests in Bonds, except in the event that use of the book-entry system for the Bonds is discontinued.

To facilitate subsequent transfers, all Bonds deposited by Direct Participants with DTC are registered in the name of DTC's partnership nominee, Cede & Co., or such other name as may be requested by an authorized representative of DTC. The deposit of Bonds with DTC and their registration in the name of Cede & Co. or such other DTC nominee do not effect any change in beneficial ownership. DTC has no knowledge of the actual Beneficial Owners of the Bonds; DTC's records reflect only the identity of the Direct Participants to whose accounts such Bonds are credited, which may or may not be the Beneficial Owners. The Direct and Indirect Participants will remain responsible for keeping account of their holdings on behalf of their customers.

Conveyance of notices and other communications by DTC to Direct Participants, by Direct Participants to Indirect Participants, and by Direct Participants and Indirect Participants to Beneficial Owners will be governed by arrangements among them, subject to any statutory or regulatory requirements as may be in effect from time to time. Beneficial Owners of Bonds may wish to take certain steps to augment the transmission to them of notices of significant events with respect to the Bonds, such as redemptions, tenders, defaults, and proposed amendments to the Bond documents. For example, Beneficial Owners of Bonds may wish to ascertain that the nominee holding the Bonds for their benefit has agreed to obtain and transmit notices to Beneficial Owners. In the alternative, Beneficial Owners may wish to provide their names and addresses to the registrar and request that copies of notices be provided directly to them.

Redemption notices shall be sent to DTC. If less than all of the Bonds within a maturity are being redeemed, DTC's practice is to determine by lot the amount of the interest of each Direct Participant in such maturity to be redeemed.

Neither DTC nor Cede & Co. (nor any other DTC nominee) will consent or vote with respect to Bonds unless authorized by a Direct Participant in accordance with DTC's Procedures. Under its usual procedures, DTC mails an Omnibus Proxy to the District as soon as possible after the record date. The Omnibus Proxy assigns Cede & Co.'s consenting or voting rights to those Direct Participants to whose accounts Bonds are credited on the record date (identified in a listing attached to the Omnibus Proxy).

All payments on the Bonds will be made to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC. DTC's practice is to credit Direct Participants' accounts upon DTC's receipt of funds and corresponding detail information from the District or the Paying Agent/Registrar, on payable date in accordance with their respective holdings shown on DTC's records. Payments by Participants to Beneficial Owners will be governed by standing instructions and customary practices, as is the case with securities held for the accounts of customers in bearer form or registered in "street name," and will be the responsibility of such Participant and not of DTC, the Paying Agent/Registrar, or the District, subject to any statutory or regulatory requirements as may be in effect from time to time. All payments to Cede & Co. (or such other nominee as may be requested by an authorized representative of DTC) are the responsibility of the District or the Paying Agent/Registrar, disbursement of such payments to Direct Participants will be the responsibility of DTC, and disbursement of such payments to the Beneficial Owners will be the responsibility of Direct and Indirect Participants.

DTC may discontinue providing its services as depository with respect to the Bonds at any time by giving reasonable notice to the District or the Paying Agent/Registrar. Under such circumstances, in the event that a successor depository is not obtained, Bond certificates are required to be printed and delivered.

The District may decide to discontinue use of the system of book-entry-only transfers through DTC (or a successor securities depository). In that event, Bond certificates will be printed and delivered to DTC.

In reading this Official Statement it should be understood that while the Bonds are in the Book-Entry-Only System, references in other sections of this Official Statement to registered owners should be read to include the person for which the Participant acquires an interest in the Bonds, but (i) all rights of ownership must be exercised through DTC and the Book-Entry-Only System, and (ii) except as described above, notices that are to be given to registered owners under the Bond Order will be given only to DTC.

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USE AND DISTRIBUTION OF BOND PROCEEDS

The proceeds of the Bonds will be used to finance the following projects: (i) engineering costs and (ii) treated wastewater drip irrigation fields. The remaining Bond proceeds will be used to: (i) pay Developer interest; and (ii) pay issuance costs associated with the Bonds.

The estimated use and distribution of Bond proceeds is set forth below. Of the proceeds to be received from the sale of the Bonds, $2,242,830 is estimated to be required to finance construction costs, and $757,170 is estimated to be required to finance non-construction costs.

The estimated use and distribution of Bond proceeds is set forth below. The actual amounts to be reimbursed by the District and the non-construction costs will be finalized after the sale of the Bonds and review by the District's auditor.

SUMMARY OF COSTS

		District's Share
I.	**CONSTRUCTION COSTS**	
	A. Developer Items:	
	1. Additional Engineering on Previously Funded Projects	$ 465,830
Total Developer Items		**$ 465,830**
	B. District Items:	
	1. Headwaters WRF Drip Irrigation System Phase 4A	$ 1,777,000
Total District Items		**$ 1,777,000**
Total Construction Costs (74.8% of BIR)		**$ 2,242,830**
II.	**NON-CONSTRUCTION COSTS**	
	A. Bond Counsel Fees	$ 65,000
	B. Special Tax Counsel Fees	7,500
	C. Fiscal Agent Fees	56,250
	D. Interest:	
	a. Capitalized Interest	78,750
	b. Developer Interest	352,870
	E. Bond Discount (3.00%)	90,000
	F. Bond Issuance Expense	56,300
	G. Bond Engineering Fee	40,000
	H. Attorney General Fee (0.10%)	3,000
	I. TCEQ Fee (0.25%)	7,500
	J. Contingency	0
Total Non-Construction Costs		**$ 757,170**
TOTAL BOND ISSUE REQUIREMENT		**$ 3,000,000**

(a) The amount of developer interest will be finalized in connection with the reimbursement report approved by the Board of Directors prior to disbursement of funds.

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RISK FACTORS

GENERAL . . . The Bonds, which are obligations of the District and are not obligations of the State of Texas; Hays County, Texas; the City of Dripping Springs; Dripping Springs Independent School District, or any other political subdivision, will be secured by a continuing direct annual ad valorem tax, without legal limitation as to rate or amount, levied on all taxable property located within the District. See "THE BONDS – Source of and Security for Payment." The ultimate security for payment of principal of and interest on the Bonds depends on the ability of the District to collect from the property owners within the District all taxes levied against the property, or in the event of foreclosure, on the value of the taxable property with respect to taxes levied by the District and by other taxing authorities. The collection by the District of delinquent taxes owed to it and the enforcement by registered owners of the District's obligation to collect sufficient taxes may be a costly and lengthy process. Furthermore, the District cannot and does not make any representations that continued development of property within the District will accumulate or maintain taxable values sufficient to justify continued payment by property owners or that there will be a market for the property. See "Registered Owners' Remedies" below.

FACTORS AFFECTING TAXABLE VALUES AND TAX PAYMENTS . . . ***Economic Factors, Interest Rates, Credit Availability and Residential Foreclosures:*** A substantial percentage of the taxable value of the District results from the current market value of single-family residences and developed lots. The market value of such homes and lots is related to general economic conditions affecting the demand for and taxable value of residences. Demand for lots and residential dwellings can be significantly affected by factors such as interest rates, credit availability, construction costs, energy availability and the economic prosperity and demographic characteristics of the urban centers toward which the marketing of lots is directed. Decreased levels of construction activity would tend to restrict the growth of property values in the District or could adversely impact existing values.

Interest rates and the availability of credit, including mortgage and development funding, have a direct impact on the construction activity, particularly short-term interest rates at which the Developers and Homebuilders are able to obtain financing for development and construction costs. Interest rate levels and the general availability of credit may affect the ability of a landowner with undeveloped property to undertake and complete development activities within the District and the ability of potential homeowners to purchase homes. Because of the numerous and changing factors affecting the availability of funds, the District is unable to assess the future availability of such funds for continued development and construction within the District. In addition, the success of development within the District and growth of District taxable property values are, to a great extent, a function of the Austin metropolitan and regional economics.

Competition . . . The demand for single-family homes in the District could be affected by competition from other residential developments including other residential developments located in other utility districts located near the District. In addition to competition for new home sales from other developments, there are numerous previously-owned homes in more established neighborhoods closer to downtown Austin that are for sale. Such homes could represent additional competition for homes proposed to be sold within the District.

The competitive position of the Residential Developer in the sale of developed lots and of prospective builders in the construction of single-family residential houses within the District is affected by most of the factors discussed in this section. Such a competitive position is directly related to the growth and maintenance of taxable values in the District and tax revenues to be received by the District. The District can give no assurance that building and marketing programs in the District by the Developers will be implemented or, if implemented, will be successful.

Developer under No Obligation to the District: There is no commitment from, or obligation of, any developer to proceed at any particular rate or according to any specified plan with the development of land or the construction of homes in the District, and there is no restriction on any landowner's right to sell its land, including any developer. Failure to construct taxable improvements on developed lots and tracts and failure of landowners to develop their land would restrict the rate of growth of taxable value in the District. The District is also dependent upon developer and the other principal taxpayers for the timely payment of ad valorem taxes, and the District cannot predict what the future financial condition of either will be or what effect, if any, such financial conditions may have on their ability to pay taxes. See 'THE DEVELOPERS" and "TAX DATA – Principal Taxpayers."

Impact on District Tax Rates: Assuming no further development, the value of the land and improvements currently within the District will be the major determinant of the ability or willingness of the District property owners to pay their taxes. The 2025 Certified Assessed Valuation is $586,961,017 (see "FINANCIAL STATEMENT"). After issuance of the Bonds, the Projected Maximum Annual Debt Service Requirement will be $6,676,352 (2042) and the Projected Average Annual Debt Service Requirement will be $5,694,457 (2026-2050, inclusive). A tax rate of $1.1974/$100 assessed valuation, at a 95% collection rate, would be necessary to pay the Projected Maximum Annual Debt Service Requirement of $6,676,352, and a tax rate of $1.0213/$100 assessed valuation at a 95% collection rate would be necessary to pay the Projected Average Annual Debt Service Requirement of $5,694,457 based upon the 2025 Certified Taxable Assessed Valuation.

BOND INSURANCE RISKS . . . The District has applied for a bond insurance policy to guarantee the scheduled payment of principal and interest on the Bonds. The purchase of bond insurance, if available, will be at the option and expense of the Purchaser. If a bond insurance policy is purchased by the Purchaser, provided below are risk factors relating to bond insurance.

In the event of default of the payment of principal or interest with respect to the Bonds when all or some becomes due, any owner of the Bonds shall have a claim under the applicable bond insurance policy (the "Policy") for such payments. However, in the

event of any earlier due date of such principal by reason of mandatory or optional redemption, the payments are to be made in such amounts and at such times as such payments would have been due had there not been any such redemption. The Policy does not insure against redemption premium, if any. The payment of principal and interest in connection with mandatory or optional redemption of the Bonds which is recovered by the District from the owner as a voidable preference under applicable bankruptcy law is covered by the insurance policy, however, such payments will be made by the bond insurer (the "Bond Insurer") at such time and in such amounts as would have been due absent such redemption by the District unless the Bond Insurer chooses to pay such amounts at an earlier date.

Under most circumstances, default of payment of principal and interest does not obligate acceleration of the obligations of the Bond Insurer without appropriate consent. The Bond Insurer may direct and must consent to any remedies that the Paying Agent exercises and the Bond Insurer's consent may be required in connection with amendments to the Bond Order.

In the event the Bond Insurer is unable to make payment of principal and interest as such payments become due under the Policy, the Bonds are payable solely from the moneys received by the Paying Agent pursuant to the Bond Order. In the event the Bond Insurer becomes obligated to make payments with respect to the Bonds, no assurance is given that such event will not adversely affect the market price of the Bonds.

If insurance is purchased on the Bonds, the long-term ratings on the Bonds will be dependent in part on the financial strength of the Bond Insurer and its ability to pay claims which is predicated upon a number of factors that could change over time. No assurance is given that the long-term ratings of the Bond Insurer and the ratings on any Bonds insured by the Bond Insurer will not be subject to downgrade and such event could adversely affect the market price of the Bonds.

The obligations of the Bond Insurer are general obligations of the Bond Insurer and, in an event of default by the Bond Insurer, the remedies available to the Paying Agent may be limited by applicable bankruptcy law or other similar laws related to insolvency. No independent investigation into the ability of the Bond Insurer to pay claims has been made and no assurance or representation regarding the financial strength or projected financial strength of the Bond Insurer is given.

STATE LEGISLATIVE CHANGES . . . The Texas Legislature convenes in regular session for 140 days on the second Tuesday in January of odd-numbered years. Thereafter the Governor may call one or more special sessions. During this time, the Texas Legislature may enact laws that materially change current law relating to districts including with respect to the levy of property taxes. The District makes no representation regarding any action the Texas Legislature may take but intends to monitor proposed legislation for any developments applicable to the District.

FUTURE AND PROPOSED LEGISLATION . . . Tax legislation, administrative actions taken by tax authorities, or court decisions, whether at the Federal or state level, may adversely affect the tax-exempt status of interest on the Bonds under Federal or state law and could affect the market price or marketability of the Bonds. Any such proposal could limit the value of certain deductions and exclusions, including the exclusion for tax-exempt interest. The likelihood of any such proposal being enacted cannot be predicted. Prospective purchasers of the Bonds should consult their own tax advisors regarding the foregoing matters.

STATE LEGISLATIVE ISSUES . . . The State Legislature, operating under the biennial system, convenes its regular session at noon on the second Tuesday in January of odd-numbered years. The maximum duration of a regular session is 140 days. Under the Texas Constitution, the Governor has the authority to call additional special sessions of the State Legislature at any time, each for a duration of no more than thirty days, to address only those subjects designated by the Governor. While in session, the State Legislature may consider bills which could have an impact on the District. The District makes no representations or predictions with respect to whether the Governor will exercise his authority under the Texas Constitution to call additional special sessions of the State Legislature or concerning the substance or effect of any legislation that may be proposed and ultimately passed with the State Legislature is in session.

TAX COLLECTIONS AND FORECLOSURE REMEDIES . . . The District's ability to make debt service payments may be adversely affected by its inability to collect ad valorem taxes. Under Texas law, the levy of ad valorem taxes by the District constitutes a lien in favor of the District on a parity with the liens of all other local taxing authorities on the property against which taxes are levied, and such lien may be enforced by judicial foreclosure. The District's ability to collect ad valorem taxes through such foreclosure may be impaired by cumbersome, time-consuming and expensive collection procedures or market conditions affecting the marketability of taxable property within the District and limiting the proceeds from a foreclosure sale of such property. Moreover, the proceeds of any sale of property within the District available to pay debt service on the Bonds may be limited by the existence of other tax liens on the property (see "FINANCIAL STATEMENT – Estimated Overlapping Debt Statement"), by the current aggregate tax rate being levied against the property, and by other factors (a taxpayer may redeem property within six (6) months for commercial property and two (2) years for residential and all other types of property after the purchaser's deed issued at the foreclosure sale is filed in the county records). Finally, any bankruptcy court with jurisdiction over bankruptcy proceedings initiated by or against a taxpayer within the District pursuant to the Federal Bankruptcy Code could stay any attempt by the District to collect delinquent ad valorem taxes assessed against such taxpayer. In addition to the automatic stay against collection of delinquent taxes afforded a taxpayer during the pendency of a bankruptcy, a bankruptcy court could approve a confirmation plan which allows the debtor to make installment payments on delinquent taxes for up to six years and a bankruptcy court may reduce the amount of any taxes assessed against the debtor, including those that have already been paid.

HOUSING MARKET, VOLATILITY AND RECENT FORECLOSURES . . . In past years, disruptions in the housing market have led to a number of foreclosures on single family homes nationally. In the District, there were no posted foreclosures on single-family homes by the Hays County Clerk's Office as of October 1, 2024. No assurance can be given whether the number of foreclosures will decrease or increase or that market conditions will improve.

REGISTERED OWNERS' REMEDIES . . . In the event of default in the payment of principal of or interest on the Bonds, the registered owners have the right to seek a writ of mandamus, requiring the District to levy adequate taxes each year to make such payments. Except for mandamus, the Bond Order does not specifically provide for remedies to protect and enforce the interest of the registered owners. There is no acceleration of maturity of the Bonds in the event of default and, consequently, the remedy of mandamus may have to be relied upon from year to year. Although the registered owners could obtain a judgment against the District, such a judgment could not be enforced by direct levy and execution against the District's property. Further, the registered owners cannot themselves foreclose on property within the District or sell property within the District in order to pay the principal of and interest on the Bonds. The enforceability of the rights and remedies of the registered owners may further be limited by laws relating to bankruptcy, reorganization or other similar laws of general application affecting the rights of creditors of political subdivisions such as the District.

BANKRUPTCY LIMITATION TO REGISTERED OWNERS' RIGHTS . . . The enforceability of the rights and remedies of registered owners may be limited by laws relating to bankruptcy, reorganization or other similar laws of general application affecting the rights of creditors of political subdivisions such as the District. Subject to the requirements of Texas law discussed below, a political subdivision such as the District may voluntarily file a petition for relief from creditors under Chapter 9 of the Federal Bankruptcy Code, 11 USC sections 901-946. The filing of such petition would automatically stay the enforcement of registered owners' remedies, including mandamus and the foreclosure of tax liens upon property within the District discussed above. The automatic stay would remain in effect until the federal bankruptcy judge hearing the case dismissed the petition, enters an order granting relief from the stay or otherwise allows creditors to proceed against the petitioning political subdivision. A political subdivision, such as the District, may qualify as a debtor eligible to proceed in a Chapter 9 case only if it (1) is specifically authorized to file for federal bankruptcy protection by applicable state law, (2) is insolvent or unable to meet its debts as they mature, (3) desires to effect a plan to adjust such debts, and (4) has either obtained the agreement of or negotiated in good faith with its creditors or is unable to negotiate with its creditors because negotiations are impracticable. Under Texas law a water control and improvement district, such as the District, must obtain the approval of the Commission as a condition to seeking relief under the Federal Bankruptcy Code. The Commission is required to investigate the financial condition of a financially troubled district and authorize such district to proceed under federal bankruptcy law only if such district has fully exercised its rights and powers under Texas law and remains unable to meet its debts and other obligations as they mature.

Notwithstanding noncompliance by a district with Texas law requirements, a district could file a voluntary bankruptcy petition under Chapter 9, thereby involving the protection of the automatic stay until the bankruptcy court, after a hearing, dismisses the petition. A federal bankruptcy court is a court of equity and federal bankruptcy judges have considerable discretion in the conduct of bankruptcy proceedings and in making the decision of whether to grant the petitioning district relief from its creditors. While such a decision might be applicable, the concomitant delay and loss of remedies to the registered owners could potentially and adversely impair the value of the registered owner's claim.

If a petitioning district were allowed to proceed voluntarily under Chapter 9 of the Federal Bankruptcy Code, it could file a plan for an adjustment of its debts. If such a plan were confirmed by the bankruptcy court, it could, among other things, affect a registered owner by reducing or eliminating the amount of indebtedness, deferring or rearranging the debt service schedule, reducing or eliminating the interest rate, modifying or abrogating collateral or security arrangements, substituting (in whole or in part) other securities, and otherwise compromising and modifying the rights and remedies of the registered owner's claim against a district.

THE EFFECT OF THE FINANCIAL INSTITUTIONS ACT OF 1989 ON TAX COLLECTIONS OF THE DISTRICT . . . The "Financial Institutions Reform, Recovery and Enforcement Act of 1989" ("FIRREA"), enacted on August 9, 1989, contains certain provisions which affect the time for protesting property valuations, the fixing of tax liens, and the collection of penalties and interest on delinquent taxes on real property owned by the Federal Deposit Insurance Corporation ("FDIC") when the FDIC is acting as the conservator or receiver of an insolvent financial institution.

Under FIRREA real property held by the FDIC is still subject to ad valorem taxation, but such act states (i) that no real property of the FDIC shall be subject to foreclosure or sale without the consent of the FDIC and no involuntary liens shall attach to such property, (ii) the FDIC shall not be liable for any penalties or fines, including those arising from the failure to pay any real or personal property tax when due and (iii) notwithstanding failure of a person to challenge an appraisal in accordance with state law, such value shall be determined as of the period for which such tax is imposed.

There has been little judicial determination of the validity of the provisions of FIRREA or how they are to be construed and reconciled with respect to conflicting state laws. However, certain recent federal court decisions have held that the FDIC is not liable for statutory penalties and interest authorized by State property tax law, and that although a lien for taxes may exist against real property, such lien may not be foreclosed without the consent of the FDIC, and no liens for penalties, fines, interest, attorneys fees, costs of abstract and research fees exist against the real property for the failure of the FDIC or a prior property owner to pay ad valorem taxes when due. It is also not known whether the FDIC will attempt to claim the FIRREA exemptions as to the time for contesting valuations and tax assessments made prior to and after the enactment of FIRREA. Accordingly, to the extent that

the FIRREA provisions are valid and applicable to any property in the District, and to the extent that the FDIC attempts to enforce the same, these provisions may affect the timeliness of collection of taxes on property, if any, owned by the FDIC in the District, and may prevent the collection of penalties and interest on such taxes.

MARKETABILITY . . . The District has no understanding with the Initial Purchaser regarding the reoffering yields or prices of the Bonds and has no control over trading of the Bonds in the secondary market. Moreover, there is no assurance that a secondary market will be made in the Bonds. If there is a secondary market, the difference between the bid and asked price for the Bonds may be greater than the difference between the bid and asked price of bonds of comparable maturity and quality issued by more traditional issuers as such bonds are more generally bought, sold or traded in the secondary market.

CONTINUING COMPLIANCE WITH CERTAIN COVENANTS . . . Failure of the District to comply with certain covenants contained in the Bond Order on a continuing basis prior to the maturity of the Bonds could result in interest on the Bonds becoming taxable retroactively to the date of original issuance. See "TAX MATTERS."

FUTURE DEBT . . . The District has reserved in the Bond Order the right to issue the remaining $12,610,000 authorized but unissued unlimited tax bonds, and such additional bonds as may hereafter be approved by both the Board of Directors and voters of the District for water, wastewater and drainage facilities remaining authorized but unissued. The District has also reserved the right to issue $97,050,000 in refunding bonds authorized at the November 6, 2007 election, and the $81,817,500 in refunding bonds authorized at the November 3, 2015 election. All of the remaining $12,135,000 unlimited tax road bonds which have heretofore been authorized by the voters of the District may be issued by the District from time to time for qualified purposes, as determined by the Board of Directors of the District, subject to the approval of the Attorney General of the State of Texas. In the opinion of the District's engineer, the remaining authorization should be sufficient to reimburse the Residential Developer for the development within the Residential Tract. See "THE SYSTEM."

Following the issuance of the Bonds, the District will still owe the Residential Developer approximately $33,064,267 for additional road, water, wastewater and drainage facilities which have been constructed to date. See "THE DISTRICT – Current Status of Development" and "– Future Development."

GOVERNMENTAL APPROVAL . . . As required by law, engineering plans, specifications and estimates of construction costs for the facilities and services to be purchased or constructed by the District with the proceeds of the Bonds have been approved, subject to certain conditions, by the TCEQ. See "USE AND DISTRIBUTION OF BOND PROCEEDS." The TCEQ approved the issuance of the Bonds by an order signed on _____, 2025 (the "TCEQ Order"). In addition, the Attorney General of Texas must also approve the legality of the Bonds prior to their delivery.

Neither the TCEQ nor the Attorney General of Texas passes upon or guarantees the security of the Bonds as an investment, nor have the foregoing authorities passed upon the adequacy or accuracy of the information contained in this Official Statement.

ENVIRONMENTAL REGULATION . . . Wastewater treatment and water supply facilities are subject to stringent and complex environmental laws and regulations. Facilities must comply with environmental laws at the federal, state, and local levels. These laws and regulations can restrict or prohibit certain activities that affect the environment in many ways such as:

1. Requiring permits for construction and operation of water supply wells and wastewater treatment facilities;
2. Restricting the manner in which wastes are released into the air, water, or soils;
3. Restricting or regulating the use of wetlands or other property;
4. Requiring remedial action to prevent or mitigate pollution; and
5. Imposing substantial liabilities for pollution resulting from facility operations.

Compliance with environmental laws and regulations can increase the cost of planning, designing, constructing and operating water production and wastewater treatment facilities. Sanctions against a water district for failure to comply with environmental laws and regulations may include a variety of civil and criminal enforcement measures, including assessment of monetary penalties, imposition of remedial requirements, and issuance of injunctions as to future compliance of and the ability to operate the District's water supply, wastewater treatment, and drainage facilities. Environmental laws and regulations can also impact an area's ability to grow and develop. The following is a discussion of certain environmental concerns that relate to the District. It should be noted that changes in environmental laws and regulations occur frequently, and any changes that result in more stringent and costly requirements could materially impact the District.

Air Quality Issues. Air quality control measures required by the United States Environmental Protection Agency (the "EPA") and the TCEQ may impact new industrial, commercial and residential development in the Austin area. Under the Clean Air Act ("CAA") Amendments of 1990, the five-county "Austin Area" – Travis, Hays, Williamson, Bastrop, and Caldwell counties – has recently been redesignated by the EPA as an attainment area. The Austin Area entered into an early action compact (EAC) with the TCEQ and EPA which demonstrates attainment and maintenance of the 8-hour ozone standard. EACs allow regions that are in nonattainment or near nonattainment for ozone under the federal CAA to elect to use their knowledge of local conditions to determine which ozone control strategies should be implemented in their area, as opposed to having rules dictated by state and federal agencies.

The EPA signed a consent decree with several environmental organizations which bound the EPA to designating nonattainment areas for 8-hour nonattainment. The Austin Area took early action with an EAC on November 17, 2004 to reduce its emissions so as not to be designated nonattainment. Voluntary reductions have focused on reducing the number of vehicles on Austin Area roads, since vehicles are the area's main source of air pollution.

The area will report semi-annually on the progress of their control measures. Under the EACs, attainment must have been demonstrated by 2007. EPA approved the photochemical modeling in support of the attainment demonstration for the 8-hour ozone standard within the Austin Area on August 15, 2005. EPA also approved the Austin EAC "CAAP" which includes control measures and demonstrates maintenance of the standard through 2012 (including a vehicle inspection and maintenance (I/M) program). These steps and any EPA/TCEQ responses could impact the economy and communities in the Austin Area.

On November 26, 2014, the EPA announced a new proposed ozone National Ambient air Quality Standards (NAAQS) range of between 65-70 parts per billion. The Austin Area is vulnerable to being designated nonattainment if the EPA adopts the new proposed ozone NAAQS or otherwise maintains the existing standard applied to more recent air quality monitoring data.

Should the Austin Area fail to achieve attainment under an EPA NAAQS, or should the Austin Area fail to satisfy a then effective State Implementation Plan (SIP) (for nonattainment or otherwise), or for any other reason should a lapse in conformity with the CAA occur, the Austin Area may be subjected to sanctions pursuant to the CAA. Under such circumstances, the TCEQ would be required under the CAA to submit to the EPA a new SIP under the CAA for the Austin Area. Due to the complexity of the nonattainment/conformity analysis, the status of EPA's implementation of any future EPA NAAQS and the incomplete information surrounding any SIP requirements for areas designated nonattainment under any future EPA NAAQS, the exact nature of sanctions or any potential SIP that may be applicable to the Austin Area in the future is uncertain. The CAA provides for mandatory sanctions, including the suspension of federal highway funding, should the State fail to submit a proper SIP, or associated submissions, or fail to revise or implement a SIP, or fail to comply with an existing SIP. Subject to certain exceptions, if the Austin Area falls out of conformity and the mandatory highway funding suspension sanction is implemented, the United States Secretary of Transportation may be prohibited from approving or awarding transportation projects or grants within the area.

It is possible that nonattainment, a lapse in conformity under the CAA, litigation involving injunctive or other relief, or other environmental issues may impact new industrial, commercial and residential development in the Austin Area.

Water Supply & Discharge Issues. Water supply and discharge regulations that the District may be required to comply with involve: (1) public water supply systems, (2) wastewater discharges from treatment facilities, (3) storm water discharges and (4) wetlands dredge and fill activities. Each of these is addressed below:

Pursuant to the Safe Drinking Water Act, potable (drinking) water provided by the District to more than sixty (60) end users for consumption will be subject to extensive federal and state regulation as a public water supply system, which include, among other requirements, frequent sampling and analyses. Additionally, the EPA has been charged with establishing maximum contaminant levels (MCLs) for potential drinking water contaminants (both naturally occurring and anthropogenic) such as arsenic, lead, radon, and disinfection by-products (e.g. chlorine). Additionally, TCEQ is initiating rule changes to Chapter 290, Public Drinking Water, to implement the federal Stage 2 Disinfection Byproducts Rule (DBP2), Long Term Stage 2 Enhanced Surface Water Treatment Rule (LT2), and Ground Water Rule (GWR). EPA adopted the GWR on October 11, 2006. Future regulations or requirements pertaining to these and other drinking water contaminants could require installation of more costly treatment facilities.

Operation of the District's sewer facilities is subject to regulation under the Federal Clean Water Act and the Texas Water Code. All discharges of pollutants into the nation's navigable waters must comply with the Clean Water Act. The Clean Water Act allows municipal wastewater treatment plants to discharge treated effluent to the extent allowed under permits issued by the EPA pursuant to the National Pollutant Discharge Elimination System ("NPDES") program, a national program established by the Clean Water Act for issuing, revoking, monitoring and enforcing wastewater discharge permits. On August 14, 1998, EPA authorized Texas to implement the NPDES program, which is called the Texas Pollutant Discharge Elimination System ("TPDES") program.

TPDES permits set limits on the type and quantity of discharge, in accordance with state and federal laws and regulations. Any discharges to water bodies designated as impaired streams in accordance with the Clean Water Act may be precluded from obtaining a TPDES permit if pollutants for which the stream is designated as impaired are among those pollutants being released by a District. Moreover, the Clean Water Act and Texas Water Code require municipal wastewater treatment plants to meet secondary treatment effluent limitations. In addition, under the Clean Water Act, states must identify any bodies of water for which more stringent effluent standards are needed to achieve water quality standards and must establish the maximum allowable daily load of certain pollutants into the water bodies. Total maximum daily loads ("TMDLs") rules can have a significant impact on the District's ability to obtain TPDES permits and maintain those permits. The District may be required to expend substantial funds to meet any of these regulatory requirements. If the District fails to achieve compliance with its discharge permits, a private plaintiff or the EPA could institute a civil action for injunctive relief and civil penalties. Operations of the District are also potentially subject to stormwater discharge permitting requirements as set forth under the Clean Water Act and regulations implementing the Clean Water Act. The TCEQ adopted by reference the vast majority of the EPA regulations relating to stormwater discharges and currently has issued a general permit for stormwater discharges associated with industrial activities and proposed two general permits for stormwater discharges associated with construction activities and municipal separate stormwater systems. The District may also be required to develop and implement stormwater pollution prevention plans and stormwater management plans. The District could incur substantial costs to develop and implement such plans as well as to install or implement best management practices to

minimize or eliminate unauthorized pollutants that may otherwise be found in stormwater runoff. Failure to comply with these requirements may result in the imposition of administrative, civil, and criminal penalties as well as injunctive relief under the Clean Water Act or the Texas Water Code.

Operations of the District are also potentially subject to requirements and restrictions under the Clean Water Act regarding the use and alteration of wetland areas that are within the "waters of the United States." The District must obtain a permit from the U.S. Army Corps of Engineers if operations of the District require that wetlands be filled, dredged, or otherwise altered.

Atlas 14 Study. The National Weather Service recently completed a rainfall study known as Atlas 14 which shows that severe rainfall events are now occurring more frequently. Within Texas, the Atlas 14 study showed an increased number of rainfall events in a band extending from the upper Gulf Coast in the east and running west generally along the I-10 corridor to Central Texas. Based on this study, various governmental entities, including Williamson County, are contemplating amendments to their regulations that will potentially increase the size of the 100 year floodplain and will also increase the size of detention ponds and drainage facilities required for future construction in all areas (not just in the floodplain). See "THE SYSTEM – 100-Year Flood Plain."

MARKETABILITY OF THE BONDS . . . The District has no understanding with the Underwriter regarding the reoffering yields or prices of the Bonds and has no control over trading of the Bonds in the secondary market. Moreover, there is no assurance that a secondary market will be made in the Bonds. If there is a secondary market, the difference between the bid and asked price of the Bonds may be greater than the difference between the bid and asked price of bonds of comparable maturity and quality issued by more traditional issuers as such bonds are more generally bought, sold or traded in the secondary market. Additionally, there are no assurances that if a secondary market for the Bonds will were to develop, that it will not be disrupted by events. Consequently, investors may not be able to resell the Bonds purchased should they need or wish to do so for emergency or other purposes.

DROUGHT CONDITIONS . . . Central Texas, like other areas of the State, has experienced extreme drought conditions within the last several years. The District adopted a water conservation plan and currently has implemented water restrictions for residents of the District. The West Travis County Public Utility Agency provides water to the District in amounts sufficient to service the residents of the District, however, if drought conditions resume, water usage, rates and water revenues could be impacted.

FORWARD-LOOKING STATEMENTS . . . The statements contained in this Official Statement, and in any other information provided by the District or Developers, that are not purely historical, are forward-looking statements, including statements regarding the District's expectations, hopes, intentions, or strategies regarding the future. Readers should not place undue reliance on forward-looking statements. All forward-looking statements included in this Official Statement are based on information available to the District and Developers on the date hereof, and neither the District nor the Developers assume any obligation to update any such forward-looking statements.

The forward looking statements herein are necessarily based on various assumptions and estimates and are inherently subject to various risks and uncertainties, including risks and uncertainties relating to the possible invalidity of the underlying assumptions and estimates and possible changes or developments in social, economic, business, industry, market, legal and regulatory circumstances and conditions and actions taken or omitted to be taken by first parties, including customers, suppliers, business partners and competitors, and legislative, judicial and other governmental authorities and officials. Assumptions related to the foregoing involve judgments with respect to, among other things, future economic competitive, and market conditions and future business decisions, all of which are difficult or impossible to predict accurately and, therefore, there can be no assurance that the forward-looking statements included in this Official Statement would prove to be accurate.

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THE DISTRICT

GENERAL . . . Headwaters Municipal Utility District of Hays County (the "District"), a political subdivision of the State of Texas, was created by order of the Texas Commission on Environmental Quality (the "TCEQ" or the "Commission"), effective August 8, 2007 and confirmed pursuant to an election held within the District on November 6, 2007. The District was created for the purpose of providing, operating, and maintaining facilities to control storm water, distribute potable water, collect and treat wastewater and operates pursuant to Chapters 49 and 54 of the Texas Water Code, as amended, and Article XVI, Section 59 of the Texas Constitution, as amended. Pursuant to Chapter 7951 of the Texas Special District Local Laws Code, the District also has road powers under Section 52, Article III of the Texas Constitution. Fire services are provided to residents and property owners within the District by North Hays County ESD #1 and Northwest Hays County ESD #5.

MANAGEMENT . . . ***Board of Directors.*** The District is governed by a Board, consisting of five directors, which has control over and management supervision of all affairs of the District. Directors' terms are four years with elections held on the first Tuesday after the first Monday in May in each even numbered year. All of the directors listed below reside or own property in the District.

Name	Title	Term Expires
Vacant	President	2026
Lisa Stephens	Vice President	2026
Drax Marlow	Secretary	2026
Charles Meyer	Treasurer	2028
Brian Jacks	Assistant Secretary	2028

Consultants:

Tax Assessor/Collector . . . Land and improvements in the District are being appraised by the Hays Central Appraisal District ("HCAD"). The Tax Assessor/Collector is appointed by the Board of Directors of the District. The Hays County Tax Assessor/Collector, Ms. Jennifer O'Kane, currently serves the District in this capacity under contract.

Operator . . . The District contracts with the Crossroad Utilities to serve as operator for the District.

Bookkeeper . . . Municipal Accounts & Consulting, L.P. ("Municipal Accounts") is charged with the responsibility of providing bookkeeping services for the District. Municipal Accounts serves in a similar capacity for other special districts.

Engineer . . . The District's consulting engineer is Malone-Wheeler (the "Engineer"). Such firm serves as consulting engineer to other special districts.

Financial Advisor . . . Specialized Public Finance Inc. serves as the District's financial advisor (the "Financial Advisor"). The fee for services rendered in connection with the issuance of the Bonds is based on a percentage of the Bonds actually issued, sold and delivered and, therefore, such fee is contingent upon the sale and delivery of the Bonds.

Bond Counsel and General Counsel . . . McLean & Howard, L.L.P., Austin, Texas serves as Bond Counsel and General Counsel in connection with the issuance of the District's Bonds. The fees of Bond Counsel are contingent upon the sale of and delivery of the Bonds.

Special Tax Counsel and Disclosure Counsel . . . McCall, Parkhurst and Horton L.L.P. serves as Special Tax Counsel and Disclosure Counsel in connection with the issuance of the District's Bonds. The fees of Special Tax Counsel and Disclosure Counsel are contingent upon the sale of and delivery of the Bonds.

LOCATION . . . The District is located in Hays County. The District is partially located within the corporate boundaries, and partially within the extraterritorial jurisdiction, of the City of Dripping Springs, Texas and within the boundaries of the Dripping Springs Independent School District. The District is located on the north side of State Highway 290. See "LOCATION MAP."

UNDEVELOPED ACREAGE . . . The Commercial Tract is being developed for commercial and residential purposes by Oryx Land Holdings, LLC, a Texas limited liability (previously defined herein as the Commercial Developer). Such Commercial Developer sold approximately 9.629 acres to Ridge at Headwaters Ltd., and construction of a 168-unit market rate multifamily project on this site (previously defined herein as the Ridge Apartments) has been completed. The Commercial Developer has completed trunk utility facilities and access roads to serve the Ridge Apartments site and the remainder of the Commercial Tract and has contracted with the District for utility services and for future facilities reimbursements. Future commercial development is currently being planned on 33 additional acres of the Commercial Tract which will include approximately 280,000 square feet of a mixture of commercial, retail, restaurant and sports lifestyle uses which is expected to break ground the second half of 2026. The Commercial Developer has contracted with the District for future facilities reimbursements. See "THE DISTRICT – Current Status of Development."

CURRENT STATUS OF DEVELOPMENT . . . Approximately 168 acres within the District is being developed for commercial and residential purposes by Oryx Land Holdings, LLC, a Texas limited liability company. The Commercial Developer sold 9.629 acres to Ridge at Headwaters, ltd., which has completed construction of a 168-unit market rate multifamily project on this site (the "Ridge

Apartments"). The Commercial Developer has completed construction of 13,092 square feet of office space on 3.46 acres with an additional 7450 sq. ft building to be built. Additionally, the Commercial Developer is developing the 11,450 square feet Oakwood Public Market, a mixture of retail, restaurant and event uses, currently under construction on 1.229 acres and expects to commence operations in the spring of 2025. The Commercial Developer sold 2.131 acres to R & S Prep School Holding Three, LLC to develop the Prep Pre School which is under construction and expected to commence operations in the spring of 2025. The Commercial Developer sold 1.426 acres to Hays County EMS for construction of a fire station. Construction of the fire station is expected in 2027. The commercial developer sold 14.002 acres to 55 Resort at Dripping Springs, LLC for the construction of a 173-unit market rate senior multifamily project (the "55 Resort at Dripping Springs") expected to commence construction in 2025. The Commercial Developer currently retains a 0.7 acre, 2.2 acre and 1.440 acre commercial lots in inventory. In total the Commercial Developer has completed construction of trunk utility facilities and access roads to serve approximately 45 acres of the 168 acre Commercial Tract. Future commercial development is currently being planned on 33 additional acres of the commercial property which will include approximately 280,000 square feet of a mixture of commercial, retail, restaurant and sports lifestyle uses which is expected to break ground the second half of 2026. The Commercial Developer has contracted with the District for future facilities reimbursements. See "THE DISTRICT – Current Status of Development."

The chart below reflects the status of development of the residential and commercial lands within the District as of September 1, 2025:

	Net Acreage	Platted Lots	Completed Homes	Homes Under Construction	Vacant Lots
A. Sections with Utility Facilities or Under Construction					
Developed	450.56	1,000	866	17	117
B. Commercial Tract[(a)]	168.00				
Total Developable Acreage	618.56				
C. Undevelopable Acreage					
Drainage, Detention, Floodplain, Parkland/Open Space	885				
Total Developable Acreage	1,503.56				

(a) The Commercial Tract is being developed for commercial and residential purposes by Oryx Land Holdings, LLC, a Texas limited liability (previously defined herein as the Commercial Developer). The Commercial Developer sold approximately 9.629 acres to Ridge at Headwaters Ltd., and construction of a 168-unit market rate multifamily project on this site (referred to herein as the Ridge Apartments) has been completed. The Commercial Developer has completed trunk utility facilities and access roads to serve the Ridge Apartments site and the remainder of the Commercial Tract and has contracted with the District for utility services and for future facilities reimbursements.

FUTURE DEVELOPMENT . . . Of the approximately 1,503 acres within the District, approximately 451 acres have been developed for single-family residential purposes by the Residential Developer. The Commercial Tract is being developed for commercial and residential purposes by the Commercial Developer. The Commercial Developer sold approximately 9.629 acres to Ridge at Headwaters Ltd., and construction of a 168-unit market rate multifamily project on this site (referred to herein as the Ridge Apartments) has been completed. The Commercial Developer has completed trunk utility facilities and access roads to serve the Ridge Apartments site and the remainder of the Commercial Tract and has contracted with the District for utility services and for future facilities reimbursements. See "THE DISTRICT – Current Status of Development." The initiation of any new development beyond that described in this Official Statement will be dependent on several factors including, to a great extent, general and economic conditions which would affect any party's ability to sell lots and/or other property and of any home builder to sell completed homes as described in this Official Statement under the caption "RISK FACTORS." If the undeveloped portion of the District is eventually developed, additions to the District's water, wastewater, and drainage systems required to service such undeveloped acreage may be financed by future issues of the District's bonds and developer contributions, if any, as required by the TCEQ.

ANNEXATION OF THE DISTRICT . . . The District lies partially within the corporate boundaries and partially within the extraterritorial jurisdiction of the City of Dripping Springs. See "THE BONDS – Annexation" for a discussion of the ability of the City of Dripping Springs to annex the District.

CONSENT AGREEMENT . . . The District, the City, Residential Developer, Rathgeber Investment Company, Ltd. ("RIC") and Commercial Developer are parties to that certain Agreement Concerning Creation and Operation of Headwaters Municipal Utility District" dated to be effective February 8, 2005, as subsequently amended on June 10, 2008, July 28, 2015, and May 29, 2020 (the "Consent Agreement"). The Consent Agreement governs the construction, operation, maintenance and inspection of District utility facilities; the provision of services by the District; the issuance of bonds by the District; and the annexation of the District by the City. Under the Consent Agreement, the City has authorized the District to issue its bonds in a total principal amount of $119,245,000 for authorized purposes, including for road projects and for water, sewer and drainage projects.

DEVELOPMENT AGREEMENT . . . The City, Residential Developer, Commercial Developer and RIC are also parties to that certain Restated Development Agreement dated to be effective as of April 14, 2005 governing the development of lands within the District, including environmental protection, construction of utility infrastructure improvements, deed restrictions, lighting and signage. The Development Agreement also includes provisions governing the timing of annexation of the lands within the District by the City.

THE DEVELOPERS

GENERAL . . . In general, the activities of a developer in a utility district, such as the District, include purchasing the land within the utility district; coordinating the design of the subdivision; coordinating the design of the utilities and streets to be constructed in the subdivision; coordinating the design of any community facilities to be built; defining a marketing program and building schedule; securing necessary governmental approvals and permits for development; arranging for the construction of the improvements within the subdivisions, including road improvements, water, wastewater, and drainage facilities pursuant to the rules of the TCEQ, as well as gas, telephone, cable television, and electric service; and selling improved lots and commercial reserves to homebuilders, other developers, or other first parties. The relative success or failure of a developer to perform such activities will have a profound effect on the security of the bonds issued by the District. A developer is generally under no obligation to a district to develop the property which it owns in a district. Furthermore, there is no restriction on a developer's right to sell any or all of the land which it owns within a district. In addition, a developer is ordinarily the major taxpayer within the district during the development phase of the property.

DESCRIPTION OF DEVELOPERS . . . WFC Headwaters Owner VII, L.P., a Delaware limited partnership ("Residential Developer") is the developer of approximately 1,035 acres of real property within the District being developed for single family residential purposes (the "Residential Tract"). WFC Headwaters GP VII, L.L.C., a Delaware limited liability company, is the General Partner of the Residential Developer, and WFC Headwaters Holdings JV VII, L.L.C., a Delaware limited liability company, is the limited partner of the Residential Developer.

ACQUISITION AND DEVELOPMENT FINANCING . . . According to the Residential Developer, all projects loans have been repaid in full and there are no developer loans currently outstanding.

HOMEBUILDERS WITHIN THE DISTRICT . . . As of September 1, 2025, there are currently three homebuilders in the District, including David Weekley Homes, Coventry Homes and Toll Brothers Homes. The homes generally range in price from approximately $490,000 to $1,000,000.

THE SYSTEM

REGULATION . . . The water, wastewater and storm drainage facilities (the "System"), the purchase, acquisition and construction of which will be permanently financed by the District with the proceeds of the Bonds, have been designed in accordance with accepted engineering practices and the recommendation of certain governmental agencies having regulatory or supervisory jurisdiction over construction and operation of such facilities, including, among others, the TCEQ, Hays County and Dripping Springs. According to Malone-Wheeler (the "Engineer"), the design of all such facilities has been approved by all governmental agencies which have authority over the District.

Operation of the District's waterworks and wastewater facilities is subject to regulation by, among others, the U.S. Environmental Protection Agency and the TCEQ.

WATER SUPPLY AND DISTRIBUTION . . . The District receives its treated water from the West Travis County Public Utility Agency ("WTCPUA"), as successor to the Lower Colorado River Authority ("LCRA"), through a "Wholesale Water Services Agreement" dated April 4, 2014 (the "Wholesale Supply Contract") originally entered into by LCRA and the City of Dripping Springs. By agreement with the District dated effective March 31, 2016, the City assigned its interest in the Wholesale Water Services Agreement to the District. The Wholesale Supply Contract was amended on October 1, 2010 and September 19, 2019. Under the Wholesale Supply Contract, as amended, the WTCPUA is obligated to provide all treated water needed and requested by the District for service to lands within the District up to, but not in excess of, (i) a maximum daily flow rate of 1,612,800 gallons per day, or (ii) such lesser amount as to WTCPUA may be able to supply in the event of an emergency. The District's engineer estimates that this amount of water would be sufficient to serve 1,400 single family equivalent connections, which is the anticipated full buildout within the District.

WASTEWATER COLLECTION AND TREATMENT . . . Wastewater treatment for the District is provided by a 100,000 gallon per day (GPD) wastewater treatment plant with disposal via drip irrigation. Based upon a conservative design factor of 250 gallons per day per connection, the District's existing treatment capacity is sufficient to serve up to 400 single family equivalent connections. The District is also the permittee under Permit No. WQ0014587001 that authorizes the treatment and disposal of 325,000 gpd of wastewater effluent.

The Developers and the District have entered into that certain "Wastewater Expansion and Capacity Agreement" dated July 17, 2018 (the "Wastewater Agreement") to provide for funding and construction of the wastewater treatment and disposal facilities

serving lands within the District. In general, the Wastewater Agreement provides for construction of the wastewater treatment and disposal facilities in phases as development progresses with the District, and each expansion corresponds to a phase authorized under Permit No. WQ0014587001. The Wastewater Agreement allocates capacity and service rights in each expansion according to the costs funded by each of the respective Developers. Generally, the Wastewater Agreement allocates 23.08% of the costs and capacity associated with each expansion to the Commercial Developer up to a maximum of 300 cumulative living unit equivalents for service to the Commercial Tract, and allocates the remaining 76.92% of costs and capacity to the Residential Developer for service to the Residential Tract. Each of the Developers may also elect to unilaterally proceed with funding and construction of an expansion if the other developer elects not to do so. The Wastewater Agreement also obligates the Developers to fund and construct an expansion of the treatment and disposal facilities when any expansion is required under the applicable rules of the Texas Commission on Environmental Quality. The Board of Directors of the District previously elected for the District to finance and construct the Phase 3 expansion of the District's wastewater treatment and disposal system with proceeds of the Bonds in lieu of Developer funding and construction under the Wastewater Agreement. The Residential Developer is currently constructing Phase 4A of the wastewater effluent disposal system.

STORM WATER DRAINAGE . . . Storm water within the District generally drains through roadside swales with street and driveway culverts and ribbon curbs into various water quality ponds, eventually discharging into tributaries that drain into Little Barton Creek, which is a tributary of Barton Creek, which is a tributary of the Colorado River.

100-YEAR FLOOD PLAIN AND STORM DRAINAGE INFORMATION . . . "Flood Insurance Rate Map" or "FIRM" means an official map of a community on which the Federal Emergency Management Agency ("FEMA") has delineated the appropriate areas of flood hazards. The 1% chance of probable inundation, also known as the 100-year flood plain, is depicted on these maps. The "100-year flood plain (or 1% chance of probable inundation) as shown on the FIRM is the estimated geographical area that would be flooded by a rain storm of such intensity to statistically have a one percent chance of occurring in any given year. Generally speaking, homes must be built above the 100-year flood plain in order to meet local regulatory requirements and to be eligible for federal flood insurance. An engineering or regulatory determination that an area is above the 100-year flood plain is not an assurance that homes built in such area will not be flooded. According to the Engineer, 84 of the 1,053 undevelopable acres within the District are located in the floodplain as shown in the Federal Emergency Management Agency Flood Insurance Rate Map. None of the floodplain acreage is intended for development.

TABLE 1 – RATE AND FEE SCHEDULE

The Board of Directors establishes rates and fees for water and sewer service, subject to change from time to time. The following schedule sets forth the monthly rates and fees for the District's water and sewer service which are currently in effect.

Monthly Base Charge – Water: $35.00

Water Usage Charge

Gallons		
0-2,000 Gallons	$ 2.30	(per 1,000 gallons)
2,001-5,000 Gallons	$ 3.85	(per 1,000 gallons)
5,001-10,000 Gallons	$ 4.24	(per 1,000 gallons)
10,001-20,000 Gallons	$ 4.88	(per 1,000 gallons)
20,001-25,000 Gallons	$ 5.86	(per 1,000 gallons)
25,001-30,000 Gallons	$ 7.03	(per 1,000 gallons)
30,001-40,000 Gallons	$ 10.55	(per 1,000 gallons)
40,000-and over Gallons	$ 15.83	(per 1,000 gallons)

Monthly Charge(s) – Wastewater: $ 35.00 Base Fee, plus $2.90 per 1,000 Gallons

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TABLE 2 – OPERATING REVENUES AND EXPENSES STATEMENT – GENERAL FUND

The following statement sets forth in condensed form the consolidated historical operations of the District' General Fund. Accounting principles customarily employed in the determination of net revenues have been observed and in all instances exclude depreciation. Such summary has been prepared from information obtained from the District's financial statements and records. Reference is made to such statements for further and more complete information. Also see "APPENDIX A – Excerpts from the Annual Financial Report."

	Fiscal Year End December 31,				
	2024	2023	2022	2021	2020
Revenues:					
Property Tax	$ 1,341,073	$ 291,497	$ 832,856	$ 788,495	$ 321,239
Water Service	1,224,045	1,072,931	949,575	649,599	530,224
Wastewater Service	575,275	491,154	417,531	329,767	194,956
Tap and Connection Fees	246,710	161,815	413,105	221,576	346,847
Interest	141,075	94,124	25,641	528	407
Total Revenues	$ 3,528,178	$ 2,111,521	$ 2,638,708	$ 1,989,965	$ 1,393,673
Expenditures:					
Water Service Fees	$ 884,880	$ 799,737	$ 749,824	$ 542,856	$ 524,314
Wastewater Services	295,756	268,304	81,181	67,494	119,207
Solid Waste Services	168,397	144,137	112,690	88,201	47,900
Landscaping	134,461	143,067	90,502	79,321	50,313
Insurance	41,829	21,178	13,986	12,066	10,972
Tax Assessor	31,757	18,717	11,841	8,616	3,878
Director Salaries and Taxes	8,539	7,833	8,397	7,428	8,074
Legal Fees	41,309	42,333	47,512	35,835	43,532
Audit Fees	10,000	10,000	10,000	8,000	8,000
Financial Advisor Fees	3,000	3,000	3,000	3,000	3,000
Accounting	83,811	71,551	43,775	36,683	36,169
Management and Consulting	-	-	177,906	129,740	48,868
Engineering Fees	62,315	51,285	59,880	49,768	50,048
Legal Notices	531	623	290	6,193	2,729
Printing and Office Supplies	14,151	22,452	26,259	14,438	23,003
Debt Service	114,831	162,600	162,600	193,941	179,760
Capital Expenditures	25,310	825,000	-	-	-
Total Expenditures	$ 1,920,877	$ 2,591,817	$ 1,599,643	$ 1,283,580	$ 1,159,767
Transfers to Other Funds	-	-	(48,956)	-	-
Excess (Deficiency) of Revenues Over Expenditures	$ 1,607,301	$ (480,296)	$ 990,109	$ 706,385	$ 233,906
Beginning Fund Balance	$ 1,745,061	$ 2,225,357	$ 1,235,248	$ 528,863	$ 294,957
Developer Advances	-	-	-	-	-
Ending Fund Balance	$ 3,352,362	$ 1,745,061	$ 2,225,357	$ 1,235,248	$ 528,863

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DEBT SERVICE REQUIREMENTS

TABLE 3 – PROJECTED DEBT SERVICE SCHEDULE

Fiscal Year Ended	Existing Debt			The Bonds			Total Debt Service
12/31	Principal	Interest	Total	Principal	Interest[(a)]	Total	Requirements
2026	$ 2,040,000	$ 3,565,744	$ 5,605,744	$ -	$ 137,375	$ 137,375	$ 5,743,119
2027	2,350,000	3,448,911	5,798,911	-	157,500	157,500	5,956,411
2028	2,500,000	3,342,554	5,842,554	70,000	157,500	227,500	6,070,054
2029	2,620,000	3,228,869	5,848,869	75,000	153,825	228,825	6,077,694
2030	2,760,000	3,114,119	5,874,119	80,000	149,888	229,888	6,104,006
2031	2,890,000	3,003,475	5,893,475	80,000	145,688	225,688	6,119,162
2032	3,035,000	2,898,881	5,933,881	85,000	141,488	226,488	6,160,369
2033	3,200,000	2,789,134	5,989,134	90,000	137,025	227,025	6,216,159
2034	3,360,000	2,673,259	6,033,259	95,000	132,300	227,300	6,260,559
2035	3,530,000	2,548,864	6,078,864	100,000	127,313	227,313	6,306,176
2036	3,705,000	2,420,132	6,125,132	105,000	122,063	227,063	6,352,195
2037	3,895,000	2,281,532	6,176,532	110,000	116,550	226,550	6,403,082
2038	4,095,000	2,134,489	6,229,489	120,000	110,775	230,775	6,460,264
2039	4,305,000	1,978,139	6,283,139	125,000	104,475	229,475	6,512,614
2040	4,525,000	1,810,251	6,335,251	130,000	97,913	227,913	6,563,164
2041	4,760,000	1,631,304	6,391,304	135,000	91,088	226,088	6,617,391
2042	5,005,000	1,442,352	6,447,352	145,000	84,000	229,000	6,676,352
2043	5,050,000	1,242,310	6,292,310	150,000	76,388	226,388	6,518,697
2044	5,115,000	1,037,700	6,152,700	160,000	68,513	228,513	6,381,212
2045	4,800,000	830,663	5,630,663	170,000	60,113	230,113	5,860,775
2046	5,065,000	630,919	5,695,919	175,000	51,188	226,188	5,922,106
2047	4,715,000	419,806	5,134,806	185,000	42,000	227,000	5,361,806
2048	4,215,000	212,581	4,427,581	195,000	32,288	227,288	4,654,869
2049	585,000	24,863	609,863	205,000	22,050	227,050	836,913
2050	-	-	-	215,000	11,288	226,288	226,288
	$ 88,120,000	$ 48,710,849	$ 136,830,849	$ 3,000,000	$ 2,530,588	$ 5,530,588	$ 142,361,437

(a) Interest calculated at an assumed rate for purposes of illustration only. Preliminary, subject to change.

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FINANCIAL STATEMENT
(Unaudited)

TABLE 4 – ASSESSED VALUE

2022 Certified Taxable Assessed Valuation	$ 336,731,315	(a)
2023 Certified Taxable Assessed Valuation	$ 504,272,856	(a)
2024 Certified Taxable Assessed Valuation	$ 547,813,196	(a)
2025 Certified Taxable Assessed Valuation	$ 586,961,017	(a)
Gross Direct Debt Outstanding	$ 91,120,000	(b)
Ratio of Gross Direct Debt Outstanding to 2025 Certified Assessed Valuation	15.52%	

(a) Assessed valuation of the District as reported by the Hays Central Appraisal District ("HCAD"). See "TAXING PROCEDURES."
(b) Includes the Bonds. See "DEBT SERVICE REQUIREMENTS."

TABLE 5 – UNLIMITED TAX BONDS AUTHORIZED BUT UNISSUED

Purpose	Date Authorized	Amount Authorized	Heretofore Issued	Being Issued	Unissued Balance
Water, Sewer, Drainage	11/6/2007	$ 64,700,000	$ 49,090,000	$ 3,000,000	$ 12,610,000
Refunding	11/6/2007	97,050,000	-	-	97,050,000
Road Improvements	11/3/2015	54,545,000	42,410,000	-	12,135,000
Refunding	11/3/2015	81,817,500	-	-	81,817,500
Total		$ 298,112,500	$ 91,500,000	$ 3,000,000	$ 203,612,500

TABLE 6 – CASH AND INVESTMENT BALANCES[(a)(b)]

Operating Fund	$ 3,807,743
Debt Service Fund	$ 2,733,051
Capital Project Fund	$ 46,917

(a) Unaudited as of August 27, 2025.
(b) Does not include approximately twelve months of capitalized interest ($78,750) which is projected to be deposited into the Debt Service Fund at closing from the proceeds of the Bonds. Neither Texas law nor the Bond Order requires that the District maintain any particular sum in the District's Debt Service Fund. Preliminary, subject to change.

INVESTMENT AUTHORITY AND INVESTMENT PRACTICES OF THE DISTRICT . . . Under Texas law, the District is authorized to invest in (1) obligations of the United States or its agencies and instrumentalities, including letters of credit; (2) direct obligations of the State of Texas or its agencies and instrumentalities; (3) collateralized mortgage obligations directly issued by a federal agency or instrumentality of the United States, the underlying security for which is guaranteed by an agency or instrumentality of the United States; (4) other obligations, the principal and interest of which is guaranteed or insured by or backed by the full faith and credit of, the State of Texas or the United States or their respective agencies and instrumentalities; (5) obligations of states, agencies, counties, cities, and other political subdivisions of any state rated as to investment quality by a nationally recognized investment rating firm not less than A or its equivalent; (6) bonds issued, assumed or guaranteed by the State of Israel; (7) certificates of deposit meeting the requirements of the Texas Public Funds Investment Act (Chapter 2256, Texas Government Code) that are issued by or through an institution that either has its main office or a branch in Texas, and are guaranteed or insured by the Federal Deposit Insurance Corporation or the National Credit Union Share Insurance Fund, or are secured as to principal by obligations described in clauses (1) through (6) or in any other manner and amount provided by law for District deposits; (8) fully collateralized repurchase agreements that have a defined termination date, are fully secured by obligations described in clause (1), and are placed through a primary government securities dealer or a financial institution doing business in the State of Texas; (9) certain bankers' acceptances with the remaining term of 270 days or less, if the short-term obligations of the accepting bank or its parent are rated at least "A-1" or "P-1" or the equivalent by at least one nationally recognized credit rating agency; (10) commercial paper with a stated maturity of 270 days or less that is rated at least "A-1" or "P-1" or the equivalent by either (a) two nationally recognized credit rating agencies or (b) one nationally recognized credit rating agency if the paper is fully secured by an irrevocable letter of credit issued by a U.S. or state bank; (11) no-load money market mutual funds registered with and regulated by the Securities and Exchange Commission that have a dollar weighted average stated maturity of 90 days or less and include in their investment objectives the maintenance of a stable net asset value of $1 for each share; and (12) no-load mutual funds registered with the Securities and Exchange Commission that have an average weighted maturity of less than two years, invest exclusively in obligations described in the this paragraph, and are continuously rated as to investment quality by at least one nationally recognized investment rating firm of not less than "AAA" or its equivalent. In addition, bond proceeds may be invested in guaranteed

investment contracts that have a defined termination date and are secured by obligations, including letters of credit, of the United States or its agencies and instrumentalities in an amount at least equal to the amount of bond proceeds invested under such contract, other than the prohibited obligations described below.

A political subdivision such as the District may enter into securities lending programs if (i) the securities loaned under the program are 100% collateralized, a loan made under the program allows for termination at any time and a loan made under the program is either secured by (a) obligations that are described in clauses (1) through (6) above, (b) irrevocable letters of credit issued by a state or national bank that is continuously rated by a nationally recognized investment rating firm at not less than "A" or its equivalent or (c) cash invested in obligations described in clauses (1) through (6) above, clauses (10) through (12) above, or an authorized investment pool; (ii) securities held as collateral under a loan are pledged to the District, held in the District's name and deposited at the time the investment is made with the District or a first party designated by the District; (iii) a loan made under the program is placed through either a primary government securities dealer or a financial institution doing business in the State of Texas; and (iv) the agreement to lend securities has a term of one year or less.

The District may invest in such obligations directly or through government investment pools that invest solely in such obligations provided that the pools are rated no lower than "AAA" or "AAAm" or an equivalent by at least one nationally recognized rating service. The District may also contract with an investment management firm registered under the Investment Advisers Act of 1940 (15 U.S.C. Section 80b-1 et seq.) or with the State Securities Board to provide for the investment and management of its public funds or other funds under its control for a term up to two years, but the District retains ultimate responsibility as fiduciary of its assets. In order to renew or extend such a contract, the District must do so by order, ordinance, or resolution.

The District is specifically prohibited from investing in: (1) obligations whose payment represents the coupon payments on the outstanding principal balance of the underlying mortgage-backed security collateral and pays no principal; (2) obligations whose payment represents the principal stream of cash flow from the underlying mortgage-backed security and bears no interest; (3) collateralized mortgage obligations that have a stated final maturity of greater than 10 years; and (4) collateralized mortgage obligations the interest rate of which is determined by an index that adjusts opposite to the changes in a market index.

Under Texas law, the District is required to invest its funds under written investment policies that primarily emphasize safety of principal and liquidity; that address investment diversification, yield, maturity, and the quality and capability of investment management; and that include a list of authorized investments for District funds, the maximum allowable stated maturity of any individual investment and the maximum average dollar-weighted maturity allowed for pooled fund groups. All District funds must be invested consistent with a formally adopted "Investment Strategy Statement" that specifically addresses each fund's investment. Each Investment Strategy Statement will describe its objectives concerning: (1) suitability of investment type, (2) preservation and safety of principal, (3) liquidity, (4) marketability of each investment, (5) diversification of the portfolio, and (6) yield. Under Texas law, the District's investments must be made "with judgment and care, under prevailing circumstances, that a person of prudence, discretion, and intelligence would exercise in the management of the person's own affairs, not for speculation, but for investment considering the probable safety of capital and the probable income to be derived." At least quarterly the District's investment officers must submit an investment report to the Board of Directors detailing: (1) the investment position of the District, (2) that all investment officers jointly prepared and signed the report, (3) the beginning market value, and any additions and changes to market value and the ending value of each pooled fund group, (4) the book value and market value of each separately listed asset at the beginning and end of the reporting period, (5) the maturity date of each separately invested asset, (6) the account or fund or pooled fund group for which each individual investment was acquired, and (7) the compliance of the investment portfolio as it relates to: (a) adopted investment strategies and (b) Texas law. No person may invest District funds without express written authority from the Board of Directors.

Under Texas law, the District is additionally required to: (1) annually review its adopted policies and strategies, (2) require any investment officers with personal business relationships or family relationships with firms seeking to sell securities to the District to disclose the relationship and file a statement with the Texas Ethics Commission and the District, (3) require the registered principal of firms seeking to sell securities to the District to: (a) receive and review the District's investment policy, (b) acknowledge that reasonable controls and procedures have been implemented to preclude imprudent investment activities, and (c) deliver a written statement attesting to these requirements; (4) in conjunction with its annual financial audit, perform a compliance audit of the management controls on investments and adherence to the District's investment policy, (5) restrict reverse repurchase agreements to not more than 90 days and restrict the investment of reverse repurchase agreement funds to no greater than the term of the reverse repurchase agreement, (6) restrict the investment in non-money market mutual funds in the aggregate to no more than 15% of the District's monthly average fund balance, excluding bond proceeds and reserves and other funds held for debt service and (7) require local government investment pools to conform to the new disclosure, rating, net asset value, yield calculation, and advisory board requirements.

TABLE 7 – CURRENT INVESTMENTS

As of August 27, 2025, the District is currently invested in a bank Money Market Fund and TexPool. State law requires the District to mark its investments to market price each calendar quarter and upon the conclusion of each fiscal year, for the purpose of compliance with applicable accounting policies concerning the contents of the District's audited financial statements.

Investments	Market Value	% of Total
Texas CLASS	$ 6,453,602	97.96%
Checking/Money Market	134,108	2.04%
	$ 6,587,710	100.00%

ESTIMATED OVERLAPPING DEBT STATEMENT . . . Other governmental entities whose boundaries overlap the District have outstanding bonds payable from ad valorem taxes. The following statement of direct and estimated overlapping ad valorem tax debt was developed from several sources, including information contained in "Texas Municipal Reports," published by the Municipal Advisory Council of Texas. Except for the amount relating to the District, the District has not independently verified the accuracy or completeness of such information, and no person is entitled to rely upon information as being accurate or complete. Furthermore, certain of the entities listed below may have issued additional bonds since the dates stated in this table, and such entities may have programs requiring the issuance of substantial amounts of additional bonds, the amount of which cannot be determined. Political subdivision overlapping the District are authorized by Texas law to levy and collect ad valorem taxes for operation, maintenance and/or general revenue purposes in addition to taxes of debt service and the tax burden for operation, maintenance and/or general purposes is not included in these figures.

Taxing Jurisdiction	Total Tax Supported Debt	Estimated % Applicable	District's Overlapping Tax Supported Debt as of 8/31/2025
Hays County	$ 448,288,993	1.06%	$ 4,751,863
Dripping Springs ISD	641,010,000	5.53%	35,447,853
City of Dripping Springs[(b)]	52,685,000	1.66%	874,571
North Hays County ESD #1	-	0.72%	-
Northwest Hays County ESD #5	-	1.17%	-
Headwaters MUD of Hays County	91,120,000	100.00%	91,120,000 [(a)]
Total Direct and Overlapping Tax Supported Debt			$ 132,194,287
Ratio of Direct and Overlapping Tax Supported Debt to 2025 Certified TAV			22.52%

(a) Includes the Bonds.
(b) Note: The City of Dripping Springs does not overlap the residential acreage within the District.

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TAX DATA

TABLE 8 – TAX COLLECTIONS

The following statement of tax collections sets forth in condensed form the historical fiscal year tax collection experience of the District. Such summary has been prepared by the Financial Advisor for inclusion herein based upon information from District audits and records of the District's Tax Assessor/Collector. Reference is made to such audits and records for further and more complete information.

Fiscal Year Ended 12/31	Tax Rate	General Operating Fund	Debt I&S Fund	Tax Levy	% Total Collections
2021	$ 0.9000	$ 0.4000	$ 0.5000	$ 1,082,705	100.00%
2022	0.9000	0.2750	0.6250	1,733,633	100.00%
2023	0.9000	0.2500	0.6500	4,386,890	100.00%
2024	0.9000	0.1000	0.8000	4,930,230	100.00%
2025	0.9000	0.0250	0.8750	5,282,649	99.91% [(a)]

(a) Collections through July 31, 2025.

TABLE 9 – DISTRICT TAX RATES

	Tax Rates per $100 Assessed Valuation				
	FY2025	**FY2024**	**FY2023**	**FY2022**	**FY2021**
Debt Service	$ 0.8750	$ 0.8000	$ 0.6250	$ 0.5500	$ 0.5000
Maintenance	0.0250	0.1000	0.2750	0.3500	0.4000
Total	$ 0.9000	$ 0.9000	$ 0.9000	$ 0.9000	$ 0.9000

TAX RATE LIMITATION . . . The District's tax rate for debt service on the Bonds is legally unlimited as to rate and amount.

MAINTENANCE TAX . . . The District has the statutory authority to levy and collect an annual ad valorem tax for maintaining, repairing and operating the District's facilities and for paying administrative expenses of the District, if such maintenance tax is authorized by the District's voters. An election for such a tax was held on November 6, 2007 at which time a maintenance tax not to exceed $1.00 per $100 assessed valuation was approved by the District's voters. The District adopted a 2025 tax year maintenance tax of $0.0250 and 2025 tax year debt service tax of $0.8750 in September 2025.

TABLE 10 – PRINCIPAL TAXPAYERS . . . The following list of principal taxpayers was provided by the Hays Central Appraisal District based on the 2025 tax rolls of the District, which reflect ownership as of January 1 of each year shown.

Taxpayer	Taxable Assessed Value	% of 2025 Taxable Assessed Valuation
Regency Ridge at Headwaters Apartments LLC	$ 23,697,490	4.04%
AG EHC II TOL Multistate 4 LLC	8,792,310	1.50%
Weekley Homes LLC	6,061,442	1.03%
ORYX HW Office Inc.	3,413,832	0.58%
R&S Prep School Holding Three LLC	3,008,036	0.51%
WFC Headwaters Owner VII LP(a)	2,909,555	0.50%
CND-Resources LLC	2,732,745	0.47%
Oakwood Land Holdings LLC	2,376,370	0.40%
DFH Coventry LLC	2,215,148	0.38%
Radichi LLC	1,868,200	0.32%
	$ 57,075,128	9.72%

(a) The Developer.

TAXING PROCEDURES

AUTHORITY TO LEVY TAXES . . . The Board is authorized to levy an annual ad valorem tax on all taxable property within the District in an amount sufficient to pay the principal of and interest on the Bonds, their pro rata share of debt service on any contract tax bonds and any additional bonds or obligations payable from taxes which the District may hereafter issue (see "RISK FACTORS – Future Debt") and to pay the expenses of assessing and collecting such taxes. The District agrees in the Bond Order to levy such a tax from year-to-year as described more fully herein under "THE BONDS – Source of and Security for Payment." Under Texas law, the Board is also authorized to levy and collect an ad valorem tax for the operation and maintenance of the District and its water and wastewater system and for the payment of certain contractual obligations, if authorized by its voters. See "TAX DATA – District Bond Tax Rate Limitation," and "TAX DATA – Maintenance Tax."

PROPERTY TAX CODE AND COUNTY-WIDE APPRAISAL DISTRICT . . . The Texas Property Tax Code (the "Property Tax Code") specifies the taxing procedures of all political subdivisions of the State of Texas, including the District. Provisions of the Property Tax Code are complex and are not fully summarized herein.

The Property Tax Code requires, among other matters, county-wide appraisal and equalization of taxable property values and establishes in each county of the State of Texas an appraisal district with the responsibility for recording and appraising property for all taxing units within the county and an appraisal review board with responsibility for reviewing and equalizing the values established by the appraisal district. HCAD has the responsibility for appraising property for all taxing units within Hays County, including the District. Such appraisal values are subject to review and change by the Hays Central Appraisal Review Board (the "Appraisal Review Board"). The appraisal roll as approved by the Appraisal Review Board must be used by the District in establishing its tax roll and tax rate.

PROPERTY SUBJECT TO TAXATION BY THE DISTRICT . . . ***General*:** Except for certain exemptions provided by State law, all real property, tangible personal property held or used for the production of income, mobile homes, and certain categories of intangible personal property with a tax situs in the District are subject to taxation by the District; however, no effort is expected to be made by the Appraisal District to include on a tax roll tangible or intangible personal property not devoted to commercial or industrial use. Principal categories of exempt property include: property owned by the State of Texas or its political subdivisions if the property is used for public purposes; property exempt from ad valorem taxation by federal law; income producing tangible personal property or mineral interest with a taxable value of less than $500; certain property used for the control of air, water or land pollution; solar and wind powered energy devices; certain non-profit cemeteries, farm products owned by the producer; and certain property owned by qualified charitable, religious, veterans, youth, or fraternal organizations. Goods, wares, ores and merchandise (other than oil, gas, or petroleum products) that are acquired in or imported into the state and forwarded out of state within 175 days thereafter are also exempt. Article VIII, Section 1-a of the Texas Constitution grants a $3,000 homestead exemption for all homesteads taxed by counties for farm-to-market roads and flood control purposes. Property owned by a disabled veteran or by the spouse of certain children of a deceased disabled veteran or a veteran who died while on active duty is partially exempt to between $5,000 and $12,000 of assessed value depending upon the disability rating of the veteran. A veteran who receives a disability rating of 100% is entitled to an exemption for the full value of the veteran's residence homestead. Additionally, subject to certain conditions, the surviving spouse of a disabled veteran who is entitled to an exemption for the full value of the veteran's residence homestead is also entitled to an exemption from taxation of the total appraised value of the same property to which the disabled veteran's exemption applied. Also partially exempt are residence homesteads of certain persons who are disabled or at least 65 years old, not less than $3,000 of appraised value or such higher amount as the Board or the District's voters may approve. The District's tax assessor/collector is authorized by statute to disregard such exemptions for the elderly and disabled if granting the exemptions would impair the District's obligation to pay tax supported debt incurred prior to adoption of the exemptions by the District.

Residential Homestead . . . The Board may exempt up to 20% of the market value of residential homesteads from ad valorem taxation. Such exemption would be in addition to any other applicable exemptions provided by law. However, if ad valorem taxes have previously been pledged for the payment of debt, then the Board may continue to levy and collect taxes against the exempted value of the homesteads until the debt is discharged if the cessation of the levy would impair the obligation of the contract by which the debt was created. The District has never adopted a general homestead exemption.

Tax Abatement . . . Hays County and the District may enter into tax abatement agreements with owners of real property within such zone. The tax abatement agreements may exempt from ad valorem taxation by the applicable taxing jurisdiction for a period of up to ten years, all or any part of any increase in the assessed valuation of property covered by the agreement over its assessed valuation in the year in which the agreement is executed, on the condition that the property owner make specified improvements or repairs to the property in conformity with a comprehensive plan. As of October 17, 2017, the District has not executed any abatement agreements.

Goods-in-Transit . . . Article VIII, Section 1-n of the Texas Constitution provides for the exemption from taxation of "goods-in-transit." "Goods-in-transit" is defined by a provision of the Tax Code, which is effective for tax years 2008 and thereafter, as personal property acquired or imported into Texas and transported to another location in the State or outside the State within 175 days of the date the property was acquired or imported into Texas. The exemption excludes oil, natural gas, petroleum products, aircraft and special inventory, including motor vehicle, vessel and out-board motor, heavy equipment and manufactured housing inventory. The Tax Code provisions permit local governmental entities, on a local option basis, to take official action by January 1 of the year preceding a tax year, after holding a public hearing, to tax goods-in-transit during the following tax year. A taxpayer

may receive only one of the freeport exemptions or the goods-in-transit exemptions for items of personal property. In February, 2008, the Board conducted a public hearing on the question of whether to provide for taxation of goods-in-transit and adopted a Resolution Providing for Taxation of Goods-in-Transit, by which the District took official action to tax goods-in-transit.

VALUATION OF PROPERTY FOR TAXATION . . . Generally, property in the District must be appraised by the HCAD at market value as of January 1 of each year. Once an appraisal roll is prepared and formally approved by the Appraisal Review Board, it is used by the District in establishing its tax rolls and tax rate. Assessments under the Property Tax Code are to be based on one hundred percent (100%) of market value, as such is defined in the Property Tax Code.

The Property Tax Code permits land designated for agricultural use, open space or timberland to be appraised at its value based on the land's capacity to produce agricultural or timber products rather than at its fair market value. The Property Tax Code permits under certain circumstances that residential real property inventory held by a person in the trade or business be valued at the price that such property would bring if sold as a unit to a purchaser who would continue the business. Landowners wishing to avail themselves of the agricultural use, open space or timberland designation or residential real property inventory designation must apply for the designation and the appraiser is required by the Property Tax Code to act on each claimant's right to the designation individually. A claimant may waive the special valuation as to taxation by some political subdivisions while claiming it as to another. If a claimant receives the agricultural use designation and later loses it by changing the use of the property or selling it to an unqualified owner, the District can collect taxes based on the new use, including taxes for the previous three years for agricultural use and taxes for the previous five years for open space land and timberland.

The Property Tax Code requires the HCAD to implement a plan for periodic reappraisal of property. The plan must provide for appraisal of all real property in the HCAD at least once every three (3) years. It is not known what frequency of reappraisal will be utilized by the HCAD or whether reappraisals will be conducted on a zone or county-wide basis. The District, however, at its expense has the right to obtain from the Appraisal District a current estimate of appraised values within the District or an estimate of any new property or improvements within the District. While such current estimate of appraised values may serve to indicate the rate and extent of growth of taxable values within the District, it cannot be used for establishing a tax rate within the District until such time as the HCAD chooses formally to include such values on its appraisal roll.

DISTRICT AND TAXPAYER REMEDIES . . . Under certain circumstances taxpayers and taxing units (such as the District), may appeal the orders of the Appraisal Review Board by filing a timely petition for review in State district court. In such event, the value of the property in question will be determined by the court or by a jury, if requested by any party. Additionally, taxing units may bring suit against the HCAD to compel compliance with the Property Tax Code.

The Property Tax Code sets forth notice and hearing procedures for certain tax rate increases by the District and provides for taxpayer referenda which could result in the repeal of certain tax increases. The Property Tax Code also establishes a procedure for notice to property owners of reappraisals reflecting increased property values, appraisals which are higher than renditions, and appraisals of property not previously on an appraisal roll.

LEVY AND COLLECTION OF TAXES . . . The District is responsible for the levy and collection of its taxes unless it elects to transfer the collection functions to another governmental entity. By August 15 of each year, or as soon thereafter as practicable, the rate of taxation is set by the Board based upon the valuation of property within the District as of the preceding January 1. Taxes are due January 31, or when billed, whichever comes later, and become delinquent after January 31 of the following year. A delinquent tax incurs a penalty of six percent (6%) of the amount of the tax for the first calendar month it is delinquent, plus one percent (1%) for each additional month or portion of a month the tax remains unpaid prior to July 1 of the year in which it becomes delinquent. If the tax is not paid by July 1 of the year in which it becomes delinquent, the tax incurs a total penalty of twelve percent (12%) regardless of the number of months the tax has been delinquent and incurs an additional penalty of up to fifteen percent (15%) if imposed by the District. The delinquent tax also accrues interest at a rate of one percent (1%) for each month or portion of a month it remains unpaid. The Property Tax Code also makes provision for the split payment of taxes, discounts for early payment and the postponement of the delinquency date of taxes under certain circumstances.

ROLLBACK OF OPERATION AND MAINTENANCE TAX RATE . . . During the 86th Regular Legislative Session, Senate Bill 2 ("SB 2") was passed and signed by the Governor, with an effective date (as to those provisions discussed herein) of January 1, 2020, and the provisions described herein are effective beginning with the 2020 tax year. See "SELECTED FINANCIAL INFORMATION" for a description of the District's current total tax rate. Debt service and contract tax rates cannot be reduced by a rollback election held within any of the districts described below.

SB 2 classifies municipal utility districts differently based on their current operation and maintenance tax rate or on the percentage of projected build-out that a district has completed. Districts that have adopted an operation and maintenance tax rate for the current year that is 2.5 cents or less per $100 of taxable value are classified herein as "Special Taxing Units." Districts that have financed, completed, and issued bonds to pay for all land, improvements and facilities necessary to serve at least 95% of the projected build-out of the district are classified as "Developed Districts." Districts that do not meet either of the classifications previously discussed can be classified herein as "Developing Districts." The impact each classification has on the ability of a district to increase its maintenance and operations tax rate pursuant to SB 2 is described for each classification below.

Special Taxing Units

Special Taxing Units that adopt a total tax rate that would impose more than 1.08 times the amount of the total tax imposed by such district in the preceding tax year on a residence homestead appraised at the average appraised value of a residence homestead in the district, subject to certain homestead exemptions, are required to hold an election within the district to determine whether to approve the adopted total tax rate. If the adopted total tax rate is not approved at the election, the total tax rate for a Special Taxing Unit is the current year's debt service and contract tax rate plus the operation and maintenance tax rate that would impose 1.08 times the amount of operation and maintenance tax imposed by the district in the preceding year on a residence homestead appraised at the average appraised value of a residence homestead in the district in that year, subject to certain homestead exemptions.

Developed Districts

Developed Districts that adopt a total tax rate that would impose more than 1.035 times the amount of the total tax imposed by the district in the preceding tax year on a residence homestead appraised at the average appraised value of a residence homestead in the district, subject to certain homestead exemptions, plus any unused increment rates, as calculated and described in Section 26.013 of the Tax Code, are required to hold an election within the district to determine whether to approve the adopted total tax rate. If the adopted total tax rate is not approved at the election, the total tax rate for a Developed District is the current year's debt service and contract tax rate plus the operation and maintenance tax rate that would impose 1.035 times the amount of operation and maintenance tax imposed by the district in the preceding year on a residence homestead appraised at the average appraised value of a residence homestead in the district in that year, subject to certain homestead exemptions, plus any unused increment rates. In addition, if any part of a Developed District lies within an area declared for disaster by the Governor of Texas or President of the United States, alternative procedures and rate limitations may apply for a temporary period. If a district qualifies as both a Special Taxing Unit and a Developed District, the district will be subject to the operation and maintenance tax threshold applicable to Special Taxing Units.

Developing Districts

Districts that do not meet the classification of a Special Taxing Unit or a Developed District can be classified as Developing Districts. The qualified voters of these districts, upon the Developing District's adoption of a total tax rate that would impose more than 1.08 times the amount of the total tax imposed by such district in the preceding tax year on a residence homestead appraised at the average appraised value of a residence homestead in the district, subject to certain homestead exemptions, are authorized to petition for an election to reduce the operation and maintenance tax rate. If an election is called and passes, the total tax rate for Developing Districts is the current year's debt service and contract tax rate plus the operation and maintenance tax rate that would impose 1.08 times the amount of operation and maintenance tax imposed by the district in the preceding year on a residence homestead appraised at the average appraised value of a residence homestead in the district in that year, subject to certain homestead exemptions.

The District

A determination as to a district's status as a Special Taxing Unit, Developed District or Developing District was made by the Board of Directors on an annual basis, beginning with the 2021 tax rate. For the 2025 tax year, the District's Board of Directors has determined that the District is a Developing District. The District cannot give any assurances as to what its classification will be at any point in time or whether the District's future tax rates will result in a total tax rate that will reclassify the District into a new classification and new election calculation.

DISTRICT'S RIGHTS IN THE EVENT OF TAX DELINQUENCIES . . . Taxes levied by the District are a personal obligation of the owner of the property on January 1 of the year for which the tax is imposed. On January 1 of each year, a tax lien attaches to property to secure the payment of all state and local taxes, penalties, and interest ultimately imposed for the year on the property. The lien exists in favor of the State of Texas and each local taxing unit, including the District, having power to tax the property. The District's tax lien is on a parity with tax liens of such other taxing units. See "FINANCIAL STATEMENT – Estimated Overlapping Debt Statement." A tax lien on real property takes priority over the claim of most creditors and other holders of liens on the property encumbered by the tax lien, whether or not the debt or lien existed before the attachment of the tax lien; however, whether a lien of the United States is on a parity with or takes priority over a tax lien of the District is determined by applicable federal law. Personal property under certain circumstances is subject to seizure and sale for the payment of delinquent taxes, penalty, and interest.

At any time after taxes on property become delinquent, the District may file suit to foreclose the lien securing payment of the tax, to enforce personal liability for the tax, or both. In filing a suit to foreclose a tax lien on real property, the District must join other taxing units that have claims for delinquent taxes against all or part of the same property. Collection of delinquent taxes may be adversely affected by the amount of taxes owed to other taxing units, by the effects of market conditions on the foreclosure sale price, by taxpayer redemption rights (a taxpayer may redeem residential homestead property within two years after the purchaser's deed issued at the foreclosure sale is filed in the county records other property may be redeemed by a taxpayer within 180 days of such filing) or by bankruptcy proceedings which restrict the collection of taxpayer debts. See "RISK FACTORS – Tax Collections and Foreclosure Remedies."

EFFECT OF FIRREA ON TAX COLLECTIONS . . . The "Financial Institutions Reform, Recovery and Enforcement Act of 1989" ("FIRREA"), enacted on August 9, 1989, contains certain provisions which affect the time for protesting property valuations, the fixing of tax liens, and the collection of penalties and interest on delinquent taxes on real property owned by the Federal Deposit Insurance Corporation ("FDIC") when the FDIC is acting as the conservator or receiver of an insolvent financial institution.

Under FIRREA real property held by the FDIC is still subject to ad valorem taxation, but such act states (i) that no real property of the FDIC shall be subject to foreclosure or sale without the consent of the FDIC and no involuntary liens shall attach to such property, (ii) the FDIC shall not be liable for any penalties or fines, including those arising from the failure to pay any real or personal property tax when due and (iii) notwithstanding failure of a person to challenge an appraisal in accordance with state law, such value shall be determined as of the period for which such tax is imposed.

There has been little judicial determination of the validity of the provisions of FIRREA or how they are to be construed and reconciled with respect to conflicting state laws. However, certain recent federal court decisions have held that the FDIC is not liable for statutory penalties and interest authorized by State property tax law, and that although a lien for taxes may exist against real property, such lien may not be foreclosed without the consent of the FDIC, and no liens for penalties, fines, interest, attorney's fees, costs of abstract and research fees exist against the real property for the failure of the FDIC or a prior property owner to pay ad valorem taxes when due. It is also not known whether the FDIC will attempt to claim the FIRREA exemptions as to the time for contesting valuations and tax assessments made prior to and after the enactment of FIRREA. Accordingly, to the extent that the FIRREA provisions are valid and applicable to any property in the District, and to the extent that the FDIC attempts to enforce the same, these provisions may affect the timeliness of collection of taxes on property, if any, owned by the FDIC in the District, and may prevent the collection of penalties and interest on such taxes.

2023 LEGISLATIVE SESSION . . . On July 13, 2023, during the Second Special Session, the Texas Legislature passed Senate Bill 2, which, among other things, includes provisions that prohibit an appraisal district from increasing the appraised value of real property during the 2024 tax year on non-homestead properties (the "subjected property") whose appraised values are not more than $5 million dollars (the "maximum property value") to an amount not to exceed the lesser of: (1) the market value of the subjected property for the most recent tax year that the market value was determined by the appraisal office or (2) the sum of: (a) 20 percent of the appraised value of the subjected property for the preceding tax year; (b) the appraised value of the subjected property for the preceding tax year; and (c) the market value of all new improvements to the subjected property (collectively, the "appraisal cap"). After the 2024 tax year, through December 31, 2026, the maximum property value may be increased or decreased by the product of the preceding state fiscal year's increase or decrease in the consumer price index, as applicable, to the maximum property value. The appraisal cap takes effect on January 1, 2024.

LEGAL MATTERS

LEGAL OPINIONS . . . Issuance of the Bonds is subject to the approving legal opinion of the Attorney General of Texas to the effect that the Bonds are valid and binding obligations of the District payable from the proceeds of an annual ad valorem tax levied, without legal limit as to rate or amount, upon all taxable property within the District. Issuance of the Bonds is also subject to the legal opinion of McLean & Howard, L.L.P., Austin, Texas ("Bond Counsel"), based upon examination of a transcript of the proceedings incident to authorization and issuance of the Bonds, to the effect that the Bonds are valid and binding obligations of the District payable from the sources and enforceable in accordance with the terms and conditions described therein, except to the extent that the enforceability thereof may be affected by governmental immunity, bankruptcy, insolvency, reorganization, moratorium, or other similar laws affecting creditors' rights or the exercise of judicial discretion in accordance with general principles of equity. Issuance of the Bonds is also subject to the legal opinion of McCall, Parkhurst & Horton L.L.P. ("Special Tax Counsel") that will address the matters described below under "TAX MATTERS." Such opinions will express no opinion with respect to the sufficiency of the security for or the marketability of the Bonds. In connection with the issuance of the Bonds, Bond Counsel has been engaged by, and only represents, the District.

The legal fees to be paid Bond Counsel for services rendered in connection with the issuance of the Bonds are based upon a percentage of Bonds actually issued, sold and delivered, and therefore, such fees are contingent upon the sale and delivery of the Bonds.

The various legal opinions to be delivered concurrently with the delivery of the Bonds express the professional judgment of the attorneys rendering the opinions as to the legal issues explicitly addressed therein. In rendering a legal opinion, the attorney does not become an insurer or guarantor of the expression of professional judgment, of the transaction opined upon, or of the future performance of the parties to the transaction, nor does the rendering of an opinion guarantee the outcome of any legal dispute that may arise out of the transaction.

NO-LITIGATION CERTIFICATE . . . The District will furnish to the Initial Purchaser a certificate, dated as of the date of delivery of the Bonds, executed by both the President and Secretary of the Board, to the effect that no litigation of any nature has been filed or is then pending or threatened, either in state or federal courts, contesting or attacking the Bonds; restraining or enjoining the issuance, execution or delivery of the Bonds; affecting the provisions made for the payment of or security for the Bonds; in any manner questioning the authority or proceedings for the issuance, execution, or delivery of the Bonds; or affecting the validity of the Bonds.

NO MATERIAL ADVERSE CHANGE . . . The obligations of the Initial Purchaser to take and pay for the Bonds, and of the District to deliver the Bonds, are subject to the condition that, up to the time of delivery of and receipt of payment for the Bonds, there shall have been no material adverse change in the condition (financial or otherwise) of the District from that set forth or contemplated in the Official Statement.

TAX MATTERS

OPINION . . . On the date of initial delivery of the Bonds, McCall, Parkhurst and Horton L.L.P., Special Tax Counsel to the District, will render its opinion that, in accordance with statutes, regulations, published rulings and court decisions existing on the date thereof ("Existing Law") (1) interest on the Bonds for federal income tax purposes will be excludable from the "gross income" of the holders thereof and (2) the Bonds will not be treated as "specified private activity bonds" the interest on which would be included as an alternative minimum tax preference item under section 57(a)(5) of the Internal Revenue Code of 1986 (the "Code"). Except as stated above, Special Tax Counsel will express no opinion as to any other federal, state or local tax consequences of the purchase, ownership or disposition of the Bonds. See "APPENDIX C – Form of Special Tax Counsel Opinion."

In rendering its opinion, Special Tax Counsel will rely upon (a) the opinion of McLean & Howard L.L.P., Bond Counsel, that the Bonds are valid and binding obligations of the District payable from the proceeds of a generally-applicable ad valorem tax, (b) the District's federal tax certificate, and (c) covenants of the District relating to arbitrage and the application of the proceeds of the Bonds and the property financed or refinanced therewith. Failure by the District to comply with these representations or covenants could cause the interest on the Bonds to become included in gross income retroactively to the date of issuance.

The Code and the regulations promulgated thereunder contain a number of requirements that must be satisfied subsequent to the issuance of the Bonds in order for the interest on the Bonds to be, and to remain, excludable from gross income for federal income tax purposes. Failure to comply with such requirements may cause interest on the Bonds to be included to gross income retroactively to the date of issuance of the Bonds. The opinion of Special Tax Counsel is conditioned on compliance by the District with the covenants and requirements, and Special Tax Counsel has not been retained to monitor compliance with these requirements subsequent to the issuance of the Bonds.

Special Tax Counsel's opinion represents its legal judgment based upon its review of Existing Law and the reliance on the aforementioned information, representations and covenants. Special Tax Counsel's opinion is not a guarantee of a result. Existing Law is subject to change by the Congress and to subsequent judicial and administrative interpretation by the courts and the Department of the Treasury. There can be no assurance that such Existing Law or the interpretation thereof will not be changed in a manner which would adversely affect the tax treatment of the purchase, ownership or disposition of the Bonds.

A ruling was not sought from the Internal Revenue Service by the District with respect to the Bonds or the property financed or refinanced with the proceeds of the Bonds. Special Tax Counsel's opinion represents its legal judgement based upon its review of Existing Law and the representations of the District that it deems relevant to render such opinion and is not a guarantee of a result. No assurances can be given as to whether the Internal Revenue Service will commence an audit of the Bonds, or as to whether the Internal Revenue Service would agree with the opinion of Special Tax Counsel. If an Internal Revenue Service audit is commenced, under current procedures the Internal Revenue Service is likely to treat the District as the taxpayer and the Bondholders may have no right to participate in such procedure. No additional interest will be paid upon any determination of taxability.

FEDERAL INCOME TAX ACCOUNTING TREATMENT OF ORIGINAL ISSUE DISCOUNT . . . The initial public offering price to be paid for one or more maturities of the Bonds is less than the principal amount thereof or one or more periods for the payment of interest on the Bonds may not be equal to the accrual period or be in excess of one year (the "Original Issue Discount Bonds"). In such event, the difference between (i) the "stated redemption price at maturity" of each Original Issue Discount Bond, and (ii) the initial offering price to the public of such Original Issue Discount Bond would constitute original issue discount. The "stated redemption price at maturity" means the sum of all payments to be made on the Bonds less the amount of all periodic interest payments. Periodic interest payments are payments which are made during equal accrual periods (or during any unequal period if it is the initial or final period) and which are made during accrual periods which do not exceed one year.

Under Existing Law, any owner who has purchased such Original Issue Discount Bond in the initial public offering is entitled to exclude from gross income (defined in section 61 of the Code) an amount of income with respect to such Original Issue Discount Bond equal to that portion of the amount of such original issue discount allocable to the accrual period. For a discussion of certain collateral federal tax consequences, see discussion set forth below.

In the event of the redemption, sale or other taxable disposition of such Original Issue Discount Bond prior to stated maturity, however, the amount realized by such owner in excess of the basis of such Original Issue Discount Bond in the hands of such owner (adjusted upward by the portion of the original issue discount allocable to the period for which such Original Issue Discount Bond was held by such initial owner) is includable in gross income.

Under Existing Law, the original issue discount on each Original Issue Discount Bond is accrued daily to the stated maturity thereof (in amounts calculated as described below for each six-month period ending on the date before the semiannual anniversary

dates of the date of the Bonds and ratably within each such six-month period) and the accrued amount is added to an initial owner's basis for such Original Issue Discount Bond for purposes of determining the amount of gain or loss recognized by such owner upon the redemption, sale or other disposition thereof. The amount to be added to basis for each accrual period is equal to (a) the sum of the issue price and the amount of original issue discount accrued in prior periods multiplied by the yield to stated maturity (determined on the basis of compounding at the close of each accrual period and properly adjusted for the length of the accrual period) less (b) the amounts payable as current interest during such accrual period on such Original Issue Discount Bond. The federal income tax consequences of the purchase, ownership, redemption, sale or other disposition of Original Issue Discount Bonds which are not purchased in the initial offering at the initial offering price may be determined according to rules which differ from those described above. All owners of Original Issue Discount Bonds should consult their own tax advisors with respect to the determination for federal, state and local income tax purposes of the treatment of interest accrued upon redemption, sale or other disposition of such Original Issue Discount Bonds and with respect to the federal, state, local and foreign tax consequences of the purchase, ownership, redemption, sale or other disposition of such Original Issue Discount Bonds.

COLLATERAL FEDERAL INCOME TAX CONSEQUENCES . . . The following discussion is a summary of certain collateral federal income tax consequences resulting from the purchase, ownership or disposition of the Bonds. This discussion is based on existing statutes, regulations, published rulings and court decisions accumulated, all of which are subject to change or modification, retroactively.

The following discussion is applicable to investors, other than those who are subject to special provisions of the Code, such as financial institutions, property and casualty insurance companies, life insurance companies, individual recipients of Social Security or Railroad Retirement benefits, individuals allowed an earned income credit, certain S corporations with subchapter C earnings and profits, foreign corporations subject to the branch profits tax, taxpayers qualifying for the health insurance premium assistance credit, and taxpayers who may be deemed to have incurred or continued indebtedness to purchase tax-exempt obligations.

THE DISCUSSION CONTAINED HEREIN MAY NOT BE EXHAUSTIVE. INVESTORS, INCLUDING THOSE WHO ARE SUBJECT TO SPECIAL PROVISIONS OF THE CODE, SHOULD CONSULT THEIR OWN TAX ADVISORS AS TO THE TAX TREATMENT WHICH MAY BE ANTICIPATED TO RESULT FROM THE PURCHASE, OWNERSHIP AND DISPOSITION OF TAX-EXEMPT OBLIGATIONS BEFORE DETERMINING WHETHER TO PURCHASE THE BONDS.

Interest on the Bonds may be includable in certain corporation's "adjusted financial statement income" determined under section 56A of the Code to calculate the alternative minimum tax imposed by section 55 of the Code.

Under section 6012 of the Code, holders of tax-exempt obligations, such as the Bonds, may be required to disclose interest received or accrued during each taxable year on their returns of federal income taxation.

Section 1276 of the Code provides for ordinary income tax treatment of gain recognized upon the disposition of a tax-exempt obligation, such as the Bonds, if such obligation was acquired at a "market discount" and if the fixed maturity of such obligation is equal to, or exceeds, one year from the date of issue. Such treatment applies to "market discount bonds" to the extent such gain does not exceed the accrued market discount of such bonds; although for this purpose, a de minimis amount of market discount is ignored. A "market discount bond" is one which is acquired by the holder at a purchase price which is less than the stated redemption price at maturity or, in the case of a bond issued at an original issue discount, the "revised issue price" (i.e., the issue price plus accrued original issue discount). The "accrued market discount" is the amount which bears the same ratio to the market discount as the number of days during which the holder holds the obligation bears to the number of days between the acquisition date and the final maturity date.

STATE, LOCAL AND FOREIGN TAXES . . . Investors should consult their own tax advisors concerning the tax implications of the purchase, ownership or disposition of the Bonds under applicable state or local laws. Foreign investors should also consult their own tax advisors regarding the tax consequences unique to investors who are not United States persons.

INFORMATION REPORTING AND BACKUP WITHHOLDING . . . Subject to certain exceptions, information reports describing interest income, including original issue discount, with respect to the Bonds will be sent to each registered holder and to the IRS. Payments of interest and principal may be subject to backup withholding under section 3406 of the Code if a recipient of the payments fails to furnish to the payor such owner's social security number or other taxpayer identification number ("TIN"), furnishes an incorrect TIN, or otherwise fails to establish an exemption from the backup withholding tax. Any amounts so withheld would be allowed as a credit against the recipient's federal income tax. Special rules apply to partnerships, estates and trusts, and in certain circumstances, and in respect of foreign investors, certifications as to foreign status and other matters may be required to be provided by partners and beneficiaries thereof.

FUTURE AND PROPOSED LEGISLATION . . . Tax legislation, administrative actions taken by tax authorities, or court decisions, whether at the Federal or state level, may adversely affect the tax-exempt status of interest on the Bonds under Federal or state law and could affect the market price or marketability of the Bonds. Any such proposal could limit the value of certain deductions and exclusions, including the exclusion for tax-exempt interest. The likelihood of any such proposal being enacted cannot be predicted. Prospective purchasers of the Bonds should consult their own tax advisors regarding the foregoing matters.

CONTINUING DISCLOSURE OF INFORMATION

In the Bond Order, the District has made the following agreement for the benefit of the registered and beneficial owners. The District is required to observe the agreement for so long as it remains obligated to advance funds to pay the Bonds. Under the agreement, the District will be obligated to provide certain updated financial information and operating data annually, and timely notice of specified events, to the Municipal Securities Rulemaking Board ("MSRB"). This information will be available free of charge from the MSRB via its Electronic Municipal Market Access system at www.emma.msrb.org.

ANNUAL REPORTS . . . The District will provide certain updated financial information and operating data to certain information to the MSRB annually. The information to be updated includes all quantitative financial information and operating data with respect to the District of the general type included in this Official Statement in tables 1-3, 6, 8 and 9 and "APPENDIX A – Excerpts from the Annual Financial Report," if audited such financial statements in APPENDIX A are then available. The District will update and provide this information within six months after the end of each fiscal year. The District will provide the updated information to the MSRB.

The District may provide updated information in full text or may incorporate by reference certain other publicly available documents, as permitted by SEC Rule 15c2-12 (the "Rule"). The updated information will include audited financial statements, if completed by the required time. If audited financial statements are not available within twelve months after any such fiscal year end, the District will file unaudited financial statements within twelve months after any such fiscal year end, and audited financial statements when the audit report becomes available. Any such financial statements will be prepared in accordance with the accounting principles described in "APPENDIX A – Excerpts from the Annual Financial Report" or such other accounting principles as the District may be required to employ from time to time pursuant to state law or regulation.

The District's current fiscal year end is December 31. Accordingly, it must provide updated disclosure information by June 30 of each year and audited financial statements by December 31 unless the District changes its fiscal year. If the District changes its fiscal year, it will notify the MSRB of the change.

NOTICE OF CERTAIN EVENTS . . . The District will provide notice to the MSRB of any of the following events with respect to the Bonds, if such event is material within the meaning of the federal securities laws: (1) non-payment related defaults; (2) modifications to rights of bondholders; (3) Bond calls; (4) release, substitution, or sale of property securing repayment of the Bonds; (5) the consummation of a merger, consolidation, or acquisition involving an obligated person or the sale of all or substantially all of the assets of the obligated person, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms; and (6) appointment of a successor or additional trustee or the change of name of a trustee.

The District will provide timely notices of certain events to the MSRB, but in no event will such notices be provided to the MSRB in excess of ten business days after the occurrence of the event. The District will provide notice of any of the following events with respect to the Bonds: (1) principal and interest payment delinquencies; (2) non-payment related defaults, if material; (3) unscheduled draws on debt service reserves reflecting financial difficulties; (4) unscheduled draws on credit enhancements reflecting financial difficulties; (5) substitution of credit or liquidity providers, or their failure to perform; (6) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the Bonds, or other material events affecting the tax status of the Bonds; (7) modifications to rights of Beneficial Owners of the Bonds, if material; (8) bond calls, if material, and tender offers; (9) defeasances; (10) release, substitution, or sale of property securing repayment of the Bonds, if material; (11) rating changes; (12) bankruptcy, insolvency, receivership or similar event of the District or other obligated person within the meaning of CFR § 240.15c2-12 (the "Rule"); (13) consummation of a merger, consolidation, or acquisition involving the District or other obligated person within the meaning of the Rule or the sale of all or substantially all of the assets of the District or other obligated person within the meaning of the Rule, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material; (14) appointment of a successor or additional trustee or the change of name of a trustee, if material; (15) incurrence of a financial obligation (as defined by the Rule which includes debt, debt-like, and debt-related obligations) of the District, if material, or agreement to covenants, events of default, remedies, priority rights, or other similar terms of a financial obligation of the obligated person, any of which affect security holders, if material; and (16) default, event of acceleration, termination event, modification of terms, or other similar events under the terms of a financial obligation of the District, any of which reflect financial difficulties. Neither the Bonds or the Bond Order make any provision for debt service reserve or a trustee.

The District shall notify the MSRB in an electronic format prescribed by the MSRB, in a timely manner, of any failure by the District to provide financial information or operating data in accordance with the Rule. All documents provided to the MSRB pursuant to this section shall be accompanied by identifying information as prescribed by the MSRB.

For these purposes, (A) any event described in clause (12) in the immediately preceding paragraph is considered to occur when any of the following occur: the appointment of a receiver, fiscal agent, or similar officer for the District in a proceeding under the United States Bankruptcy Code or in any other proceeding under state or federal law in which a court or governmental authority has assumed jurisdiction over substantially all of the assets or business of the District, or if such jurisdiction has been assumed by leaving the existing governing body and officials or officers in possession but subject to the supervision and orders of a court or governmental authority, or the entry of an order confirming a plan of reorganization, arrangement, or liquidation by a court or

governmental authority having supervision or jurisdiction over substantially all of the assets or business of the District. As used in this section, the term "Financial Obligation" means a (i) debt obligation, (ii) derivative instrument entered into in connection with, or pledged as security or a source of payment for, an existing or planned debt obligation, or (iii) guarantee of a debt obligation or any such derivative instrument; provided that "Financial Obligation" shall not include municipal securities as to which a final official statement (as defined in Securities and Exchange Commission Rule 15c2-12 (the "Rule")) has been provided to the MSRB consistent with the Rule. The District intends the words used in the above clauses (15) and (16) and in the definition of Financial Obligation above to have the meanings ascribed to them in SEC Release No. 34-83885 dated August 20, 2018.

AVAILABILITY OF INFORMATION FROM THE MSRB . . . The District has agreed to provide the foregoing information only to the MSRB. All documents provided by the District to the MSRB described above under "Annual Reports" and "Notice of Certain Events" will be in an electronic format and accompanied by identifying information as prescribed by the MSRB.

The address of the MSRB is 1900 Duke Street, Suite 600, Alexandria, VA 22314, and its telephone number is (703) 797-6600.

LIMITATIONS AND AMENDMENTS . . . The District has agreed to update information and to provide notices of specified events only as described above. The District has not agreed to provide other information that may be relevant or material to a complete presentation of its financial results of operations, condition, or prospects or agreed to update any information that is provided, except as described above. The District makes no representation or warranty concerning such information or concerning its usefulness to a decision to invest in or sell Bonds at any future date. The District disclaims any contractual or tort liability for damages resulting in whole or in part from any breach of its continuing disclosure agreement or from any statement made pursuant to its agreement, although Registered Owners may seek a writ of mandamus to compel the District to comply with its agreement.

This continuing disclosure agreement may be amended by the District from time to time to adapt to changed circumstances that arise from a change in legal requirements, a change in law, or a change in the identity, nature, status, or type of operations of the District, but only if (1) the provisions, as so amended, would have permitted an underwriter to purchase or sell Bonds in the primary offering of the Bonds in compliance with the Rule, taking into account any amendments or interpretations of the Rule since such offering as well as such changed circumstances and (2) either (a) the holders of a majority in aggregate principal amount (or any greater amount required by any other provision of the Bond Order that authorizes such an amendment) of the outstanding Bonds consent to such amendment or (b) a person that is unaffiliated with the District (such as nationally recognized bond counsel) determined that such amendment will not materially impair the interest of the Holders and beneficial owners of the Bonds. The District may also amend or repeal the provisions of this continuing disclosure agreement if the SEC amends or repeals the applicable provision of the Rule or a court of final jurisdiction enters judgment that such provisions of the Rule are invalid, but only if and to the extent that the provisions of this sentence would not prevent an underwriter from lawfully purchasing or selling Bonds in the primary offering of the Bonds.

COMPLIANCE WITH PRIOR UNDERTAKINGS . . . In the last five years, the District has complied in all material respects with all continuing disclosure agreements made by it in accordance with the Rule.

FINANCIAL ADVISOR

The Official Statement was compiled and edited under the supervision of Specialized Public Finance Inc. (the "Financial Advisor"), which firm is currently employed as Financial Advisor to the District. The fees paid to the Financial Advisor for services rendered in connection with the issuance and sale of the Bonds are based on a percentage of the Bonds actually issued, sold and delivered, and therefore such fees are contingent on the sale and delivery of the Bonds. The Financial Advisor has reviewed the information in this Official Statement in accordance with, and as a part of, its responsibilities to the issuer and, as applicable, to investors under the federal securities laws as applied to the facts and circumstances of this transaction, but the Financial Advisor does not guarantee the accuracy or completeness of such information.

OFFICIAL STATEMENT

UPDATING THE OFFICIAL STATEMENT DURING UNDERWRITING PERIOD . . . If, subsequent to the date of the Official Statement to and including the date the Initial Purchaser is no longer required to provide and Official Statement to potential customers who request the same pursuant to the Rule (the earlier of (i) 90 days from the "end of the underwriting period" (as defined in the Rule) and (ii) the time when the Official Statement is available to any person from a nationally recognized repository but in no case less than 25 days after the "end of the underwriting period"), the District learns or is notified by the Initial Purchaser of any adverse event which causes any of the key representations in the Official Statement to be materially misleading, the District will promptly prepare and supply to the Initial Purchaser a supplement to the Official Statement which corrects such representation to the reasonable satisfaction of the Initial Purchaser, unless the Initial Purchaser elects to terminate its obligation to purchase the Bonds as described in the Notice of Sale under the heading "DELIVERY OF THE BONDS AND ACCOMPANYING DOCUMENTS – Delivery." The obligation of the District to update or change the Official Statement will terminate when the District delivers the Bonds to the Initial Purchaser (the "end of the underwriting period" within the meaning of the Rule), unless the Initial Purchaser provides written notice the District that less than all of the Bonds have been sold to ultimate customers on or before such date, in which case the obligation to update or change the Official Statement will extend for an additional period of time of 25 days after all of the Bonds have been sold to ultimate customers. In the event the Initial Purchaser provides written notice to the District that

less than all of the Bonds have been sold to ultimate customers, the Initial Purchaser agrees to notify the District in writing following the occurrence of the "end of the underwriting period" as defined in the Rule.

CERTIFICATION AS TO OFFICIAL STATEMENT . . . The District, acting by and through its Board of Directors in its official capacity in reliance upon the experts listed above, hereby certifies, as of the date hereof, that to the best of its knowledge and belief, the information, statements and descriptions pertaining to the District and its affairs herein contain no untrue statements of a material fact and do not omit to state any material fact necessary to make the statements herein, in light of the circumstances under which they were made, not misleading. The information, description and statements concerning entities other than the District, including particularly other governmental entities, have been obtained from sources believed to be reliable, but the District has made no independent investigation or verification of such matters and makes no representation as to the accuracy or completeness thereof. Except as set forth in "CONTINUING DISCLOSURE OF INFORMATION" herein, the District has no obligation to disclose any changes in the affairs of the District and other matters described in this Official Statement subsequent to the "end of the underwriting period" which shall end when the District delivers the Bonds to the Initial Purchaser at closing, unless extended by the Initial Purchaser. All information with respect to the resale of the Bonds subsequent to the "end of the underwriting period" is the responsibility of the Initial Purchaser.

ANNUAL AUDITS . . . Under Texas Law, the District must keep its fiscal records in accordance with generally accepted accounting principles. It must also have its financial accounts and records audited by a certified or permitted public accountant within 120 days after the close of each fiscal year of the District and must file each audit report with the TCEQ within 135 days after the close of the fiscal year so long as the District has bond outstanding. Copies of each audit report must also be filed in the office of the District. The District's fiscal records and audit reports are available for public inspection during regular business hours, and the District is required by law to provide a copy of the District's audit reports to any Registered Owner or other member of the public within a reasonable time on request, upon payment of prescribed charges.

This Official Statement was approved by the Board of Directors of Headwaters Municipal Utility District of Hays County, as of the date shown on the first page hereof.

Secretary, Board of Directors Headwaters Municipal Utility District of Hays County	President, Board of Directors Headwaters Municipal Utility District of Hays County

LOCATION MAP

PHOTOGRAPHS

The homes shown in the attached photographs are representative of the type of construction presently located within the District, and these photographs are presented solely to illustrate such construction.

The District makes no representation that any additional construction such as that as illustrated in the following photographs will occur in the District. See “THE DISTRICT.”

APPENDIX A

EXCERPTS FROM THE ANNUAL FINANCIAL REPORT

The information contained in this APPENDIX has been excerpted from the financial statements of Headwaters Municipal Utility District of Hays County for the fiscal year ended December 31, 2024, as prepared by the District's auditor West, Davis & Company, LLP.

APPENDIX B

FORM OF BOND COUNSEL'S OPINION

APPENDIX C

FORM OF SPECIAL TAX COUNSEL'S OPINION

DRIPPING SPRINGS
Texas

Contract Cover Sheet

Contract Number	CLD10072025 *Use first three letters of contractor and date of approval. Ex: contract approved for HDR on Jan.18, 2022 the Contract number is **HDR20220118**. If administratively approved, use the date the contract is submitted to the city signator.*
Contractor with Contact Information	*Company:* City Lights Design Alliance *POC:* Keenan E. Smith *Address:* 18320 Shepherds Corral, Dripping Springs, Tx 78620 *Phone Number:* 512-659-5062
Effective Date	October 7th 2025
Termination Date	September 30th 2026
Renewal/ Termination Notice Date	30 days
Bid/Quotes/ Budgeted	Amendment to current agreement. Not to exceed $43,200 for the year at $150 an hour.
Department	TIRZ/Finance
Reporting Requirements	*Insurance Certificate:* ☑ YES ☐ NA *Conflict Disclosure:* ☑ YES ☐ NA *1295 Reporting:* ☑ YES ☐ NA *Other Reporting Requirements:*
Council Meeting Date (if applicable)	October 7th 2025

CLD10072025

PROFESSIONAL SERVICES AGREEMENT
TIRZ PROJECT MANAGER SERVICES

THIS AGREEMENT made and entered into this, the 7th day of October 2025, and between the **City of Dripping Springs**, Texas (hereinafter referred to as the "City") and **Keenan E. Smith**, AIA, dba: City Lights Design Alliance, (hereinafter referred to as "Consultant"), is understood and agreed to be as set forth herein:

1. Description of Services:

Project Management, Staff Support, and Coordination Services for TIRZ #1 & #2 "Project Management" Selected Projects. Consultant shall assist the Client by providing the described services for Project Management, Staff Support and Coordination Services for Specified TIRZ Priority Projects for TIRZ #1 & #2, Dripping Springs, TX 78620:

(1) Stephenson Building & Downtown Parking Lot
(2) Old Fitzhugh Road
(3) Mercer Street Paseo

All services will be provided and performed at the Client's sole direction. Professional Fees will be invoiced per the Compensation Schedule, not to exceed budgeted caps without prior authorization.

Project Management / Liaison & Staff Support / Coordination Services*

B) **Project Management-** TIRZ #1 & #2: (*for specified projects- tasks may vary)
(1) Project Team(s): (Administer RFQ's; coordinate Team vetting & selection process; manage Team organization)
(2) Project Tasks, Studies & Plans: (Oversee tasks, plans and implementation; ensure schedules & budgets; review & direct deliverable products, cost estimates, reports, consultant invoices, etc.)

C) **Liaison** & **Staff Support-** to TIRZ Entities, Partners & Stakeholders
(1) TIRZ #1 & #2 Board of Directors (Staff Support; Advisor)
(2) City of Dripping Springs (Liaison; Advisor)
(3) Hays County (Liaison; Advisor)
(4) Dripping Springs Community Library (Liaison; Advisor)
(5) TIRZ Landowners & Developers (Liaison; Advisor)

D) **Coordination Services-** with TIRZ Team(s)
(1) TIRZ Administrators
(2) TIRZ Financial Advisors & Consultants
(3) TIRZ Legal Counsel (City Attorney)

2. Payment for Services:

The City will compensate Consultant at the rate of $150 an hour for Project Coordination & Liaison Fees, on a Budgeted Average of 24 hrs./mo., with a capped annual amount of $43,200/yr. Additional services or fees may be agreed to in writing by both parties. Payment terms: Net due on receipt of monthly invoice.

3. **Duration:**
   - A) **Begin Services** October 7, 2025
   - B) **End Services** September 30, 2026 (end of Fiscal Year)
   - C) **Renewal Option** Annually or as mutually agreed - rates to be negotiated

4. **Conditions and Termination:**
   Fees and Expenses are estimates strictly for the scope of work outlined. Any Addenda to Scope of Work, if approved and directed by Client, are subject to billing at standard hourly fee schedule (above).

   Either party may terminate this agreement at any time upon thirty (30) days written notice.

5. **Exclusions:**
   Provision of construction documents; surveying, structural, electrical, civil, geo-technical or mechanical engineering services.

6. **Limit of Liability:**
   To the fullest extent permitted by law, the Consultant's total liability to the Client for any and all injuries, claims, losses, expenses damages or claim expenses arising out of the Consultant's performance under this agreement, other than what is insurable by Consultant's insurance policies, shall not exceed the amount of the total fees paid to the Consultant. Such causes include, but not limited to, the Consultant's negligence, errors, omissions, strict liability, breach of contract or breach of warranty. The Consultant's liability does not extend to construction and design activities performed by third parties related to this Agreement.

7. **Termination:** Either party may terminate this Agreement by a thirty (30) day written notice.

8. **Relationship of Parties:**
   It is understood by the parties that Consultant is an independent contractor with respect to the City and not an employee of the City. City will not provide fringe benefits, including health insurance benefits, paid vacation, or any employee benefit, for the benefit of Consultant. The City may contract with other individuals or firms for project management services.

9. **Conflicts of Interest:**
   During the period the Consultant is covered by this agreement, the Consultant will contact the City and TIRZ Board in writing if a potential conflict of interest with a third-party client may exist. If the TIRZ Board or the City Council finds that a project for a third-party client of the Consultant has a direct conflict with the TIRZs, the TIRZ Board or the City Council

shall contact the Consultant in writing. If the conflict of interest cannot be resolved to either party's satisfaction, either the Consultant or the City Council may terminate this Agreement with seven (7) days' notice to the other party.

10. **Mandatory Disclosures**: Texas law requires that vendors make certain disclosures. Prior to the effective date of this Contract, the Contractor has submitted to the City a copy of the Conflict of lnterest Questionnaire form (CIQ Form) approved by the Texas Ethics Commission (Texas Local Government Code Chapter 176), and the Contractor shall file a Form 1295 Certificate of lnterested Parties (Form 1295) approved by the Texas Ethics Commission (Texas Government Code Section 2252.908). The Contractor also confirms it is in compliance with all Texas requirements related to government contracts including: (1) no boycott of Israel; (2) not listed as a foreign terrorist organization by the Texas Comptroller of Public Accounts; (3) Contractor does not have a policy or practice of discriminating against firearm entities or firearm trade associations; (4) Contractor does not boycott energy companies; and Contractor is compliant with all other Texas laws including any additional disclosure requirements.

11. **Injuries/Insurance:**
Consultant acknowledges his obligation to obtain appropriate insurance coverage for the benefit of Consultant's employees, if any. Consultant waives the rights to recovery from City for any injuries that Consultant and/or Consultant's employees may sustain while performing services under this Agreement. Consultant is to provide a copy of insurance coverage to City at least ten (10) days prior to end of any existing coverage period if Consultant uses the services of any of Consultant's employees for the provision of services to the City.

12. **Assignment:**
Consultant's obligation under this Agreement may not be assigned or transferred to any other person, firm, or corporation without the prior written consent of City.

13. **Notice:**
All notice required or permitted under this Agreement shall be in writing and shall be delivered either in person or deposited in the United States mail, postage prepaid, addressed as follows:

For the City:
City of Dripping Springs
Attn: City Administrator
PO Box 384
Dripping Springs, TX 78620
(512) 858-4725

For the Contractor:
City Lights Design Alliance
Attn: Keenan Smith, AIA
18320 Shepherds Corral
Dripping Springs, TX 78620
(512) 659-5062

14. **Entire Agreement:**
This Agreement contains the entire Agreement of the parties and there are no other promises or conditions in any other Agreement whether oral or written. This Agreement supersedes and prior written agreements between the parties.

15. Amendment:
This agreement may be modified or amended only if the amendment is made in writing and is signed by both parties.

16. Severability:
If any provision of this Agreement shall be held to be invalid or unenforceable, then such provision shall be deemed to be written, construed, and enforced as so limited.

17. Waiver of Contractual Right:
The failure of any party to enforce any provision of this Agreement shall not be construed as a waiver of that party's right to subsequently enforce and compel strict compliance with every provision of the Agreement.

18. Applicable Law:
The laws of the State of Texas shall govern this Agreement.

19. Venue:
The venue for any and all legal disputes arising under this Agreement shall be Hays County, Texas.

CITY OF DRIPPING SPRINGS:	**CITY LIGHTS DESIGN ALLIANCE:**
_____	_____
Michelle Fischer, City Administrator	Keenan Smith, AIA
_____	_____
Date	Date

CLD10072025

PROFESSIONAL SERVICES AGREEMENT
TIRZ PROJECT MANAGER SERVICES

THIS AGREEMENT made and entered into this, the 7th day of October 2025, and between the **City of Dripping Springs**, Texas (hereinafter referred to as the "City") and **Keenan E. Smith**, AIA, dba: City Lights Design Alliance, (hereinafter referred to as "Consultant"), is understood and agreed to be as set forth herein:

1. Description of Services:

Project Management, Staff Support, and Coordination Services for TIRZ #1 & #2 "Project Management" Selected Projects. Consultant shall assist the Client by providing the described services for Project Management, Staff Support and Coordination Services for Specified TIRZ Priority Projects for TIRZ #1 & #2, Dripping Springs, TX 78620:

(1) Stephenson Building & Downtown Parking Lot
(2) Old Fitzhugh Road
(3) Mercer Street Paseo

All services will be provided and performed at the Client's sole direction. Professional Fees will be invoiced per the Compensation Schedule, not to exceed budgeted caps without prior authorization.

Project Management / Liaison & Staff Support / Coordination Services*

B) **Project Management**- TIRZ #1 & #2: (*for specified projects- tasks may vary)
(1) Project Team(s): (Administer RFQ's; coordinate Team vetting & selection process; manage Team organization)
(2) Project Tasks, Studies & Plans: (Oversee tasks, plans and implementation; ensure schedules & budgets; review & direct deliverable products, cost estimates, reports, consultant invoices, etc.)

C) **Liaison** & **Staff Support-** to TIRZ Entities, Partners & Stakeholders
(1) TIRZ #1 & #2 Board of Directors (Staff Support; Advisor)
(2) City of Dripping Springs (Liaison; Advisor)
(3) Hays County (Liaison; Advisor)
(4) Dripping Springs Community Library (Liaison; Advisor)
(5) TIRZ Landowners & Developers (Liaison; Advisor)

D) **Coordination Services-** with TIRZ Team(s)
(1) TIRZ Administrators
(2) TIRZ Financial Advisors & Consultants
(3) TIRZ Legal Counsel (City Attorney)

2. Payment for Services:

The City will compensate Consultant at the rate of $150 an hour for Project Coordination & Liaison Fees, on a Budgeted Average of 24 hrs./mo., with a capped annual amount of $43,200/yr. Additional services or fees may be agreed to in writing by both parties. Payment terms: Net due on receipt of monthly invoice.

3. **Duration:**
   - A) **Begin Services** October 7, 2025
   - B) **End Services** September 30, 2026 (end of Fiscal Year)
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5. **Exclusions:**
   Provision of construction documents; surveying, structural, electrical, civil, geo-technical or mechanical engineering services.

6. **Limit of Liability:**
   To the fullest extent permitted by law, the Consultant's total liability to the Client for any and all injuries, claims, losses, expenses damages or claim expenses arising out of the Consultant's performance under this agreement, other than what is insurable by Consultant's insurance policies, shall not exceed the amount of the total fees paid to the Consultant. Such causes include, but not limited to, the Consultant's negligence, errors, omissions, strict liability, breach of contract or breach of warranty. The Consultant's liability does not extend to construction and design activities performed by third parties related to this Agreement.

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Attn: Keenan Smith, AIA
18320 Shepherds Corral
Dripping Springs, TX 78620
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This Agreement contains the entire Agreement of the parties and there are no other promises or conditions in any other Agreement whether oral or written. This Agreement supersedes and prior written agreements between the parties.

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The failure of any party to enforce any provision of this Agreement shall not be construed as a waiver of that party's right to subsequently enforce and compel strict compliance with every provision of the Agreement.

18. Applicable Law:
The laws of the State of Texas shall govern this Agreement.

19. Venue:
The venue for any and all legal disputes arising under this Agreement shall be Hays County, Texas.

CITY OF DRIPPING SPRINGS:	CITY LIGHTS DESIGN ALLIANCE:
_____	_____
Michelle Fischer, City Administrator	Keenan Smith, AIA
_____	_____
Date	Date

DRIPPING SPRINGS
Texas

Professional Services Agreement: TIRZ Project Manager Services

Laura Mueller, City Attorney

Agreement Overview & Scope of Work

Date: October 7, 2025
Parties:
•City of Dripping Springs, TX (Client)
•City Lights Design Alliance (Consultant: Keenan E. Smith, AIA)

Scope of Services: TIRZ Project Management
Consultant will support **TIRZ #1 & #2** priority projects:
1.Stephenson Building & Downtown Parking Lot
2.Old Fitzhugh Road
3.Mercer Street Paseo

- Keenan Smith has been the TIRZ Project Manager since 2016.
- Will only continue with current projects.
- City will need to manage future TIRZ Projects.

DRIPPING SPRINGS
Texas

Key Responsibilities

- **Project Management:**
  - Team coordination, RFQ administration
  - Oversight of tasks, budgets, and deliverables
- **Liaison & Staff Support:**
  - Boards: TIRZ #1 & #2, City, County, Library, Landowners
- **Coordination Services:**
  - With TIRZ Administrators, Legal Counsel, Financial Advisors

Compensation & Term

- **Rate:** $150/hour
- **Avg. Hours:** 24/month
- **Cap:** $43,200/year
- **Term:** Oct 7, 2025 – Sep 30, 2026
- **Renewal:** Annual, subject to negotiation

DRIPPING SPRINGS
Texas

Staff Recommendations and Next Steps

Staff Recommends Approval

Keenan will continue with Current Projects.

City Administration will work with City Staff and Engineer on any future TIRZ Project Management.

DRIPPING SPRINGS
Texas

QUESTIONS?

DRIPPING SPRINGS
Texas

DRIPPING SPRINGS
Texas

To: Mayor Bill Foulds, Jr. and City Council, City of Dripping Springs

From: Shawn Cox, Deputy City Administrator

Date: October 7, 2025

RE: August 2025 City Treasurer's Report

General Fund:

The General Fund received **$512,752.34** in revenues for August.

General Fund revenues are in line with the amended budget. Line items of note include:

- 100-000-40001: Sales Tax Revenue – $421,221.35 was received in August, of which $323,369.03 is considered City Revenues and is not allocated to either the Utility Fund or through agreements. This is a 1.62% increase from August 2024 collections.
- 100-000-46014: Transportation Improvements Reimbursements – The City received $65,697.12 in reimbursements from TxDOT. This is related to eh Mercer Street Sidewalk Project. Additional reimbursements have been requested and are being processed.
- 100-200-43030: Subdivision Fees – In August, the City received $200,589.00 in Subdivision fees. This brings the FY25 total to $716,696.45, or $200,696.45 more than was projected.
- 100-201-43031: Building Code Fees – The City received $171,930.75 in Building Code Fees in August.

General Fund expenditures are in line with the amended budget.

Utility Fund:

The Utility Fund received **$442,900.49** in revenues for August.

Utility Fund revenues are in line with the projected budget. Line items of note include:

- 400-300-43018: Wastewater Service Fees – The Utility Fund received $124,483.63 in Wastewater Fees.
- 400-300-43048: Reclaimed Water Use Fee – In August, the Utility Fund received $24,022.90 in reclaimed water fees.
- 400-301-43041: Water Usage – Though August, $391,842.62, This is $91,842.62 more than originally amended.
- 400-320-47009: Sales Tax – $84,237.46 was deposited into the Utility Fund for the August Sales Tax allocation.

Utility Fund expenditures are in line with the projected budget.

Dripping Springs Ranch Park (DSRP):

The Ranch Park received **$24,370.08** in August.

DSRP revenues are in line with the amended budget. Line items of note include:

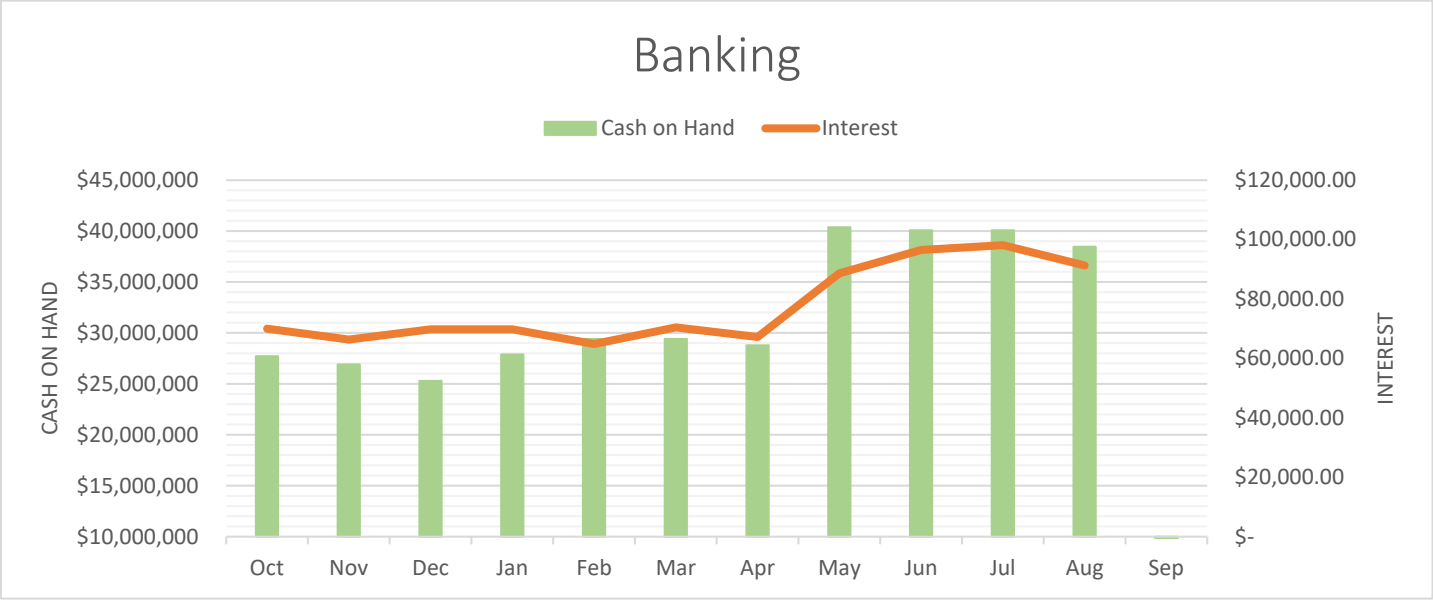
DRIPPING SPRINGS
Texas

- 200-401-43012: Facility Rental Fees – In August, the DSRP collected $16,962.50 in rental fees, bring the total collected to $122,694.25, which is $444.25 more than anticipated.
- 200-401-43013: Equipment Rental Fees – The DSRP collected $2,705.00 in equipment rental fees in August.
- 200-401-43015: Cleaning Fees - $2,850.00 was collected in Cleaning Fees.

DSRP expenditures are in line with the amended budget.

Banking:

On August 31st, the City's cash balance was **$38.461 Million**. This is a 4.0% decrease from the previous month's cash balances. At the end of August is when our Debt Series 2013 ($81,743.75) and Debt Series 2025 ($851,700.00) were paid. This is the primary driver behind the balance decrease. A total of **$91,234.47** was collected in interest revenues in August.



City of Dripping Springs, TX

Budget Report
Account Summary

For Fiscal: FY 2024-2025 Period Ending: 08/31/2025

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
Fund: 100 - General Fund							
Revenue							
Department: 000 - Undesignated							
100-000-40000	Ad Valorem Tax	3,707,356.54	3,726,162.68	15,833.01	3,720,354.61	-5,808.07	0.16 %
100-000-40001	Sales Tax Revenue	4,500,000.00	4,900,000.00	421,221.35	4,557,354.60	-342,645.40	6.99 %
100-000-40002	Mixed Beverage	100,000.00	26,976.63	0.00	26,976.63	0.00	0.00 %
100-000-40006	Ad Valorem Tax Penalty/Interest	4,000.00	13,531.83	1,407.42	14,939.25	1,407.42	110.40 %
100-000-41000	Solid Waste Franchise Fee	55,000.00	60,000.00	0.00	40,977.90	-19,022.10	31.70 %
100-000-42000	Alcohol Permit Fees	6,500.00	5,868.50	105.00	5,972.50	104.00	101.77 %
100-000-46001	Other Revenues	40,000.00	40,000.00	-424,094.39	1,376,893.38	1,336,893.38	3,442.23 %
100-000-46002	Interest	150,000.00	210,000.00	12,953.80	200,159.09	-9,840.91	4.69 %
100-000-46011	Coronavirus Local Fiscal Recovery F	0.00	0.00	0.00	50.00	50.00	0.00 %
100-000-46013	Opioid Abatement	0.00	0.00	0.00	241.78	241.78	0.00 %
100-000-46014	Transportation Improvements Reim	1,010,000.00	1,337,000.00	65,697.12	121,245.42	-1,215,754.58	90.93 %
100-000-47005	Transfer from HOT Fund	55,000.00	255,000.00	0.00	0.00	-255,000.00	100.00 %
100-000-47010	Transfer from Wastewater Fund	0.00	12,500.00	0.00	0.00	-12,500.00	100.00 %
100-000-47013	Transfer From TIRZ	0.00	100,000.00	0.00	0.00	-100,000.00	100.00 %
100-000-47016	Transfer from Sidewalk Fund	29,000.00	29,000.00	0.00	0.00	-29,000.00	100.00 %
100-000-47019	Transfer from Series 2025	0.00	383,000.00	0.00	0.00	-383,000.00	100.00 %
	Department: 000 - Undesignated Total:	**9,656,856.54**	**11,099,039.64**	**93,123.31**	**10,065,165.16**	**-1,033,874.48**	**9.31%**
Department: 105 - Communications							
100-105-44000	Sponsorships & Donations	0.00	0.00	700.00	700.00	700.00	0.00 %
100-105-46006	Merchandise	0.00	0.00	0.00	-239.83	-239.83	0.00 %
	Department: 105 - Communications Total:	**0.00**	**0.00**	**700.00**	**460.17**	**460.17**	**0.00%**
Department: 200 - Planning & Development							
100-200-42001	Health Permits/Inspections	75,000.00	65,000.00	4,035.00	56,920.00	-8,080.00	12.43 %
100-200-43000	Site Development Fees	400,000.00	63,000.00	21,069.28	84,279.60	21,279.60	133.78 %
100-200-43002	Zoning Fees	65,000.00	68,500.00	0.00	7,635.00	-60,865.00	88.85 %
100-200-43030	Subdivision Fees	295,100.00	516,000.00	200,589.00	716,696.45	200,696.45	138.89 %
	Department: 200 - Planning & Development Total:	**835,100.00**	**712,500.00**	**225,693.28**	**865,531.05**	**153,031.05**	**21.48%**
Department: 201 - Building							
100-201-42001	Health Permit	0.00	0.00	-90.00	-90.00	-90.00	0.00 %
100-201-42007	Sign Permits	0.00	0.00	11,045.00	71,191.15	71,191.15	0.00 %
100-201-43029	Fire Inspections	50,000.00	40,000.00	5,138.00	42,568.50	2,568.50	106.42 %
100-201-43031	Building Code Fees	1,500,000.00	1,600,000.00	171,930.75	1,525,645.41	-74,354.59	4.65 %
	Department: 201 - Building Total:	**1,550,000.00**	**1,640,000.00**	**188,023.75**	**1,639,315.06**	**-684.94**	**0.04%**
Department: 400 - Parks & Recreation							
100-400-44000	Sponsorships & Donations	5,500.00	5.00	0.00	6,676.00	6,671.00	133,520.00 %
100-400-44001	Community Service Fees	1,800.00	1,800.00	0.00	805.00	-995.00	55.28 %
100-400-44002	Program & Event Fees	9,500.00	9,500.00	0.00	3,419.00	-6,081.00	64.01 %
100-400-44004	Park Rental Income	6,000.00	8,980.00	910.00	7,285.00	-1,695.00	18.88 %
100-400-47002	Transfer from Parkland Dedication	8,500.00	8,500.00	0.00	0.00	-8,500.00	100.00 %
100-400-47003	Transfer from Landscaping Fund	60,000.00	60,000.00	0.00	0.00	-60,000.00	100.00 %
100-400-47005	Transfer from HOT Fund	16,500.00	16,500.00	0.00	0.00	-16,500.00	100.00 %
	Department: 400 - Parks & Recreation Total:	**107,800.00**	**105,285.00**	**910.00**	**18,185.00**	**-87,100.00**	**82.73%**
Department: 402 - Aquatics							
100-402-44003	Aquatic Fees	41,750.00	49,118.15	2,662.00	28,388.40	-20,729.75	42.20 %
100-402-44004	Park Rental Income	21,235.00	21,517.75	440.00	23,497.75	1,980.00	109.20 %
100-402-46012	Reimbursement of Utility Costs	0.00	4,790.00	1,200.00	3,230.00	-1,560.00	32.57 %
	Department: 402 - Aquatics Total:	**62,985.00**	**75,425.90**	**4,302.00**	**55,116.15**	**-20,309.75**	**26.93%**

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
Department: 404 - Founders Day							
100-404-43012	FD Facility Rental	0.00	8,000.00	0.00	0.00	-8,000.00	100.00 %
100-404-45000	FD Craft/Business Booths	7,540.00	7,020.00	0.00	7,020.00	0.00	0.00 %
100-404-45001	FD Food Booths	1,500.00	1,612.50	0.00	9,251.25	7,638.75	573.72 %
100-404-45002	FD BBQ Cooker Registration Fees	5,115.00	6,650.00	0.00	0.00	-6,650.00	100.00 %
100-404-45003	FD Carnival	15,000.00	20,265.63	0.00	20,265.63	0.00	0.00 %
100-404-45004	FD Parade Registration Fees	4,675.00	3,910.00	0.00	3,995.00	85.00	102.17 %
100-404-45005	FD Sponsorships	100,000.00	121,700.00	0.00	132,800.00	11,100.00	109.12 %
100-404-45006	FD Parking Fees	500.00	500.00	0.00	0.00	-500.00	100.00 %
100-404-45007	FD Electric Fees	3,000.00	3,300.00	0.00	2,220.00	-1,080.00	32.73 %
	Department: 404 - Founders Day Total:	**137,330.00**	**172,958.13**	**0.00**	**175,551.88**	**2,593.75**	**1.50%**
	Revenue Total:	**12,350,071.54**	**13,805,208.67**	**512,752.34**	**12,819,324.47**	**-985,884.20**	**7.14%**
Expense							
Department: 000 - Undesignated							
100-000-60000	Salaries	3,936,374.84	3,594,295.82	0.00	0.00	3,594,295.82	100.00 %
100-000-61000	Health Insurance	315,432.63	288,020.89	5,677.98	64,442.40	223,578.49	77.63 %
100-000-61001	Dental Insurance	0.00	0.00	0.00	4.54	-4.54	0.00 %
100-000-61002	Medicare	0.00	0.00	6.54	95.49	-95.49	0.00 %
100-000-61003	Social Security	0.00	0.00	27.90	408.17	-408.17	0.00 %
100-000-61004	Unemployment	0.00	0.00	7.20	96.00	-96.00	0.00 %
100-000-61005	Federal Withholding	309,012.18	282,158.39	0.00	0.00	282,158.39	100.00 %
100-000-61006	TMRS	214,341.87	195,715.12	0.00	34.81	195,680.31	99.98 %
100-000-62009	Human Resources Consultant	38,200.00	32,000.00	1,988.93	29,991.56	2,008.44	6.28 %
100-000-63004	Dues, Fees & Subscriptions	74,462.85	125,000.00	9,445.77	128,193.58	-3,193.58	-2.55 %
100-000-63005	Training/Continuing Education	100,000.00	85,000.00	6,367.23	65,455.59	19,544.41	22.99 %
100-000-64000	Office Supplies	37,000.00	25,000.00	2,085.11	21,653.31	3,346.69	13.39 %
100-000-64004	Office Furniture and Equipment	10,000.00	10,000.00	0.00	3,176.48	6,823.52	68.24 %
100-000-66002	Postage & Shipping	4,500.00	4,500.00	52.64	3,383.04	1,116.96	24.82 %
100-000-68004	Animal Control	3,400.00	3,400.00	0.00	0.00	3,400.00	100.00 %
100-000-69002	Economic Development	5,000.00	5,000.00	0.00	5,000.00	0.00	0.00 %
100-000-70001	Mileage	2,000.00	1,200.00	0.00	0.00	1,200.00	100.00 %
100-000-70002	Contingencies/Emergency Fund	62,000.00	10,000.00	0.00	6,484.69	3,515.31	35.15 %
100-000-70003	Other Expenses	10,000.00	5,000.00	0.00	74,199.79	-69,199.79	-1,384.00 %
100-000-90000	Transfer to Reserve Fund	500,000.00	300,000.00	0.00	0.00	300,000.00	100.00 %
100-000-90002	Transfer to TIRZ	575,566.14	575,566.14	0.00	0.00	575,566.14	100.00 %
100-000-90013	Transfer to Vehicle Replacement Fu	115,083.55	115,083.55	0.00	0.00	115,083.55	100.00 %
100-000-90015	Transfer to Farmers Marke	16,542.01	16,542.01	0.00	0.00	16,542.01	100.00 %
	Department: 000 - Undesignated Total:	**6,328,916.07**	**5,673,481.92**	**25,659.30**	**402,619.45**	**5,270,862.47**	**92.90%**
Department: 100 - City Council/Boards & Commissions							
100-100-63004	Dues, Fees & Subscriptions	0.00	0.00	0.00	195.00	-195.00	0.00 %
100-100-64004	Office Furniture and Equipment	0.00	0.00	0.00	763.21	-763.21	0.00 %
100-100-69000	Family Violence Center	7,000.00	7,000.00	0.00	7,000.00	0.00	0.00 %
100-100-69008	Land Acquisition	10,000.00	0.00	0.00	0.00	0.00	0.00 %
	Department: 100 - City Council/Boards & Commissions Total:	**17,000.00**	**7,000.00**	**0.00**	**7,958.21**	**-958.21**	**-13.69%**
Department: 101 - City Administrators Office							
100-101-60000	Regular Employees	0.00	0.00	53,292.04	591,922.82	-591,922.82	0.00 %
100-101-60002	Overtime	0.00	0.00	104.64	419.67	-419.67	0.00 %
100-101-61000	Health Insurance	0.00	0.00	2,082.14	23,440.55	-23,440.55	0.00 %
100-101-61001	Dental Insurance	0.00	0.00	134.80	1,617.60	-1,617.60	0.00 %
100-101-61002	Medicare	0.00	0.00	726.78	8,186.57	-8,186.57	0.00 %
100-101-61003	Social Security	0.00	0.00	3,107.58	31,758.51	-31,758.51	0.00 %
100-101-61004	Unemployment	0.00	0.00	0.00	864.01	-864.01	0.00 %
100-101-61006	TMRS	0.00	0.00	2,927.81	34,264.28	-34,264.28	0.00 %
	Department: 101 - City Administrators Office Total:	**0.00**	**0.00**	**62,375.79**	**692,474.01**	**-692,474.01**	**0.00%**
Department: 102 - City Secretary							
100-102-60000	Regular Employees	0.00	0.00	10,624.97	127,285.57	-127,285.57	0.00 %
100-102-60001	Part-time Employees	0.00	0.00	3,124.00	19,668.40	-19,668.40	0.00 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
100-102-60002	Overtime	0.00	0.00	20.16	501.39	-501.39	0.00 %
100-102-61000	Health Insurance	0.00	0.00	1,024.80	12,289.99	-12,289.99	0.00 %
100-102-61001	Dental Insurance	0.00	0.00	67.40	808.80	-808.80	0.00 %
100-102-61002	Medicare	0.00	0.00	197.16	2,099.57	-2,099.57	0.00 %
100-102-61003	Social Security	0.00	0.00	843.05	8,977.36	-8,977.36	0.00 %
100-102-61004	Unemployment	0.00	0.00	26.14	545.57	-545.57	0.00 %
100-102-61006	TMRS	0.00	0.00	614.22	7,392.66	-7,392.66	0.00 %
100-102-62000	Municipal Election	8,000.00	0.00	0.00	0.00	0.00	0.00 %
100-102-62018	Code Publication	6,461.47	6,461.47	0.00	0.00	6,461.47	100.00 %
100-102-64032	Meeting Supplies	3,120.00	10,000.00	1,137.63	10,117.51	-117.51	-1.18 %
100-102-66003	Public Notices	2,600.00	6,000.00	259.40	5,545.77	454.23	7.57 %
100-102-69003	Records Management	720.00	3,000.00	151.50	2,448.00	552.00	18.40 %
	Department: 102 - City Secretary Total:	**20,901.47**	**25,461.47**	**18,090.43**	**197,680.59**	**-172,219.12**	**-676.39%**
Department: 103 - Courts							
100-103-62003	Muni Court Attorney/ Judge	15,500.00	8,000.00	1,520.00	6,900.00	1,100.00	13.75 %
	Department: 103 - Courts Total:	**15,500.00**	**8,000.00**	**1,520.00**	**6,900.00**	**1,100.00**	**13.75%**
Department: 104 - City Attorney							
100-104-60000	Regular Employees	0.00	0.00	22,004.58	263,670.56	-263,670.56	0.00 %
100-104-61000	Health Insurance	0.00	0.00	1,039.34	12,470.41	-12,470.41	0.00 %
100-104-61001	Dental Insurance	0.00	0.00	67.40	808.80	-808.80	0.00 %
100-104-61002	Medicare	0.00	0.00	314.62	3,769.86	-3,769.86	0.00 %
100-104-61003	Social Security	0.00	0.00	1,345.22	15,990.40	-15,990.40	0.00 %
100-104-61004	Unemployment	0.00	0.00	0.00	288.00	-288.00	0.00 %
100-104-61006	TMRS	0.00	0.00	1,269.66	15,327.72	-15,327.72	0.00 %
100-104-62003	Special Counsel and Consultants	16,000.00	5,000.00	782.00	4,058.60	941.40	18.83 %
100-104-69004	Government Affairs	50,000.00	0.00	0.00	0.00	0.00	0.00 %
100-104-70001	Mileage	0.00	0.00	0.00	357.05	-357.05	0.00 %
	Department: 104 - City Attorney Total:	**66,000.00**	**5,000.00**	**26,822.82**	**316,741.40**	**-311,741.40**	**-6,234.83%**
Department: 105 - Communications							
100-105-60000	Regular Employees	0.00	0.00	18,364.47	190,091.38	-190,091.38	0.00 %
100-105-60002	Overtime	0.00	0.00	149.65	524.67	-524.67	0.00 %
100-105-61000	Health Insurance	0.00	0.00	1,559.92	14,148.76	-14,148.76	0.00 %
100-105-61001	Dental Insurance	0.00	0.00	101.10	909.90	-909.90	0.00 %
100-105-61002	Medicare	0.00	0.00	265.79	2,749.55	-2,749.55	0.00 %
100-105-61003	Social Security	0.00	0.00	1,136.45	11,756.17	-11,756.17	0.00 %
100-105-61004	Unemployment	0.00	0.00	0.00	441.45	-441.45	0.00 %
100-105-61006	TMRS	0.00	0.00	1,068.25	11,043.52	-11,043.52	0.00 %
100-105-63039	Employee Engagement	20,000.00	20,000.00	2,356.70	16,202.60	3,797.40	18.99 %
100-105-64021	Merchandise	0.00	0.00	0.00	-312.00	312.00	0.00 %
100-105-66000	Website	7,000.00	7,000.00	4,000.00	6,812.75	187.25	2.68 %
100-105-66005	Public Relations	15,000.00	15,000.00	1,438.67	13,741.54	1,258.46	8.39 %
	Department: 105 - Communications Total:	**42,000.00**	**42,000.00**	**30,441.00**	**268,110.29**	**-226,110.29**	**-538.36%**
Department: 106 - IT							
100-106-60000	Regular Employees	0.00	0.00	6,730.76	80,639.36	-80,639.36	0.00 %
100-106-61000	Health Insurance	0.00	0.00	530.74	6,367.68	-6,367.68	0.00 %
100-106-61001	Dental Insurance	0.00	0.00	33.70	404.40	-404.40	0.00 %
100-106-61002	Medicare	0.00	0.00	97.42	1,167.16	-1,167.16	0.00 %
100-106-61003	Social Security	0.00	0.00	416.54	4,990.43	-4,990.43	0.00 %
100-106-61004	Unemployment	0.00	0.00	0.00	144.01	-144.01	0.00 %
100-106-61006	TMRS	0.00	0.00	388.36	4,687.70	-4,687.70	0.00 %
100-106-64001	Office IT Equipment & Support	117,329.00	117,329.00	5,583.59	106,645.50	10,683.50	9.11 %
100-106-64002	Software	301,251.76	275,000.00	11,959.63	237,654.84	37,345.16	13.58 %
100-106-64003	Uniforms	0.00	0.00	0.00	369.00	-369.00	0.00 %
100-106-65000	Network/Phone	85,221.64	85,221.64	7,224.28	78,286.79	6,934.85	8.14 %
	Department: 106 - IT Total:	**503,802.40**	**477,550.64**	**32,965.02**	**521,356.87**	**-43,806.23**	**-9.17%**
Department: 107 - Finance							
100-107-60000	Regular Employees	0.00	0.00	24,565.66	286,594.74	-286,594.74	0.00 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
100-107-60002	Overtime	0.00	0.00	0.00	58.19	-58.19	0.00 %
100-107-61000	Health Insurance	0.00	0.00	2,069.90	23,779.96	-23,779.96	0.00 %
100-107-61001	Dental Insurance	0.00	0.00	134.80	1,549.36	-1,549.36	0.00 %
100-107-61002	Medicare	0.00	0.00	335.78	3,874.61	-3,874.61	0.00 %
100-107-61003	Social Security	0.00	0.00	1,435.67	16,566.61	-16,566.61	0.00 %
100-107-61004	Unemployment	0.00	0.00	0.00	576.01	-576.01	0.00 %
100-107-61006	TMRS	0.00	0.00	1,417.44	16,657.97	-16,657.97	0.00 %
100-107-62001	Financial Services	37,500.00	55,849.00	0.00	55,949.00	-100.00	-0.18 %
100-107-67000	TML Liability Insurance	33,908.00	25,699.50	0.00	25,702.50	-3.00	-0.01 %
100-107-67001	TML Property Insurance	67,191.00	87,262.50	0.00	87,262.50	0.00	0.00 %
100-107-67002	TML Workmen's Comp Insurance	42,497.00	61,822.00	0.00	61,822.00	0.00	0.00 %
100-107-70001	Mileage	0.00	0.00	28.70	388.98	-388.98	0.00 %
100-107-80004	Series 2024	486,041.67	486,041.67	0.00	486,041.66	0.01	0.00 %
100-107-80005	Series 2025	865,000.00	425,529.52	851,700.00	861,200.00	-435,670.48	-102.38 %
100-107-90003	Transfer to Wastewater Utility Fund	900,000.00	980,000.00	84,237.46	990,993.53	-10,993.53	-1.12 %
100-107-90004	SPA & ECO D Transfers	259,200.00	215,000.00	13,580.81	173,696.73	41,303.27	19.21 %
	Department: 107 - Finance Total:	**2,691,337.67**	**2,337,204.19**	**979,506.22**	**3,092,714.35**	**-755,510.16**	**-32.33%**
Department: 200 - Planning & Development							
100-200-60000	Regular Employees	0.00	0.00	19,336.06	167,561.79	-167,561.79	0.00 %
100-200-60002	Overtime	0.00	0.00	0.77	190.59	-190.59	0.00 %
100-200-61000	Health Insurance	0.00	0.00	1,565.18	13,630.01	-13,630.01	0.00 %
100-200-61001	Dental Insurance	0.00	0.00	101.10	876.20	-876.20	0.00 %
100-200-61002	Medicare	0.00	0.00	255.13	2,315.99	-2,315.99	0.00 %
100-200-61003	Social Security	0.00	0.00	1,090.93	9,903.13	-9,903.13	0.00 %
100-200-61004	Unemployment	0.00	0.00	16.99	431.99	-431.99	0.00 %
100-200-61006	TMRS	0.00	0.00	1,115.74	9,746.23	-9,746.23	0.00 %
100-200-62002	Engineering & Surveying	70,000.00	70,000.00	5,153.75	71,085.25	-1,085.25	-1.55 %
100-200-62005	Health Inspector	0.00	15,000.00	0.00	12,650.00	2,350.00	15.67 %
100-200-62006	Architectural & Landscape Consulta	5,000.00	2,500.00	0.00	0.00	2,500.00	100.00 %
100-200-62007	Historic District Consultant	29,500.00	29,500.00	45.00	28,247.80	1,252.20	4.24 %
100-200-62010	Miscellaneous Consultant	30,000.00	30,000.00	0.00	223.65	29,776.35	99.25 %
	Department: 200 - Planning & Development Total:	**134,500.00**	**147,000.00**	**28,680.65**	**316,862.63**	**-169,862.63**	**-115.55%**
Department: 201 - Building							
100-201-60000	Regular Employees	0.00	0.00	42,834.12	514,484.45	-514,484.45	0.00 %
100-201-60002	Overtime	0.00	0.00	436.72	8,679.76	-8,679.76	0.00 %
100-201-61000	Health Insurance	0.00	0.00	4,616.92	55,019.38	-55,019.38	0.00 %
100-201-61001	Dental Insurance	0.00	0.00	303.30	3,620.32	-3,620.32	0.00 %
100-201-61002	Medicare	0.00	0.00	600.71	7,264.05	-7,264.05	0.00 %
100-201-61003	Social Security	0.00	0.00	2,568.57	31,060.07	-31,060.07	0.00 %
100-201-61004	Unemployment	0.00	0.00	0.00	1,615.30	-1,615.30	0.00 %
100-201-61006	TMRS	0.00	0.00	2,496.71	30,403.44	-30,403.44	0.00 %
100-201-62004	Bldg. Inspector	750,000.00	1,000,000.00	71,995.00	848,205.00	151,795.00	15.18 %
100-201-62008	Lighting Consultant	2,000.00	2,000.00	0.00	577.50	1,422.50	71.13 %
100-201-62014	FireInspector	40,000.00	40,000.00	0.00	39,419.82	580.18	1.45 %
100-201-64003	Uniforms	0.00	0.00	127.00	3,502.12	-3,502.12	0.00 %
	Department: 201 - Building Total:	**792,000.00**	**1,042,000.00**	**125,979.05**	**1,543,851.21**	**-501,851.21**	**-48.16%**
Department: 300 - Wastewater							
100-300-71001	Transportation Improvement Proje	790,000.00	525,000.00	208,915.96	524,252.15	747.85	0.14 %
	Department: 300 - Wastewater Total:	**790,000.00**	**525,000.00**	**208,915.96**	**524,252.15**	**747.85**	**0.14%**
Department: 301 - Water							
100-301-64004	Office Furniture and Equipment	0.00	0.00	0.00	411.97	-411.97	0.00 %
	Department: 301 - Water Total:	**0.00**	**0.00**	**0.00**	**411.97**	**-411.97**	**0.00%**
Department: 304 - Maintenance							
100-304-60000	Regular Employees	0.00	0.00	41,438.75	498,517.16	-498,517.16	0.00 %
100-304-60002	Overtime	0.00	0.00	1,341.39	14,531.75	-14,531.75	0.00 %
100-304-60003	On Call Pay	0.00	0.00	800.00	9,773.26	-9,773.26	0.00 %
100-304-61000	Health Insurance	0.00	0.00	5,064.82	58,350.13	-58,350.13	0.00 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
100-304-61001	Dental Insurance	0.00	0.00	337.00	3,875.50	-3,875.50	0.00 %
100-304-61002	Medicare	0.00	0.00	621.91	7,493.17	-7,493.17	0.00 %
100-304-61003	Social Security	0.00	0.00	2,659.22	32,039.72	-32,039.72	0.00 %
100-304-61004	Unemployment	0.00	0.00	45.63	1,689.51	-1,689.51	0.00 %
100-304-61006	TMRS	0.00	0.00	2,514.55	30,541.61	-30,541.61	0.00 %
100-304-63000	Office Maintenance/Repairs	36,880.00	36,880.00	3,633.24	31,348.05	5,531.95	15.00 %
100-304-63001	Equipment Maintenance	17,750.00	8,000.00	458.24	3,372.50	4,627.50	57.84 %
100-304-63002	Fleet Maintenance	103,675.00	75,000.00	4,815.55	56,966.56	18,033.44	24.04 %
100-304-63008	Stephenson Building & Lawn Maint	2,500.00	500.00	0.00	103.17	396.83	79.37 %
100-304-63009	Street/ROW Maintenance	215,075.00	175,000.00	3,685.14	58,174.61	116,825.39	66.76 %
100-304-63023	General Maintenance	0.00	0.00	0.00	515.78	-515.78	0.00 %
100-304-64003	Uniforms	17,500.00	12,500.00	1,039.18	4,884.60	7,615.40	60.92 %
100-304-64006	Fleet Acquisition	50,000.00	48,000.00	0.00	45,278.85	2,721.15	5.67 %
100-304-64008	Fuel	0.00	0.00	119.17	475.16	-475.16	0.00 %
100-304-64009	Maintenance Equipment	115,500.00	115,500.00	60,229.37	86,651.98	28,848.02	24.98 %
100-304-64010	Maintenance Supplies	6,500.00	6,500.00	73.46	3,778.15	2,721.85	41.87 %
100-304-65001	Street Electricty	20,000.00	18,000.00	38.25	15,338.16	2,661.84	14.79 %
100-304-65002	City Streets Water	4,000.00	4,000.00	0.00	2,961.87	1,038.13	25.95 %
100-304-65003	Office Electricty	8,000.00	11,750.00	0.00	9,738.76	2,011.24	17.12 %
100-304-65004	Office Water	750.00	2,450.00	0.00	1,914.98	535.02	21.84 %
100-304-65005	Stephenson Bldg Electric	1,500.00	750.00	0.00	807.82	-57.82	-7.71 %
100-304-65006	Stephenson Water	800.00	800.00	0.00	594.81	205.19	25.65 %
100-304-65009	Triangle Electric	0.00	0.00	0.00	344.25	-344.25	0.00 %
100-304-65015	Downtown Restroom Electric	2,000.00	1,000.00	0.00	0.00	1,000.00	100.00 %
100-304-65021	Downtown Restroom Water	2,000.00	1,000.00	0.00	452.81	547.19	54.72 %
100-304-69001	Lighting Compliance	2,000.00	2,000.00	0.00	0.00	2,000.00	100.00 %
100-304-69006	Stephenson Bldg Improvements	0.00	0.00	539.60	27,922.95	-27,922.95	0.00 %
100-304-69010	Downtown Bathroom	0.00	395,000.00	0.00	394,435.22	564.78	0.14 %
100-304-71002	Street Improvements	0.00	773,157.42	0.00	773,697.02	-539.60	-0.07 %
100-304-71003	City Hall Improvements	1,100,000.00	1,100,000.00	116,286.81	1,098,968.97	1,031.03	0.09 %
100-304-71014	Maintenance Yard Improvements	0.00	0.00	0.00	17,748.75	-17,748.75	0.00 %
	Department: 304 - Maintenance Total:	**1,706,430.00**	**2,787,787.42**	**245,741.28**	**3,293,287.59**	**-505,500.17**	**-18.13%**
Department: 400 - Parks & Recreation							
100-400-60000	Regular Employees	0.00	0.00	44,565.20	495,390.81	-495,390.81	0.00 %
100-400-60001	Part-time Employees	16,840.00	6,840.00	395.70	395.70	6,444.30	94.21 %
100-400-60002	Overtime	0.00	0.00	570.49	3,600.39	-3,600.39	0.00 %
100-400-60003	On Call Pay	0.00	0.00	800.00	5,600.00	-5,600.00	0.00 %
100-400-60005	Camp Staff	0.00	0.00	19,710.02	104,881.68	-104,881.68	0.00 %
100-400-60006	Camp Staff OT	0.00	0.00	0.00	6.61	-6.61	0.00 %
100-400-61000	Health Insurance	0.00	0.00	2,132.58	22,911.64	-22,911.64	0.00 %
100-400-61001	Dental Insurance	0.00	0.00	136.00	1,706.56	-1,706.56	0.00 %
100-400-61002	Medicare	0.00	0.00	948.81	8,745.16	-8,745.16	0.00 %
100-400-61003	Social Security	0.00	0.00	4,057.09	37,393.68	-37,393.68	0.00 %
100-400-61004	Unemployment	0.00	0.00	367.48	3,279.87	-3,279.87	0.00 %
100-400-61006	TMRS	0.00	0.00	2,643.58	28,046.16	-28,046.16	0.00 %
100-400-62011	Park Consultant	0.00	10,000.00	0.00	1,245.00	8,755.00	87.55 %
100-400-63004	Dues, Fees & Subscriptions	2,725.00	2,725.00	0.00	2,450.00	275.00	10.09 %
100-400-63010	Sports & Rec Park Lawn Mainten	0.00	0.00	1,610.00	8,630.00	-8,630.00	0.00 %
100-400-63011	Founders Park Lawn Maintenance	0.00	0.00	610.00	5,590.00	-5,590.00	0.00 %
100-400-63012	Charro Ranch Landscaping	0.00	0.00	620.00	3,185.00	-3,185.00	0.00 %
100-400-63013	General Parks Maintenance	25,000.00	25,000.00	116.05	17,837.10	7,162.90	28.65 %
100-400-63015	Founders Park/Pool Maintenance	26,000.00	26,000.00	3.42	10,500.67	15,499.33	59.61 %
100-400-63016	Sports & Rec Park Maintenance	43,500.00	43,500.00	153.92	7,054.82	36,445.18	83.78 %
100-400-63017	Charro Ranch Park Maintenance	26,150.00	21,150.00	0.00	0.00	21,150.00	100.00 %
100-400-63018	Triangle/Veterans Park Maintenanc	5,700.00	5,700.00	0.00	0.00	5,700.00	100.00 %
100-400-63036	Skate Park Maintenance	2,500.00	2,500.00	0.00	0.00	2,500.00	100.00 %
100-400-64003	Uniforms	0.00	0.00	0.00	254.37	-254.37	0.00 %
100-400-64005	Equipment Rental	5,000.00	2,500.00	353.79	353.79	2,146.21	85.85 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
100-400-64011	Park Supplies	19,600.00	19,600.00	281.66	5,554.11	14,045.89	71.66 %
100-400-64012	Charro Ranch Supplies	1,050.00	1,050.00	0.00	415.97	634.03	60.38 %
100-400-64013	Founders Park/Pool Supplies	0.00	0.00	68.75	1,291.05	-1,291.05	0.00 %
100-400-64014	Sports & Rec Park Supplies	400.00	400.00	0.00	358.11	41.89	10.47 %
100-400-64015	Park Program & Event Supplies	10,950.00	10,950.00	1,215.98	4,179.32	6,770.68	61.83 %
100-400-64033	Rathgeber Supplies	1,504.00	1,504.00	242.94	362.94	1,141.06	75.87 %
100-400-65000	Network/Phone	8,568.00	8,568.00	0.00	0.00	8,568.00	100.00 %
100-400-65007	Portable Toilets	10,000.00	7,500.00	760.00	6,655.00	845.00	11.27 %
100-400-65009	Triangle Electric	500.00	500.00	0.00	0.00	500.00	100.00 %
100-400-65010	Triangle Water	500.00	500.00	0.00	386.98	113.02	22.60 %
100-400-65011	Sports & Rec Park Water	13,000.00	16,274.98	0.00	15,907.29	367.69	2.26 %
100-400-65012	Sports & Rec Park Electricty	2,500.00	2,500.00	-1,234.70	-2,588.60	5,088.60	203.54 %
100-400-65014	Founders Park/Pool Electricty	0.00	0.00	0.00	5,444.81	-5,444.81	0.00 %
100-400-66001	Advertising	15,500.00	15,500.00	1,392.75	6,057.83	9,442.17	60.92 %
100-400-70003	Other Expenses	6,500.00	6,500.00	0.00	2,793.64	3,706.36	57.02 %
100-400-70007	Sponsored Events	0.00	0.00	0.00	1,695.98	-1,695.98	0.00 %
100-400-71004	All Parks Improvements	247,000.00	397,000.00	34,744.60	234,127.89	162,872.11	41.03 %
100-400-71005	Founders Park/Pool Improvmts	175,000.00	155,000.00	0.00	27,814.50	127,185.50	82.06 %
100-400-71006	Sports & Rec Park Improvements	70,000.00	90,000.00	0.00	59,953.27	30,046.73	33.39 %
100-400-71009	Triangle Improvements	5,000.00	5,000.00	0.00	3,600.00	1,400.00	28.00 %
100-400-71010	Rathgeber Improvements	0.00	0.00	0.00	8,534.73	-8,534.73	0.00 %
100-400-71012	Skate Park Improvements	25,000.00	0.00	0.00	0.00	0.00	0.00 %
	Department: 400 - Parks & Recreation Total:	**765,987.00**	**884,261.98**	**117,266.11**	**1,151,603.83**	**-267,341.85**	**-30.23%**
Department: 401 - DSRP							
100-401-60000	Regular Employees	293,829.00	417,237.18	29,552.78	374,819.92	42,417.26	10.17 %
100-401-60002	Overtime	0.00	0.00	63.30	3,248.39	-3,248.39	0.00 %
100-401-60003	On Call Pay	0.00	0.00	0.00	4,000.00	-4,000.00	0.00 %
100-401-61000	Health Insurance	35,267.45	50,079.78	3,063.56	38,886.97	11,192.81	22.35 %
100-401-61001	Dental Insurance	0.00	0.00	201.00	2,555.22	-2,555.22	0.00 %
100-401-61002	Medicare	0.00	0.00	422.18	5,395.37	-5,395.37	0.00 %
100-401-61003	Social Security	0.00	0.00	1,805.29	23,071.02	-23,071.02	0.00 %
100-401-61004	Unemployment	0.00	0.00	0.00	1,072.19	-1,072.19	0.00 %
100-401-61005	Federal Withholding	17,049.43	27,019.36	0.00	0.00	27,019.36	100.00 %
100-401-61006	TMRS	23,737.92	30,898.68	1,708.86	22,105.45	8,793.23	28.46 %
100-401-63023	General Maintenance	17,000.00	17,000.00	0.00	0.00	17,000.00	100.00 %
	Department: 401 - DSRP Total:	**386,883.80**	**542,235.00**	**36,816.97**	**475,154.53**	**67,080.47**	**12.37%**
Department: 402 - Aquatics							
100-402-60000	Regular Employees	0.00	0.00	4,616.00	55,397.47	-55,397.47	0.00 %
100-402-60007	Aquatic Staff	126,813.64	75,000.00	17,905.01	62,509.64	12,490.36	16.65 %
100-402-61000	Health Insurance	0.00	0.00	510.44	4,614.18	-4,614.18	0.00 %
100-402-61001	Dental Insurance	0.00	0.00	33.70	303.30	-303.30	0.00 %
100-402-61002	Medicare	0.00	0.00	326.38	1,706.58	-1,706.58	0.00 %
100-402-61003	Social Security	0.00	0.00	1,395.56	7,296.91	-7,296.91	0.00 %
100-402-61004	Unemployment	0.00	0.00	286.49	1,286.89	-1,286.89	0.00 %
100-402-61006	TMRS	0.00	0.00	266.34	3,232.43	-3,232.43	0.00 %
100-402-63015	Founders Park/Pool Maintenance	21,000.00	21,000.00	0.00	17,986.20	3,013.80	14.35 %
100-402-64013	Pool Supplies	26,200.00	26,200.00	529.57	1,431.52	24,768.48	94.54 %
100-402-65000	Network/Phone	2,500.00	2,500.00	180.92	1,889.67	610.33	24.41 %
100-402-65013	FMP Pool/Pavilion Water	5,300.00	5,300.00	0.00	4,768.48	531.52	10.03 %
100-402-65014	FMP Pool/Pavilion Electric	4,500.00	6,000.00	0.00	0.00	6,000.00	100.00 %
100-402-65019	Propane/Natural Gas	10,000.00	7,500.00	0.00	0.00	7,500.00	100.00 %
100-402-71011	Founders Pool Improvements	10,000.00	10,000.00	0.00	0.00	10,000.00	100.00 %
	Department: 402 - Aquatics Total:	**206,313.64**	**153,500.00**	**26,050.41**	**162,423.27**	**-8,923.27**	**-5.81%**
Department: 404 - Founders Day							
100-404-63019	FD Clean Up	18,500.00	16,812.84	0.00	16,812.84	0.00	0.00 %
100-404-63038	FD Transportation	10,500.00	9,321.18	0.00	9,321.18	0.00	0.00 %
100-404-64016	FD Event Supplies	1,000.00	3,817.78	0.00	3,817.78	0.00	0.00 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
100-404-64017	FD Event Tent, Table, & Chairs	7,000.00	11,631.00	0.00	11,631.00	0.00	0.00 %
100-404-64018	FD Barricades	21,500.00	17,005.00	0.00	20,390.00	-3,385.00	-19.91 %
100-404-65007	Portable Toilets	10,000.00	10,310.00	0.00	10,310.00	0.00	0.00 %
100-404-65016	FD Electricity	2,225.00	141.12	0.00	141.12	0.00	0.00 %
100-404-66008	FD Parade	500.00	0.00	0.00	0.00	0.00	0.00 %
100-404-66009	FD Publicity	1,400.00	6,031.75	0.00	1,929.76	4,101.99	68.01 %
100-404-66010	Events, Entertainment & Activities	25,000.00	22,040.26	0.00	23,640.26	-1,600.00	-7.26 %
100-404-66012	FD Sponsorship	3,500.00	8,919.36	0.00	8,032.88	886.48	9.94 %
100-404-68005	FD Security	38,000.00	43,493.55	0.00	26,441.90	17,051.65	39.21 %
100-404-68006	FD Health, Safety & Lighting	17,500.00	18,965.00	0.00	26,418.00	-7,453.00	-39.30 %
	Department: 404 - Founders Day Total:	**156,625.00**	**168,488.84**	**0.00**	**158,886.72**	**9,602.12**	**5.70%**
	Department: 500 - Emergency Management						
100-500-60000	Regular Employees	0.00	0.00	6,438.76	77,783.03	-77,783.03	0.00 %
100-500-61000	Health Insurance	0.00	0.00	18.08	216.45	-216.45	0.00 %
100-500-61001	Dental Insurance	0.00	0.00	33.70	404.40	-404.40	0.00 %
100-500-61002	Medicare	0.00	0.00	92.60	1,118.71	-1,118.71	0.00 %
100-500-61003	Social Security	0.00	0.00	395.92	4,783.15	-4,783.15	0.00 %
100-500-61004	Unemployment	0.00	0.00	0.00	144.00	-144.00	0.00 %
100-500-61006	TMRS	0.00	0.00	371.52	4,522.23	-4,522.23	0.00 %
100-500-64003	Uniforms	0.00	0.00	0.00	241.20	-241.20	0.00 %
100-500-68000	Emergency Management Equip	67,500.00	67,500.00	14,447.71	72,414.82	-4,914.82	-7.28 %
100-500-68001	Emergency Fire& Safety	611.00	900.00	-1,248.67	710.32	189.68	21.08 %
100-500-68002	Emergency Management PR	3,000.00	3,000.00	0.00	0.00	3,000.00	100.00 %
100-500-68003	Emergency Equipment Maint	12,299.00	12,299.00	0.00	1,748.57	10,550.43	85.78 %
	Department: 500 - Emergency Management Total:	**83,410.00**	**83,699.00**	**20,549.62**	**164,086.88**	**-80,387.88**	**-96.04%**
	Expense Total:	**14,707,607.05**	**14,909,670.46**	**1,987,380.63**	**13,297,375.95**	**1,612,294.51**	**10.81%**
	Fund: 100 - General Fund Surplus (Deficit):	**-2,357,535.51**	**-1,104,461.79**	**-1,474,628.29**	**-478,051.48**	**626,410.31**	**56.72%**
Fund: 200 - Dripping Springs Ranch Park							
Revenue							
	Department: 401 - DSRP						
200-401-42008	Riding Permit Fees	8,000.00	10,360.00	100.00	14,055.00	3,695.00	135.67 %
200-401-43010	Stall Rental Fees	40,000.00	39,125.00	0.00	32,793.54	-6,331.46	16.18 %
200-401-43011	RV Site Rental Fees	21,000.00	20,300.00	60.00	18,030.00	-2,270.00	11.18 %
200-401-43012	Facility Rental Fees	125,000.00	122,250.00	16,962.50	122,694.25	444.25	100.36 %
200-401-43013	Equipment Rental Fees	8,000.00	19,752.00	2,705.00	19,618.90	-133.10	0.67 %
200-401-43014	Staff & Miscellaneous Fees	4,000.00	4,000.00	100.00	3,937.21	-62.79	1.57 %
200-401-43015	Cleaning Fees	25,000.00	23,790.00	2,850.00	23,791.71	1.71	100.01 %
200-401-44000	Sponsorships & Donations	52,275.00	7,508.00	0.00	7,508.00	0.00	0.00 %
200-401-44005	Coyote Camp	137,100.00	152,607.00	-950.00	152,671.60	64.60	100.04 %
200-401-44006	Riding Series	35,000.00	41,545.00	0.00	41,417.75	-127.25	0.31 %
200-401-44007	Miscellaneous Events	12,000.00	51,484.00	0.00	89,062.17	37,578.17	172.99 %
200-401-44008	Program Fees	53,000.00	67,900.00	189.00	54,112.24	-13,787.76	20.31 %
200-401-44009	Ice Rink	229,169.00	153,111.00	0.00	152,966.06	-144.94	0.09 %
200-401-44012	Rink Merchandise	500.00	1,390.00	0.00	506.16	-883.84	63.59 %
200-401-46001	Other Revenues	500.00	2,197.00	769.28	3,158.48	961.48	143.76 %
200-401-46002	Interest	4,500.00	6,748.00	967.30	6,748.02	0.02	100.00 %
200-401-46006	Merchandise Sales	22,065.20	27,600.00	617.00	24,492.44	-3,107.56	11.26 %
200-401-46015	Concessions	0.00	3,560.00	0.00	2,910.08	-649.92	18.26 %
200-401-47004	Transfer from Ag Facility Fund	0.00	116,000.00	0.00	0.00	-116,000.00	100.00 %
200-401-47005	Transfer from HOT Fund	330,000.00	330,000.00	0.00	165,000.00	-165,000.00	50.00 %
	Department: 401 - DSRP Total:	**1,107,109.20**	**1,201,227.00**	**24,370.08**	**935,473.61**	**-265,753.39**	**22.12%**
	Revenue Total:	**1,107,109.20**	**1,201,227.00**	**24,370.08**	**935,473.61**	**-265,753.39**	**22.12%**
Expense							
	Department: 400 - Parks & Recreation						
200-400-63035	Ranch House Maintenance	5,000.00	5,000.00	360.00	4,195.23	804.77	16.10 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
200-400-64024	Ranch House Supplies	1,000.00	1,000.00	0.00	236.96	763.04	76.30 %
	Department: 400 - Parks & Recreation Total:	**6,000.00**	**6,000.00**	**360.00**	**4,432.19**	**1,567.81**	**26.13%**
Department: 401 - DSRP							
200-401-60005	Camp Staff	154,246.48	154,246.48	0.00	0.00	154,246.48	100.00 %
200-401-63000	Building/Office Maintenance	0.00	0.00	1,220.64	89,193.96	-89,193.96	0.00 %
200-401-63001	Equipment Maintenance	25,000.00	20,000.00	20.98	9,815.45	10,184.55	50.92 %
200-401-63002	Fleet Maintenance	3,000.00	3,000.00	2.71	941.57	2,058.43	68.61 %
200-401-63003	Lawn Maintenance	0.00	0.00	0.00	1,440.00	-1,440.00	0.00 %
200-401-63004	Dues, Fees & Subscriptions	5,127.50	5,127.50	417.04	5,383.74	-256.24	-5.00 %
200-401-63005	Training/Continuing Education	0.00	0.00	0.00	1,573.23	-1,573.23	0.00 %
200-401-63023	General Maintenance	170,730.00	170,730.00	1,555.00	23,917.59	146,812.41	85.99 %
200-401-63024	Stall Cleaning & Repair	4,000.00	3,500.00	0.00	2,665.65	834.35	23.84 %
200-401-63028	Lift Station Maintenance	12,000.00	8,000.00	0.00	0.00	8,000.00	100.00 %
200-401-64000	Office Supplies	10,000.00	10,000.00	522.69	2,112.74	7,887.26	78.87 %
200-401-64001	IT Equipment	3,000.00	3,000.00	0.00	0.00	3,000.00	100.00 %
200-401-64003	Uniforms	1,000.00	1,000.00	0.00	629.29	370.71	37.07 %
200-401-64004	Office Furniture and Equipment	0.00	0.00	0.00	343.77	-343.77	0.00 %
200-401-64005	Equipment Rental	3,000.00	3,000.00	0.00	2,040.20	959.80	31.99 %
200-401-64008	Fuel	0.00	0.00	118.00	3,194.24	-3,194.24	0.00 %
200-401-64009	Maintenance Equipment	0.00	0.00	0.00	45.33	-45.33	0.00 %
200-401-64010	Maintenance Supplies	0.00	0.00	116.89	383.28	-383.28	0.00 %
200-401-64015	Park Program & Event Supplies	0.00	0.00	0.00	93.65	-93.65	0.00 %
200-401-64021	Merchandise	17,065.20	10,000.00	0.00	6,265.50	3,734.50	37.35 %
200-401-64023	Equipment	5,000.00	5,000.00	0.00	0.00	5,000.00	100.00 %
200-401-64026	Sponsorship Expenses	2,100.00	2,100.00	0.00	188.17	1,911.83	91.04 %
200-401-64027	Coyote Camp	12,000.00	12,000.00	1,710.96	8,006.94	3,993.06	33.28 %
200-401-64028	Riding Series	28,000.00	33,000.00	0.00	33,019.16	-19.16	-0.06 %
200-401-64029	Miscellaneous Events	700.00	55,000.00	8,119.39	36,300.30	18,699.70	34.00 %
200-401-64030	Programing	8,000.00	27,500.00	2,216.30	27,697.11	-197.11	-0.72 %
200-401-64031	Concert Series	229,169.00	229,169.00	0.00	57,292.25	171,876.75	75.00 %
200-401-64038	Ice Rink	0.00	0.00	0.00	225,600.82	-225,600.82	0.00 %
200-401-65000	Network/Phone	9,414.00	14,000.00	1,156.55	13,414.83	585.17	4.18 %
200-401-65005	Water	7,000.00	19,000.00	587.91	17,414.97	1,585.03	8.34 %
200-401-65007	Portable Toilets	960.00	960.00	0.00	640.00	320.00	33.33 %
200-401-65008	Alarm	13,317.24	13,317.24	0.00	979.97	12,337.27	92.64 %
200-401-65017	Electricity	60,000.00	85,000.00	0.00	64,433.00	20,567.00	24.20 %
200-401-65018	Septic	750.00	750.00	0.00	0.00	750.00	100.00 %
200-401-65019	Propane/Natural Gas	2,500.00	5,500.00	0.00	5,463.82	36.18	0.66 %
200-401-66001	Advertising	15,000.00	8,000.00	0.00	67.54	7,932.46	99.16 %
200-401-66004	City Sponsored Events	0.00	0.00	33,515.41	36,924.48	-36,924.48	0.00 %
200-401-70001	Mileage	500.00	500.00	0.00	27.16	472.84	94.57 %
200-401-70002	Contingencies/Emergency Fund	30,000.00	30,000.00	0.00	17,095.41	12,904.59	43.02 %
200-401-70003	Other Expenses	10,000.00	10,000.00	0.00	17,003.37	-7,003.37	-70.03 %
200-401-70004	Hays County Livestock Board Agree	13,200.00	13,200.00	0.00	0.00	13,200.00	100.00 %
200-401-70007	Sponsored Events	7,900.00	7,900.00	0.00	0.00	7,900.00	100.00 %
200-401-70013	DSRP Sales Tax	0.00	2,500.00	247.00	2,355.28	144.72	5.79 %
200-401-71008	DSRP Improvements	320,000.00	170,000.00	39,376.99	56,225.99	113,774.01	66.93 %
200-401-90013	Transfer to Vehicle Replacement Fu	31,906.08	31,906.08	0.00	0.00	31,906.08	100.00 %
	Department: 401 - DSRP Total:	**1,215,585.50**	**1,167,906.30**	**90,904.46**	**770,189.76**	**397,716.54**	**34.05%**
	Expense Total:	**1,221,585.50**	**1,173,906.30**	**91,264.46**	**774,621.95**	**399,284.35**	**34.01%**
	Fund: 200 - Dripping Springs Ranch Park Surplus (Deficit):	**-114,476.30**	**27,320.70**	**-66,894.38**	**160,851.66**	**133,530.96**	**-488.75%**
Fund: 400 - Utilities							
Revenue							
Department: 000 - Undesignated							
400-000-46001	Other Revenues	0.00	0.00	0.00	367,035.41	367,035.41	0.00 %
	Department: 000 - Undesignated Total:	**0.00**	**0.00**	**0.00**	**367,035.41**	**367,035.41**	**0.00%**

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
Department: 300 - Wastewater							
400-300-41000	Solid Waste	0.00	0.00	0.00	-20,258.61	-20,258.61	0.00 %
400-300-41004	Texas Gas Franchise Fees	0.00	0.00	8,615.40	8,615.40	8,615.40	0.00 %
400-300-43018	Wastewater Service Fees	1,672,883.25	1,725,000.00	124,483.63	1,633,982.24	-91,017.76	5.28 %
400-300-43020	Late Fees	9,000.00	8,000.00	0.00	6,440.80	-1,559.20	19.49 %
400-300-43021	Delayed Connection Fees	5,000.00	33,750.00	2,300.00	33,750.00	0.00	0.00 %
400-300-43024	Over Use Fees	0.00	0.00	0.00	79,077.63	79,077.63	0.00 %
400-300-43025	Reuse Fees	0.00	0.00	6,398.51	30,051.37	30,051.37	0.00 %
400-300-43047	Temporary Wastewater Service - Ca	0.00	0.00	5,065.60	25,778.19	25,778.19	0.00 %
400-300-43048	Reclaimed Water Use Fee	0.00	0.00	24,022.90	24,155.40	24,155.40	0.00 %
400-300-46001	Other Revenues	0.00	0.00	0.00	741,480.20	741,480.20	0.00 %
400-300-46002	Interest	0.00	0.00	13,890.83	13,890.83	13,890.83	0.00 %
400-300-47009	Sales Tax	0.00	0.00	0.00	317,486.80	317,486.80	0.00 %
	Department: 300 - Wastewater Total:	**1,686,883.25**	**1,766,750.00**	**184,776.87**	**2,894,450.25**	**1,127,700.25**	**63.83%**
Department: 301 - Water							
400-301-43020	Late Fees	0.00	0.00	0.00	4,982.98	4,982.98	0.00 %
400-301-43038	Meter Set Fees	3,000.00	3,800.00	450.00	4,700.00	900.00	123.68 %
400-301-43040	Water Base Rate	40,000.00	125,000.00	10,429.99	118,143.22	-6,856.78	5.49 %
400-301-43041	Water Usage	200,000.00	300,000.00	44,577.16	391,842.62	91,842.62	130.61 %
400-301-43043	Equipment Fee	8,000.00	21,765.00	2,817.00	27,399.00	5,634.00	125.89 %
400-301-43044	Inspection Fees	1,000.00	3,476.00	450.00	4,376.00	900.00	125.89 %
400-301-46001	Other Revenues	0.00	-6,000.00	23,634.05	23,634.05	29,634.05	393.90 %
	Department: 301 - Water Total:	**252,000.00**	**448,041.00**	**82,358.20**	**575,077.87**	**127,036.87**	**28.35%**
Department: 320 - Development/Capital							
400-320-41001	PEC	130,000.00	173,634.00	57,563.02	231,197.65	57,563.65	133.15 %
400-320-41002	ROW Fees	3,500.00	3,500.00	878.43	4,388.04	888.04	125.37 %
400-320-41003	Cable Franchise Fee	130,000.00	126,048.00	33,086.51	159,134.52	33,086.52	126.25 %
400-320-41004	Texas Gas Franchise Fee	4,250.00	6,216.00	0.00	6,216.67	0.67	100.01 %
400-320-43024	Overuse Fees	221,841.43	79,077.63	0.00	0.00	-79,077.63	100.00 %
400-320-46001	Other Revenues	80,000.00	40,000.00	0.00	0.00	-40,000.00	100.00 %
400-320-46002	Interest	180,000.00	215,000.00	0.00	183,898.67	-31,101.33	14.47 %
400-320-47009	Sales Tax	900,000.00	980,000.00	84,237.46	673,506.73	-306,493.27	31.27 %
	Department: 320 - Development/Capital Total:	**1,649,591.43**	**1,623,475.63**	**175,765.42**	**1,258,342.28**	**-365,133.35**	**22.49%**
Department: 330 - TWDB Project							
400-330-47008	Transfer from TWDB	21,005,000.00	445,000.00	0.00	0.00	-445,000.00	100.00 %
	Department: 330 - TWDB Project Total:	**21,005,000.00**	**445,000.00**	**0.00**	**0.00**	**-445,000.00**	**100.00%**
	Revenue Total:	**24,593,474.68**	**4,283,266.63**	**442,900.49**	**5,094,905.81**	**811,639.18**	**18.95%**
Expense							
Department: 300 - Wastewater							
400-300-62002	Engineering and Surveying	0.00	0.00	0.00	145,049.25	-145,049.25	0.00 %
400-300-62019	Planning and Permitting	0.00	0.00	3,487.50	6,775.26	-6,775.26	0.00 %
400-300-63004	Dues, Fees & Subscriptions	0.00	0.00	3,797.97	11,482.33	-11,482.33	0.00 %
400-300-63025	Wastewater Treatment Plant Maint	108,100.00	92,572.00	2,224.41	49,692.90	42,879.10	46.32 %
400-300-63026	Routine Operations	95,700.00	95,700.00	10,512.83	63,311.62	32,388.38	33.84 %
400-300-63027	Operations Non Routine	94,400.00	35,000.00	7,934.15	36,167.77	-1,167.77	-3.34 %
400-300-63028	Lift Station Maintenance	81,000.00	81,000.00	6,075.58	39,683.04	41,316.96	51.01 %
400-300-63029	Sanitary Sewer Line Maintenance	80,000.00	80,000.00	54.50	6,474.47	73,525.53	91.91 %
400-300-63030	Drip Field Maintenance	41,000.00	41,000.00	21,321.62	34,822.07	6,177.93	15.07 %
400-300-63031	Sludge Hauling	165,000.00	210,000.00	21,593.37	197,021.68	12,978.32	6.18 %
400-300-63034	Utility Operations	0.00	0.00	0.00	57,946.50	-57,946.50	0.00 %
400-300-64003	Uniforms	0.00	0.00	0.00	1,808.50	-1,808.50	0.00 %
400-300-64008	Fuel	0.00	0.00	54.20	137.74	-137.74	0.00 %
400-300-64010	Supplies	0.00	0.00	421.81	559.82	-559.82	0.00 %
400-300-64022	Chemicals	16,500.00	13,000.00	821.97	15,792.46	-2,792.46	-21.48 %
400-300-65000	Network/Phone	0.00	0.00	722.79	7,950.69	-7,950.69	0.00 %
400-300-65017	Electric	88,000.00	88,000.00	0.00	61,072.47	26,927.53	30.60 %
400-300-66005	Public Relations	0.00	0.00	875.00	2,500.00	-2,500.00	0.00 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
400-300-70003	Other Expenses	0.00	0.00	0.00	19,099.97	-19,099.97	0.00 %
400-300-72002	TWDB - Engineering and Design	0.00	0.00	0.00	98,141.98	-98,141.98	0.00 %
400-300-72003	TWDB - Special Counsel and Consul	0.00	0.00	-60,970.86	0.00	0.00	0.00 %
400-300-72004	TWDB - Misc.	0.00	0.00	550.00	550.00	-550.00	0.00 %
400-300-72005	TWDB - Land Acquisition	0.00	0.00	0.00	174,453.00	-174,453.00	0.00 %
400-300-90013	Transfer to Vehicle Replacement Fu	50,545.02	50,545.02	0.00	0.00	50,545.02	100.00 %
	Department: 300 - Wastewater Total:	**820,245.02**	**786,817.02**	**19,476.84**	**1,030,493.52**	**-243,676.50**	**-30.97%**
Department: 301 - Water							
400-301-63026	Routine Operations	27,500.00	27,500.00	349.29	22,292.60	5,207.40	18.94 %
400-301-63027	Operations Non Routine	15,000.00	15,000.00	115.32	4,356.84	10,643.16	70.95 %
400-301-63032	Water Line Maintenance & Repair	25,000.00	5,000.00	0.00	505.22	4,494.78	89.90 %
400-301-64010	Supplies	0.00	0.00	61.31	61.31	-61.31	0.00 %
400-301-64040	Water Meters	60,000.00	60,000.00	0.00	51,373.02	8,626.98	14.38 %
400-301-65022	Wholesale Water	0.00	0.00	0.00	264,384.48	-264,384.48	0.00 %
	Department: 301 - Water Total:	**127,500.00**	**107,500.00**	**525.92**	**342,973.47**	**-235,473.47**	**-219.05%**
Department: 310 - Utility Operations							
400-310-60000	Regular Employees	711,493.20	598,368.06	41,659.19	525,897.63	72,470.43	12.11 %
400-310-60002	Overtime	48,672.00	35,000.00	4,051.16	29,872.80	5,127.20	14.65 %
400-310-60003	On Call Pay	26,000.00	26,000.00	2,000.00	21,650.00	4,350.00	16.73 %
400-310-61000	Health Insurance	70,133.37	58,982.39	4,597.26	56,195.28	2,787.11	4.73 %
400-310-61001	Dental Insurance	0.00	0.00	303.30	3,707.00	-3,707.00	0.00 %
400-310-61002	Medicare	0.00	0.00	666.84	8,139.92	-8,139.92	0.00 %
400-310-61004	Unemployment	0.00	0.00	0.00	1,670.27	-1,670.27	0.00 %
400-310-61005	Federal Withholding	53,169.15	44,715.42	0.00	0.00	44,715.42	100.00 %
400-310-61006	TMRS	40,977.10	34,461.87	2,752.87	33,555.27	906.60	2.63 %
400-310-62001	Financial Services	10,000.00	10,000.00	0.00	0.00	10,000.00	100.00 %
400-310-62003	Special Coounsel and Consultants	55,000.00	55,000.00	5,055.25	31,537.36	23,462.64	42.66 %
400-310-62020	Lab Testing	45,000.00	45,000.00	0.00	32,063.53	12,936.47	28.75 %
400-310-63001	Equipment Maintenance	11,000.00	5,000.00	478.61	1,511.81	3,488.19	69.76 %
400-310-63002	Fleet Maintenance	14,000.00	6,000.00	0.00	4,099.98	1,900.02	31.67 %
400-310-63005	Training/Continuing Education	20,000.00	10,000.00	0.00	6,246.27	3,753.73	37.54 %
400-310-63034	Utility Operations	69,000.00	38,200.00	0.00	35,300.80	2,899.20	7.59 %
400-310-63041	SCADA	50,000.00	59,450.00	0.00	59,450.00	0.00	0.00 %
400-310-64001	IT Equipment & Support	5,000.00	5,000.00	0.00	396.00	4,604.00	92.08 %
400-310-64002	Software	7,000.00	25,000.00	0.00	23,723.56	1,276.44	5.11 %
400-310-64003	Uniforms	11,000.00	5,000.00	0.00	775.08	4,224.92	84.50 %
400-310-64006	Fleet Acquisition	50,000.00	42,317.00	0.00	42,217.00	100.00	0.24 %
400-310-64008	Fuel	22,000.00	22,000.00	133.00	835.11	21,164.89	96.20 %
400-310-64010	Supplies	59,500.00	25,000.00	1,246.61	19,641.95	5,358.05	21.43 %
400-310-64023	Equipment	320,000.00	270,000.00	0.00	53,371.43	216,628.57	80.23 %
400-310-65000	Network/Phone	18,000.00	12,500.00	51.75	1,678.62	10,821.38	86.57 %
400-310-66002	Postage & Shipping	0.00	15,000.00	5,309.20	15,077.85	-77.85	-0.52 %
400-310-70003	Other Expenses	0.00	0.00	0.00	340.00	-340.00	0.00 %
	Department: 310 - Utility Operations Total:	**1,716,944.82**	**1,447,994.74**	**68,305.04**	**1,008,954.52**	**439,040.22**	**30.32%**
Department: 311 - Arrowhead Wastewater Plant							
400-311-63025	Arrowhead - Wastwater Treatment	21,250.00	-6,500.00	164.91	8,292.17	-14,792.17	227.57 %
400-311-63026	Arrowhead - Routine Operations	26,000.00	15,000.00	55.42	9,121.68	5,878.32	39.19 %
400-311-63027	Arrowhead - Non-Routine Operatio	24,000.00	15,000.00	114.98	11,506.28	3,493.72	23.29 %
400-311-63028	Arrowhead - Lift Station Maintenan	11,000.00	8,000.00	2,582.03	7,764.90	235.10	2.94 %
400-311-63030	Arrowhead - Drip Field Maintenanc	52,000.00	25,000.00	0.00	1,548.21	23,451.79	93.81 %
400-311-63031	Arrowhead - Sludge Hauling	50,000.00	20,000.00	950.17	16,859.27	3,140.73	15.70 %
400-311-64022	Arrowhead - Chemicals	14,300.00	14,300.00	2,197.00	13,918.00	382.00	2.67 %
400-311-65017	Arrowhead - Electricity	22,000.00	35,000.00	0.00	26,234.80	8,765.20	25.04 %
400-311-71000	Arrowhead - Capital Projects	0.00	0.00	0.00	50,785.90	-50,785.90	0.00 %
400-311-71013	Arrowhead Plant Lease	286,560.00	286,560.00	0.00	296,570.00	-10,010.00	-3.49 %
	Department: 311 - Arrowhead Wastewater Plant Total:	**507,110.00**	**412,360.00**	**6,064.51**	**442,601.21**	**-30,241.21**	**-7.33%**

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
Department: 312 - Big Sky Wastewater Plant							
400-312-63025	Big Sky - Wastewater Treatment Pla	8,700.00	5,000.00	0.00	0.00	5,000.00	100.00 %
400-312-63026	Big Sky - Routine Operations	23,250.00	19,000.00	0.00	17,517.16	1,482.84	7.80 %
400-312-63027	Big Sky - Non-Routine Operations	21,450.00	20,000.00	0.00	19,571.80	428.20	2.14 %
400-312-63028	Big Sky - Lift Station Maintenance	6,500.00	0.00	0.00	0.00	0.00	0.00 %
400-312-63030	Big Sky - Drip Field Maintenance	7,500.00	7,500.00	0.00	0.00	7,500.00	100.00 %
400-312-63031	Big Sky - Sludge Hauling	39,000.00	10,000.00	0.00	1,780.81	8,219.19	82.19 %
400-312-64022	Big Sky - Chemicals	13,000.00	2,400.00	910.00	3,192.50	-792.50	-33.02 %
400-312-65017	Big Sky - Electricity	20,000.00	1,500.00	0.00	0.00	1,500.00	100.00 %
	Department: 312 - Big Sky Wastewater Plant Total:	**139,400.00**	**65,400.00**	**910.00**	**42,062.27**	**23,337.73**	**35.68%**
Department: 320 - Development/Capital							
400-320-62002	Engineering and Surveying	762,500.00	230,000.00	0.00	94,435.28	135,564.72	58.94 %
400-320-62019	Planning & Permitting	0.00	2,000.00	0.00	0.00	2,000.00	100.00 %
400-320-71000	Capital Projects	2,600,000.00	2,828,000.00	0.00	1,316,668.83	1,511,331.17	53.44 %
	Department: 320 - Development/Capital Total:	**3,362,500.00**	**3,060,000.00**	**0.00**	**1,411,104.11**	**1,648,895.89**	**53.89%**
Department: 330 - TWDB Project							
400-330-72001	TWDB Capital Projects	20,500,000.00	0.00	0.00	0.00	0.00	0.00 %
400-330-72002	TWDB Engineering and Surveying	405,000.00	270,000.00	7,688.53	247,604.55	22,395.45	8.29 %
400-330-72003	TWDB - Special Councel and Consul	0.00	95,000.00	165,531.39	165,531.39	-70,531.39	-74.24 %
400-330-72004	TWDB - Consultants and Legal	100,000.00	100,000.00	-78,046.86	-77,606.06	177,606.06	177.61 %
400-330-72006	Village Grove - East Interceptor	0.00	0.00	0.00	14,941.30	-14,941.30	0.00 %
	Department: 330 - TWDB Project Total:	**21,005,000.00**	**465,000.00**	**95,173.06**	**350,471.18**	**114,528.82**	**24.63%**
	Expense Total:	**27,678,699.84**	**6,345,071.76**	**190,455.37**	**4,628,660.28**	**1,716,411.48**	**27.05%**
	Fund: 400 - Utilities Surplus (Deficit):	**-3,085,225.16**	**-2,061,805.13**	**252,445.12**	**466,245.53**	**2,528,050.66**	**122.61%**
	Report Surplus (Deficit):	**-5,557,236.97**	**-3,138,946.22**	**-1,289,077.55**	**149,045.71**	**3,287,991.93**	**104.75%**

Group Summary

Department	Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
Fund: 100 - General Fund						
Revenue						
000 - Undesignated	9,656,856.54	11,099,039.64	93,123.31	10,065,165.16	-1,033,874.48	9.31%
105 - Communications	0.00	0.00	700.00	460.17	460.17	0.00%
200 - Planning & Development	835,100.00	712,500.00	225,693.28	865,531.05	153,031.05	21.48%
201 - Building	1,550,000.00	1,640,000.00	188,023.75	1,639,315.06	-684.94	0.04%
400 - Parks & Recreation	107,800.00	105,285.00	910.00	18,185.00	-87,100.00	82.73%
402 - Aquatics	62,985.00	75,425.90	4,302.00	55,116.15	-20,309.75	26.93%
404 - Founders Day	137,330.00	172,958.13	0.00	175,551.88	2,593.75	1.50%
Revenue Total:	**12,350,071.54**	**13,805,208.67**	**512,752.34**	**12,819,324.47**	**-985,884.20**	**7.14%**
Expense						
000 - Undesignated	6,328,916.07	5,673,481.92	25,659.30	402,619.45	5,270,862.47	92.90%
100 - City Council/Boards & Commissions	17,000.00	7,000.00	0.00	7,958.21	-958.21	-13.69%
101 - City Administrators Office	0.00	0.00	62,375.79	692,474.01	-692,474.01	0.00%
102 - City Secretary	20,901.47	25,461.47	18,090.43	197,680.59	-172,219.12	-676.39%
103 - Courts	15,500.00	8,000.00	1,520.00	6,900.00	1,100.00	13.75%
104 - City Attorney	66,000.00	5,000.00	26,822.82	316,741.40	-311,741.40	-6,234.83%
105 - Communications	42,000.00	42,000.00	30,441.00	268,110.29	-226,110.29	-538.36%
106 - IT	503,802.40	477,550.64	32,965.02	521,356.87	-43,806.23	-9.17%
107 - Finance	2,691,337.67	2,337,204.19	979,506.22	3,092,714.35	-755,510.16	-32.33%
200 - Planning & Development	134,500.00	147,000.00	28,680.65	316,862.63	-169,862.63	-115.55%
201 - Building	792,000.00	1,042,000.00	125,979.05	1,543,851.21	-501,851.21	-48.16%
300 - Wastewater	790,000.00	525,000.00	208,915.96	524,252.15	747.85	0.14%
301 - Water	0.00	0.00	0.00	411.97	-411.97	0.00%
304 - Maintenance	1,706,430.00	2,787,787.42	245,741.28	3,293,287.59	-505,500.17	-18.13%
400 - Parks & Recreation	765,987.00	884,261.98	117,266.11	1,151,603.83	-267,341.85	-30.23%
401 - DSRP	386,883.80	542,235.00	36,816.97	475,154.53	67,080.47	12.37%
402 - Aquatics	206,313.64	153,500.00	26,050.41	162,423.27	-8,923.27	-5.81%
404 - Founders Day	156,625.00	168,488.84	0.00	158,886.72	9,602.12	5.70%
500 - Emergency Management	83,410.00	83,699.00	20,549.62	164,086.88	-80,387.88	-96.04%
Expense Total:	**14,707,607.05**	**14,909,670.46**	**1,987,380.63**	**13,297,375.95**	**1,612,294.51**	**10.81%**
Fund: 100 - General Fund Surplus (Deficit):	**-2,357,535.51**	**-1,104,461.79**	**-1,474,628.29**	**-478,051.48**	**626,410.31**	**56.72%**
Fund: 200 - Dripping Springs Ranch Park						
Revenue						
401 - DSRP	1,107,109.20	1,201,227.00	24,370.08	935,473.61	-265,753.39	22.12%
Revenue Total:	**1,107,109.20**	**1,201,227.00**	**24,370.08**	**935,473.61**	**-265,753.39**	**22.12%**
Expense						
400 - Parks & Recreation	6,000.00	6,000.00	360.00	4,432.19	1,567.81	26.13%
401 - DSRP	1,215,585.50	1,167,906.30	90,904.46	770,189.76	397,716.54	34.05%
Expense Total:	**1,221,585.50**	**1,173,906.30**	**91,264.46**	**774,621.95**	**399,284.35**	**34.01%**
Fund: 200 - Dripping Springs Ranch Park Surplus (Deficit):	**-114,476.30**	**27,320.70**	**-66,894.38**	**160,851.66**	**133,530.96**	**-488.75%**
Fund: 400 - Utilities						
Revenue						
000 - Undesignated	0.00	0.00	0.00	367,035.41	367,035.41	0.00%
300 - Wastewater	1,686,883.25	1,766,750.00	184,776.87	2,894,450.25	1,127,700.25	63.83%
301 - Water	252,000.00	448,041.00	82,358.20	575,077.87	127,036.87	28.35%
320 - Development/Capital	1,649,591.43	1,623,475.63	175,765.42	1,258,342.28	-365,133.35	22.49%
330 - TWDB Project	21,005,000.00	445,000.00	0.00	0.00	-445,000.00	100.00%
Revenue Total:	**24,593,474.68**	**4,283,266.63**	**442,900.49**	**5,094,905.81**	**811,639.18**	**18.95%**
Expense						
300 - Wastewater	820,245.02	786,817.02	19,476.84	1,030,493.52	-243,676.50	-30.97%
301 - Water	127,500.00	107,500.00	525.92	342,973.47	-235,473.47	-219.05%
310 - Utility Operations	1,716,944.82	1,447,994.74	68,305.04	1,008,954.52	439,040.22	30.32%
311 - Arrowhead Wastewater Plant	507,110.00	412,360.00	6,064.51	442,601.21	-30,241.21	-7.33%

Budget Report **For Fiscal: FY 2024-2025 Period Endin** **5**

Department	Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Remaining
312 - Big Sky Wastewater Plant	139,400.00	65,400.00	910.00	42,062.27	23,337.73	35.68%
320 - Development/Capital	3,362,500.00	3,060,000.00	0.00	1,411,104.11	1,648,895.89	53.89%
330 - TWDB Project	21,005,000.00	465,000.00	95,173.06	350,471.18	114,528.82	24.63%
Expense Total:	**27,678,699.84**	**6,345,071.76**	**190,455.37**	**4,628,660.28**	**1,716,411.48**	**27.05%**
Fund: 400 - Utilities Surplus (Deficit):	**-3,085,225.16**	**-2,061,805.13**	**252,445.12**	**466,245.53**	**2,528,050.66**	**122.61%**
Report Surplus (Deficit):	**-5,557,236.97**	**-3,138,946.22**	**-1,289,077.55**	**149,045.71**	**3,287,991.93**	**104.75%**

Fund Summary

Fund	Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)
100 - General Fund	-2,357,535.51	-1,104,461.79	-1,474,628.29	-478,051.48	626,410.31
200 - Dripping Springs Ranch Park	-114,476.30	27,320.70	-66,894.38	160,851.66	133,530.96
400 - Utilities	-3,085,225.16	-2,061,805.13	252,445.12	466,245.53	2,528,050.66
Report Surplus (Deficit):	**-5,557,236.97**	**-3,138,946.22**	**-1,289,077.55**	**149,045.71**	**3,287,991.93**

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78620

Submitted By: Keenan Smith, TIRZ Project Manager, Shawn Cox, Deputy City Administrator, and Michelle Fischer, City Administrator

Council Meeting Date: October 7, 2025

Agenda Item Wording: **Discuss and consider approval of a Construction Contract between the City of Dripping Springs and QA Construction Services, Inc. for the Stephenson Building and Parking Lot Project**

Agenda Item Requestor: Mayor Bill Foulds, Jr.

Summary/Background: 9/5/25, 9/11/25, 9/18/25, and 9/25/25 the Committee held Value Engineering meetings with QA Construction Services, Inc. ("QA").

9/25/25 QA submitted final Value Engineering and Alternate selections based on Committee Consensus. Council Member Parks and Council Member Crow provided valuable participation and feedback.

9/29/2025 Committee Recommendation was submitted, which included the following:

Recommended Bid Base Items:

- Building: $3,014,000
- Parking Lot: $1,267,000
  Total: $4,281.000

Recommended Alternates:

- Alternate No. 1: Replace windows at existing building: $59,000
- Alternate No. 2: Roof thermal and acoustic insulation at existing building: $26,000
- Alternate A: Parking Lot Power: $113,000
  Total: $198,000

Value Engineering:

- Eliminated decorative pavers throughout
- City to provide quarry rocks
- Eliminated flagpole
- Eliminated most window treatments
- Eliminated picture hanging system at gallery
- Eliminated overhead cabinets at catering

- Eliminated overhead cabinets at Addition Entry Lobby
- Eliminated counter at Green Room
- Eliminated carpet tile and finished concrete in Addition, instead doing sealed concrete throughout
- Voluntary deduction for lighting fixtures

Total Costs Reduced $31,800.

Project Cost & Funding:

Contract Amount	$4,447,200
10% Contingency	$ 444,720
Total	$4,891.920
Debt Issuance Funds	$4,695,163
Landscape Funds	$ 200,000
Total	$4,895,163

The Committee recommends the notice to proceed on 10/20/2025. The contract period is 365 calendar days.

Council Member Parks will serve on the Project Construction Committee. Staff will regularly update City Council on the status of the project and bring proposed Change Orders to City Council for consideration as required by the City's Purchasing Policy or as directed.

Commission Recommendations: The Historic Preservation Commission and TIRZ Board continue to be supportive of the project.

Recommended Council Actions: Approve the construction contract with QA Construction Services, Inc., accepting the building and parking lot base bids, value engineering, Alternate 1, Alternate 2, and Alternate A, for a total of $4,447,200.

Attachments: Construction contract, value engineering spreadsheet.

Next Steps/Schedule: Execute contract; obtain Performance and Payment Bond, issue a notice to proceed.

Stephenson Building & Downtown Parking Lot

Construction Agreement with QA Construction Services, Inc.

City Council Meeting
Oct. 7, 2025

Keenan Smith, TIRZ Project Manager
Shawn Cox, Deputy City Administrator
Michelle Fischer, City Administrator

DRIPPING SPRINGS
Texas

Contract Negotiation Process



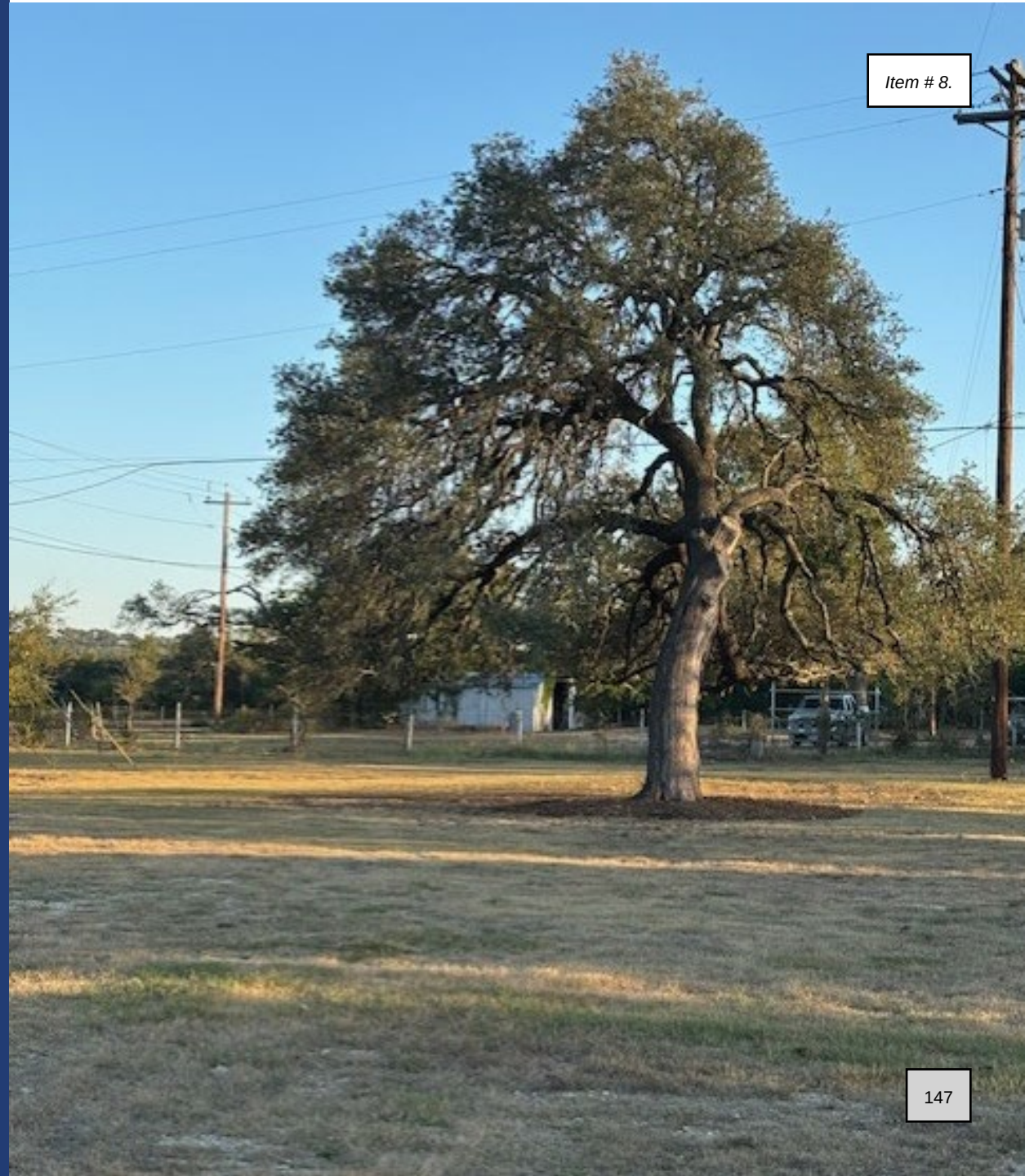
- 9/5/25, 9/11/25, 9/18/25, and 9/25/25 Committee held Value Engineering meetings w/ QA.
- 9/25/25 QA submitted final Value Engineering and Alternate selections based on Committee Consensus.
- 9/29/2025 Committee Recommendation submitted, including value engineering.
- 10/7/2025 City Council consideration of QA Construction Contract.

DRIPPING SPRINGS
Texas

Recommended Base Bid Items

Building:	$3,014,000
Parking Lot:	$1,267,000
Total Base Bid:	$4,281,000

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Texas



Recommended Alternates

- Alternate No. 1: Replace windows at existing building: $59,000
- Alternate No. 2: Roof thermal and acoustic insulation at existing building: $26,000

DRIPPING SPRINGS
Texas



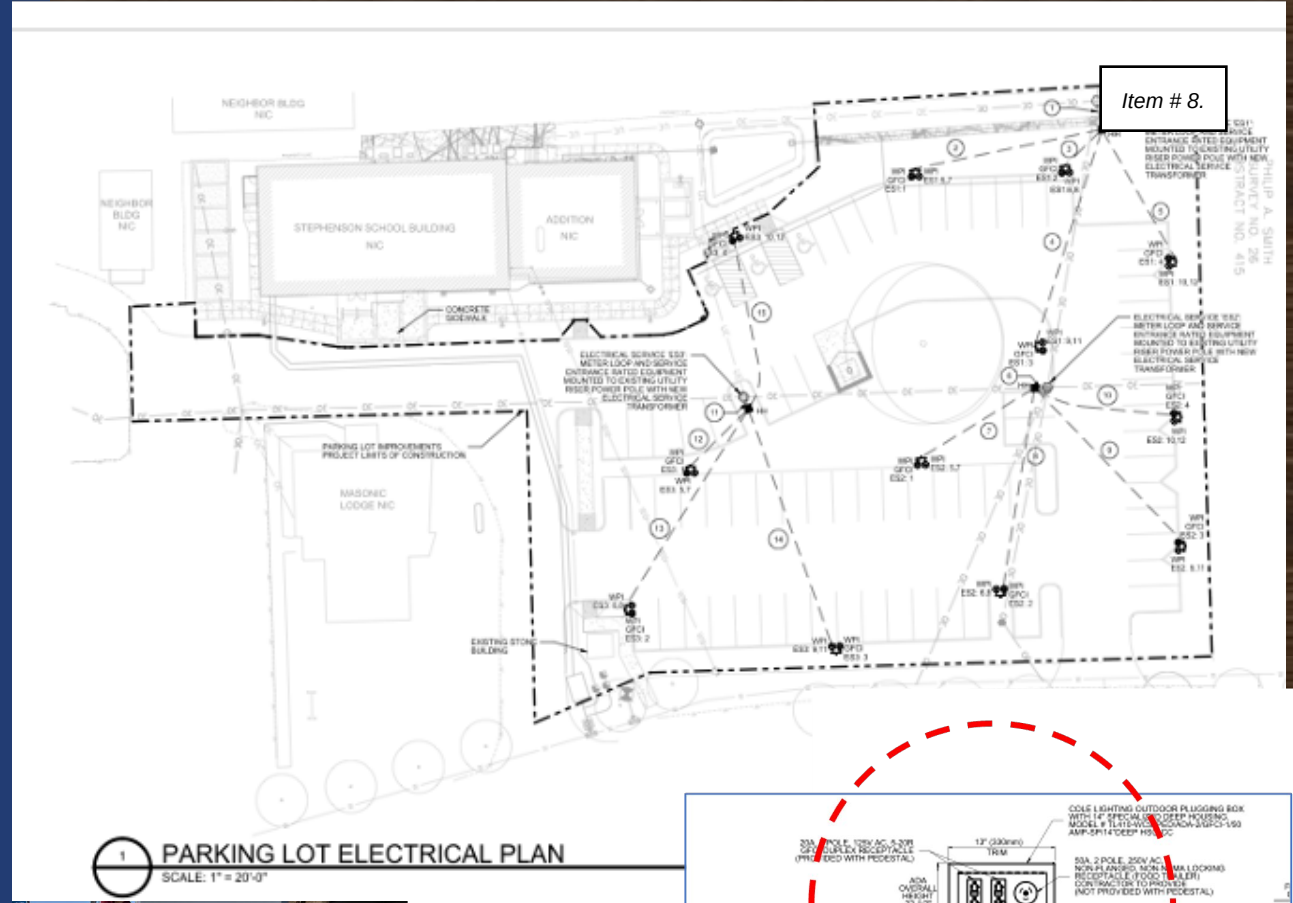


Recommended Alternates

- Alternate A: Parking Lot Power: $113,000
  - Facilitates Markets & Community Events
  - Recommended by Parks & Community Services

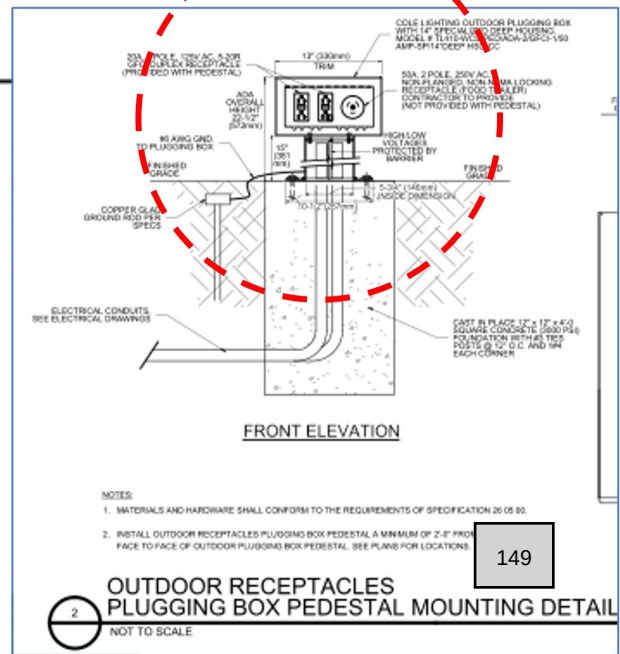
Total Add Alternates: $198,000

DRIPPING SPRINGS
Texas



1 PARKING LOT ELECTRICAL PLAN
SCALE: 1" = 20'-0"





2 OUTDOOR RECEPTACLES PLUGGING BOX PEDESTAL MOUNTING DETAIL
NOT TO SCALE

Value Engineering

- Eliminated decorative pavers throughout
- City to provide quarry rocks
- Eliminated flagpole
- Eliminated most window treatments
- Eliminated picture hanging system at gallery
- Eliminated overhead cabinets at catering
- Eliminated overhead cabinets at Addition Entry Lobby
- Eliminated counter at Green Room
- Eliminated carpet tile and finished concrete in Addition, instead doing sealed concrete throughout
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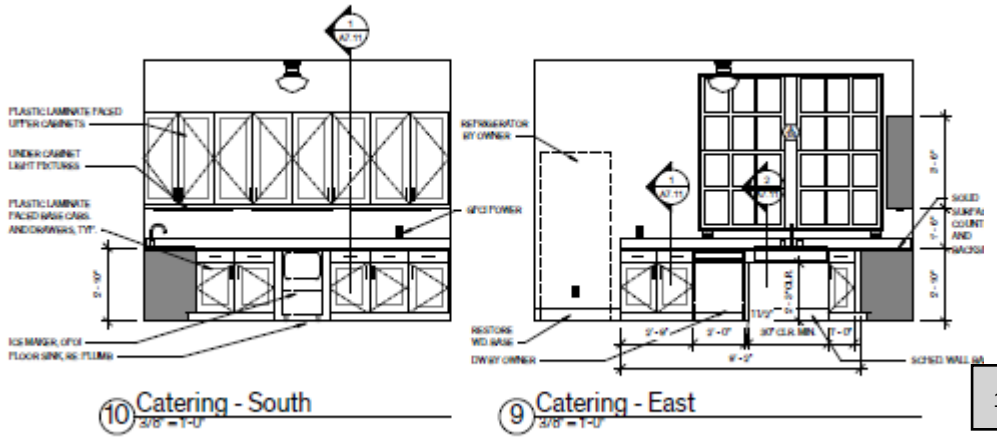
Total Value Engineering Reductions: ($31,800)

DRIPPING SPRINGS
Texas









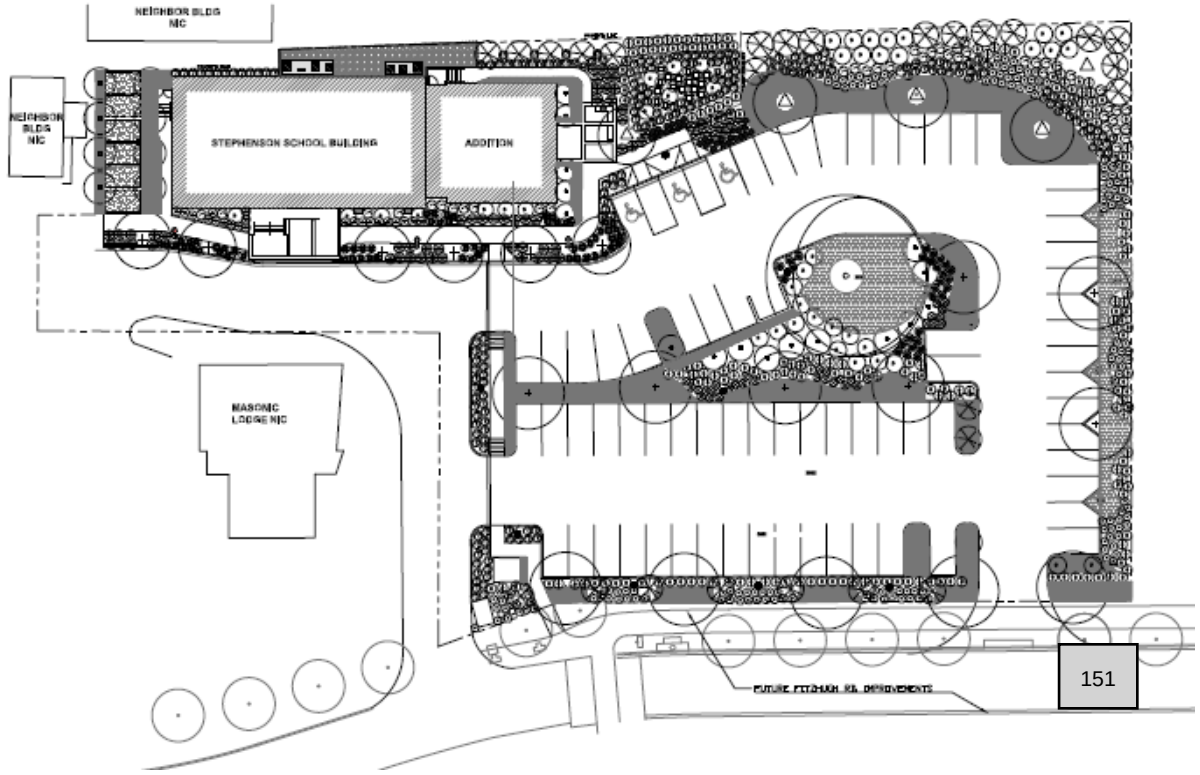
Project Cost & Funding

Base Bid	$4,281,000
Add Alternates	$ 198,000
Value Engineering	($31,800)
Net Contract Amount:	$4,447,200
Contract Amount	$4,447,200
10% Contingency	$ 444,720
Total	$4,891.920
Debt Issuance Funds	$4,695,163
Landscape Funds	$ 200,000
Total	$4,895,163









Next Steps

- Execute Contract
- Obtain Performance & Payment Bond
- Issue Notice to Proceed on 10/20/2025
- 365 calendar days to complete

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Texas



Questions?



DRIPPING SPRINGS
Texas

CONSTRUCTION CONTRACT

THIS CONSTRUCTION CONTRACT (hereinafter the "Contract") made this the 7th day of October, 2025 ("Effective Date"), by and between **QA Construction Services, Inc,** (a Texas limited liability company), whose address is 5811 Blue Bluff Road, Austin, TX 78724 (hereinafter called the "Contractor"), and the CITY OF DRIPPING SPRINGS (herein after called the "City").

WITNESSETH, that the Contractor and the City for the considerations stated herein mutually agree as follows:

ARTICLE 1. STATEMENT OF WORK

The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment and services, including utility and transportation services that are such an inseparable part of the work described that exclusion would render performance by Contractor impractical, illogical, or unconscionable. Furthermore, Contractor shall perform and complete all work required for the construction of the Improvements embraced in the Project; namely, STEPHENSON SCHOOL BUILDING PROJECT and PARKING LOT, and required supplemental work, all in strict accordance with the contract documents including all addenda thereto (hereinafter referred to as the "Work"). All Work shall be performed in a good and workmanlike manner according to industry standards. The parties agree that the Statement of Work and the addenda to this Contract is a description of Contractor's obligations and responsibilities and is deemed to include preliminary considerations and prerequisites.

ARTICLE 2. CONTRACTOR'S DUTIES

2.1 Construction. Contractor shall construct all Improvements embraced in the **Project** as described in the proposal documents.

2.2 Labor and Materials. The Contractor shall furnish all labor, materials, mechanical workmanship, transportation, equipment, and services necessary for the completion of the work described in this Contract and in accordance with the plan (if any) and other contract documents to conduct the construction required under this Contract in an efficient manner.

2.3 Completion of Work. Work, shall commence after the date the Notice to Proceed is received by the Contractor following the preconstruction meeting, and Contractor shall complete the Work within **three hundred sixty-five (365) consecutive calendar days** after receiving the Notice to Proceed. The City shall provide Contractor with written acceptance of the Work upon completion. Payment of monies due hereunder does not constitute acceptance of the Work.

2.4 Invoicing. Contractor shall prepare an invoice for work completed and submit the involved to the City for payment. The proposal for the work is set forth in the proposal documents. Incomplete or inaccurate invoices shall be returned other Contractor for correction and re-submittal.

2.5 Insurance. Contractor shall assume all risk and liability for accidents and damages that may occur to persons or property during the performance of the work under this Contract. Contractor shall not be covered by the City's liability carrier. Contractor shall, at its sole expense, acquire and maintain during the full term of this Contract insurance coverage with insurers licensed to do business in the State of Texas and acceptable to the City. The Contractor shall comply with all insurance requirements contained in *Article 5 of General Conditions and Division C*, including maintaining worker's compensation and liability coverage in stated amounts and providing proof of such coverage. Contractor shall give the City thirty (30) days written notice of any material change or cancellation of coverage. Contractor shall list the City as an additional named insured in its liability coverage.

2.6 Change Orders. Change orders from the City or requested by the Contractor shall be controlled by *Articles 10, 11 and 12 of the General Conditions*. The City shall have the continuing right to inspect and, upon reasonable cause, reject any Work provided by Contractor under this Contract. Contractor will at Contractor's cost promptly re-perform any Work to the extent necessary to correct any rejected Work, to correct any breach or to make the Work conform to the provisions of this Contract and any applicable Statement of Work (collectively, "Corrective Work"). The City's failure to inspect or to discover defective Work will not relieve Contractor from any liability or responsibility. Payment of any funds by the City to Contractor will not constitute a waiver or acceptance of any defective Work.

2.7 Warranty and Maintenance Bond. The Contractor agrees to remedy all defects appearing in the work, or developing in the materials furnished and the workmanship performed, under this Contract during the warranty period of **two (2) years** after the date of final acceptance of the work by the City for the full amount (100%) of the work. Contractor further agrees to indemnify and hold the City harmless from any costs encountered in remedying such defects. Contractor shall agree to supply a **two (2) year** maintenance bond to the City at the time of acceptance of the work for the full amount of the work. Furthermore, Contractor shall:

(a) Timely perform the Work with due diligence, in a good, workmanlike and safe manner consistent with that high degree of skill, competence and professional care of generally accepted industry standards and in compliance with City policies and the provisions of this Contract and any applicable Statement of Work. Contractor will perform the Work within the time set by the City in each Statement of Work.
(b) Ensure that all employees of Contractor and Contractor Group maintain a current license while performing any Work for which a license is required under any applicable regional, state or federal law or regulatory agency.
(c) Use only materials, goods, tools, machinery, and equipment of sufficient quality for their purposes, free from defect and meeting all standards and specifications customary for the Work being performed as well as standards and specifications provided by City, if any.

2.8 Mandatory Disclosures. Texas law requires that vendors make certain disclosures. Prior to the effective date of this Contract and issuance of the Notice to Proceed, the Contractor has submitted to the City a copy of the Conflict-of-Interest Questionnaire form (CIQ Form) approved by the Texas Ethics Commission (Texas Local Government Code Chapter 176), and the Contractor

shall file a Form 1295 Certificate of Interested Parties (Form 1295) approved by the Texas Ethics Commission (Texas Government Code Section 2252.908). The Contractor also confirms it is in compliance with all Texas requirements related to government contracts including: (1) no boycott of lsrael; (2) not listed as a foreign terrorist organization by the Texas Comptroller of Public Accounts; (3) Contractor does not have a policy or practice of discriminating against firearm entities or firearm trade associations; (4) Contractor does not boycott energy companies; and Contractor is compliant with all other Texas laws including any additional disclosure requirements.

ARTICLE 3. THE CONTRACT PRICE

The City will pay the Contractor for the performance of the Contract, in current funds, subject to additions and deductions as provided in this Contract and Addenda, the sum of **$ 4,447,200.00**. Payments will be made pursuant to this Contract and its Addenda. Contractor shall document and submit to City all time, mileage, travel, equipment, rentals, supplies, materials and other charges incurred for which City has agreed to reimburse Contractor. Contractor shall maintain correct records in connection with the Work and all transactions related to this Contract (including without limitation, complete and accurate records of all of Contractor's charges and expenses and documentation of items that are chargeable to City under this Contract) and shall retain all records for two (2) years following the calendar year in which the final invoice for the Work was sent to City. City shall have the right, at City's expense, upon reasonable advance notice at the offices of Contractor and during Contractor's normal business hours, to inspect, copy, and audit all records (except Contractor's trade secrets or proprietary information) of Contractor in connection with the Work performed by or on behalf of Contractor for City's account and all payments made to or by Contractor. If the audit reveals a discrepancy between the amount or value of materials or services billed to City and that which is evidenced by Contractor's books and records, City shall have the right to adjust its account with Contractor, which adjustment may necessitate a refund by Contractor of funds disbursed to Contractor.

ARTICLE 4. THE CONTRACT

The executed contract documents shall consist of the following components:

Exhibit A	Project Manual
Exhibit B	Plans – Stephenson Building
Exhibit C	Plans – Parking Lot
Exhibit D	Addenda
Exhibit E	Performance and Payment Bond
Exhibit F	Certificate of Insurance
Exhibit G	Contractor's Signed Cost Proposal
Exhibit H	Contractor's Value Engineering
Exhibit I	Conflict of Interest Questionnaire
Exhibit J	Form 1295 Certificate
Exhibit K	Form of Maintenance Bond

This Contract, together with other documents enumerated in this ARTICLE 4, which said other documents are as fully a part of this Contract as if hereto attached or herein repeated, forms the Contract between the parties hereto. If there is any inconsistency between the terms of this Contract and other documents listed herein Article 4, the terms of this Contract shall control. The City objects to and rejects any terms contained within Contractor's statements of work, purchase orders, work orders, invoices, proposals, proposals, delivery tickets, or other document issued by Contractor that modify, alter, amend, or supplement the terms of this Contract, purport to affect the risk allocation scheme in this Contract, or add additional requirements to this Contract or any Statement of Work. The Parties agree that no changes to the risk allocation scheme set forth in this Contract may be made unless an amendment to this Contract is executed by authorized representatives of both Parties that specifically identifies this Contract and the specific terms or provisions that are amended

ARTICLE 5. TERMINATION AND DELAYS

Terminations and delays are governed by *Articles 10, 12 and 15 of General Conditions*.

ARTICLE 6. MISCELLANEOUS

6. Non-Assignability. Neither the City nor the Contractor shall assign any interest in this Contract without the prior written consent of the other party outside of what is allowed in this Contract, or its the proposal documents described above.

6.2 Amendment. This Contract and the proposal documents described above embody the entire Contract between the parties and may not be modified unless in writing, executed by all parties.

6.3 Independent Contractor. Contractor is an independent contractor under this Contract. Services provided by Contractor pursuant to this Contract shall be subject to the supervision of the Contractor. In providing such services, neither Contractor nor Contractor's agents shall act as officers, employees, or agents of the City. No partnership, joint venture, or other join relationship is created hereby. City does not extend to Contractor or Contractor's agents any authority of any kind to bind City in any respect whatsoever.

6.4 Notice. Any notice and/or statement required or permitted by this Contract, shall be deemed to be given and delivered when deposited in the United States mail, certified with return receipt requested, postage prepaid, addressed to the appropriate Party at the following addresses, or such other address as amended by providing notice to the other party at the addresses below:

If to the City:
City of Dripping Springs
Attn: City Administrator
PO Box 384
Dripping Springs, TX 78620

If to the Contractor:
QA Construction Services Inc.
Attn: Shay Traweek, Project Manager
5811 Blue Bluff Road
Austin, TX 78724

6.5 Force Majeure. No party to this Contract shall be deemed in violation if it is prevented from timely performing any of its obligations by reason of labor disputes, acts of God, acts of the public enemy, acts of superior governmental authority, or other circumstances for which the party is not responsible, or which is not in its control.

6.6 Law & Venue. This Contract shall be governed by the laws of the State of Texas. The venue for any disputes arising under this Contract shall be the district court of Hays County, Texas.

6.7 Severability. If the final judgment of a court of competent jurisdiction invalidates any part of this Contract, then the remaining parts shall be enforced, to the extent possible, consistent with the intent of the Parties as evidenced by this Contract.

6.8 Entire Contract. This Contract and the proposal documents described above in Article 4 herein constitutes the entire Contract of the Parties and supersedes any and all prior understandings, or oral or written Contracts, between the Parties on this subject matter.

6.09 Termination and Delays. Terminations and delays are governed by *Articles 10, 12 and 15 of Section D-1 of the General Conditions*.

6.10 Indemnification. Contractor hereby releases, and shall cause its insurers, its subcontractors, to release the City and its agents and assigns from any and all claims or causes of action which Contractor, its insurers, and/or its subcontractors might otherwise possess resulting in or from or in any way connected with any loss covered or which should have been covered by insurance maintained and/or required to be maintained by Contractor and/or its subcontractors pursuant to this contract, even if such claims of causes of action arise from or are attributed to the sole or concurrent negligence of any City agent or from strict liability.

6.11 Liquidated Damages. Failure on the part of the Contractor to sustain the required maintenance or perform under this Contract may result in liquidated damages. The City may assess liquidated damages as listed in Section C-7 for incomplete work until all work is completed.

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed in four (4) original copies on the day and year first above written.

CITY OF DRIPPING SPRINGS:

_____

Michelle Fischer, City Administrator

CONTRACTOR:

_____
Printed Name and Title

ATTEST:

_____
Signature

_____
Printed Name and Title

CORPORATE CERTIFICATIONS:

I, _____, certify that I am the Secretary / Treasurer of the corporation named as Contractor herein; that _____ who signed this Contract on behalf of the Contractor, was then _____ of said corporation; that said Contract was duly signed for and on behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

[CORPORATE SEAL]

_____
Corporate Secretary

_____
Printed Name

_____
Date

Project Manual

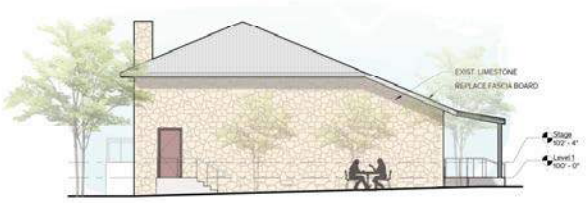
Stephenson School Building

Rehabilitation & Addition

Dripping Springs, Texas







ARCHITEXAS Project No. 2314

January 17, 2025

ISSUED FOR PERMIT & CONSTRUCTION



01/17/2025

Owner
City of Dripping Springs
511 Mercer Street
Dripping Springs, TX 78620

Architect
ARCHITEXAS
Architecture, Planning and Historic Preservation, Inc.
1023 Springdale Rd
Bldg 11, Suite E
Austin, TX 78721

Structural Engineer
Architectural Engineers Collaborative
3800 N Lamar Blvd., Suite 330
Austin, TX 78756
Civil Engineer

Doucet & Associates
7401 State Hwy 71, B160
Austin, TX 78735

MEP Engineer
Cleary Zimmermann Engineers
3218 Manor Rd. Suite 200
Austin, TX 78723
Landscape Architect

Co'Design
1155 Barton Springs Road
Austin, TX 78704

Acoustics & A/V
BAI, LLC
4006 Speedway
Austin, TX 78751

Accessibility
Rob Roy Parnell, Inc.
251 McKellar Road
Dripping Springs, TX 78620

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SECTION C-7	CONTRACT TIME AND LIQUIDATED DAMAGES	
SECTION C-8	EQUAL OPPORTUNITY CLAUSE	
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SECTION C-10	ENGINEER & OWNER REPRESENTATIVE	
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01/17/2025

DRIPPING SPRINGS
Texas

REQUEST FOR PROPOSAL

Stephenson School Building & Parking Improvements

City of Dripping Springs, TX

The City of Dripping Springs will receive sealed proposals for the following project:

PROJECT:	Stephenson School Building & Parking Lot Improvements
DUE DATE AND TIME:	**Thursday, July 17, 2025, 2:00 p.m.**
SUBMISSION LOCATION:	City of Dripping Springs 511 Mercer Street Dripping Springs, Texas 78620 Personal Delivery or U.S. Mail accepted. No submissions by fax or email.
DEADLINE FOR INQUIRIES:	**Friday, July 11, 2025, 5:00 p.m.**
OPTIONAL PRE-PROPOSAL CONFERENCE:	**Wednesday, July 2, 2025, 1 p.m.** at the building, 311 Old Fitzhugh Rd, Dripping Springs, Texas - R23573
TYPE OF WORK:	Rehabilitation of an historic building (4,020 square feet), an addition of 1,881 square feet, 8,490 square feet of site improvements, and 41,160 of parking improvements.

NOTICE TO RESPONDENTS

Competitive sealed proposals will be received by the **City of Dripping Springs,** at its office at **511 Mercer St, City Hall Building, Dripping Springs, Texas,** until **2:00 p.m.** on **Thursday, July 17, 2025**. Proposals will be evaluated and scored based on selection criteria by the City's evaluation committee. Proposals will be for the furnishing of all necessary materials, machinery, equipment, labor, superintendence, and all other services and appurtenances required for the construction of the "Project" titled **Stephenson School Building & Parking Improvements** and shall include acknowledgement of any addenda submitted, and all other documents included in said call for proposals. No proposals may be withdrawn after receipt by the City. Any proposals received after the scheduled deadline will be returned unopened. Said proposal shall be marked;

"STEPHENSON SCHOOL BUILDING & PARKING IMPROVEMENTS"

Proposals must be submitted on City of Dripping Springs forms and must be accompanied by an acceptable proposal security in the form of a cashier's check or bond, payable to the City of Dripping Springs, Texas, equal to five percent (5%) of the total bid amount. Proposals must be submitted in a sealed envelope plainly marked with the name of the project as shown above, and the name and address of the Respondent. When submitted in person or by courier, this envelope shall be placed in another envelope addressed to:

City of Dripping Springs
511 Mercer St.
Dripping Springs, Texas 78620

Stephenson School Building & Parking Improvements Project generally includes: rehabilitation of an historic building (4,020 square feet), an addition of 1,881 square feet, 8,490 square feet of site improvements, and 41,160 of parking improvements.

Plans, Specifications, and Instructions to Respondents may be obtained via email at cgilpin@cityofdrippingsprings.com and via download at the City of Dripping Springs website https://www.cityofdrippingsprings.com/requestforbids beginning **June 25, 2025**.

The City reserves the right to reject any and all proposals and any nonconforming proposal and to award the Contract in a period of time not exceeding **60 days** from the proposal due date. Proposals shall remain firm for that period.

The successful Respondent must furnish a performance bond and payment bond on the forms provided, each in the amount of one hundred percent (100%) of the contract amount, from a surety company holding a permit from the State of Texas to act as surety.

Respondents are expected to inspect the site of the work and inform themselves regarding all local conditions.

An **Optional Pre-Proposal conference** with prospective proposers will be held on **Wednesday, July 2, 2025, at 1:00 p.m.** at the building, 311 Old Fitzhugh Rd., Dripping Springs, Texas.

INSTRUCTIONS TO RESPONDENTS

1. NONRESPONSIVE PROPOSALS: PROPOSALS, AT A MINIMUM, WILL BE CONSIDERED NONRESPONSIVE IF FAILURE TO:
    - *Sign Proposal*
    - Include *Proposal Bond*: All cost proposals shall be accompanied by a certified cashier's check upon a National or State bank in an amount not less than five percent (5%) of the total maximum proposal price, payable without recourse to City, or a bond in the same amount from a reliable surety company, as a guarantee that the respondent will enter into a contract and execute performance and payment bonds within ten (10) days after notice of award of contract to him. Proposal guarantees must be submitted in the same sealed envelope with the cost proposal. Proposals submitted without check or bonds will not be considered.
    - List *Unit Price* for each item
    - List *Total Amount of Cost Proposal*
    - Include *Non-Collusion Statement*: Each respondent shall file a statement executed by, or on behalf of, the person, firm, association, or corporation submitting the cost proposal certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive proposals in connection with the submitted proposal. Failure to submit the executed statement as part of the proposal documents will make the proposal nonresponsive and not eligible for award consideration.
    - Include *References*: The City REQUIRES respondent to supply with this Proposal, a list of at least three (3) references where like services have been supplied by their firm. Include name of firm, address, telephone number and name of representative. This information is provided on the Information from Respondents forms within this proposal package.

2. ALL INFORMATION REQUIRED BY THE COST PROPOSAL FORM MUST BE FURNISHED OR THE PROPOSAL WILL BE DEEMED NON-RESPONSIVE. WHERE THERE IS AN ERROR IN THE EXTENSION OF PRICE, THE UNIT PRICE SHALL GOVERN.

3. ONE (1) ORIGINAL OF ALL PROPOSALS MUST BE SUBMITTED (THIS INCLUDES ALL DOCUMENTATION SUBMITTED WITH THE PROPOSAL). PROPOSALS MUST BE MARKED ORIGINAL. ONE (1) DIGITAL COPY OF ALL PROPOSALS MUST BE SUBMITTED.

4. Should this solicitation fail to contain sufficient information in order for interested firms to obtain a clear understanding of the services required by the City, or should it appear that the instructions outlined in the solicitation are not clear or are contradictory, any interested firm may in writing request clarification from Chad Gilpin, P.E., no later than **5 p.m. on Friday, July 11, 2025**. The interested firm shall email a copy of the written clarification request to Chad Gilpin, at cgilpin@cityofdrippingsprings.com and Written requests from interested firms and written responses by the City will be provided to all Applicants.

5. Prior to submitting any proposal, respondents are required to read the plans, specifications, contract and bond forms carefully; to inform themselves by their independent research, test and investigation of the difficulties to be encountered and judge for themselves of the accessibility of the work and all attending circumstances affecting the cost of doing the work and the time required for its completion and obtain all information required to make an intelligent proposal.

6. Each proposal and the proposal guaranty must be originals and must be sealed in an envelope plainly marked with the name of the Project, and the name and the address of the respondent. When submitted, this envelope shall be placed in another envelope addressed as indicated in this Notice to Respondents.

7. Only proposals and proposal guaranties actually in the hands of the designated official at the time set in this Notice to Respondents shall be considered. Proposals submitted by telephone, e-mail, or fax will not be considered.

8. In case of ambiguity or lack of clarity in the statement of prices in the proposals, the City reserves the right to consider the most favorable analysis thereof, or to reject the proposal. Unreasonable (or unbalanced) prices submitted in a proposal may result in rejection of such proposal or other proposals.

9. Any quantities given in any portion of the contract documents, including the plans, are estimates only, and the actual amount of work required may differ somewhat from the estimates. The basis for the payment shall be the actual amount of work done and/or material furnished.

10. All proposal securities will be returned to the respective respondents within twenty-five (25) days after proposals are opened, except those which the City elects to hold until the successful respondent has executed the contract. Thereafter, all remaining securities, including security of the successful respondent, will be returned within sixty (60) days.

11. Performance and Payment Bonds: Section 262.032 and of the Texas Local Government Code and Section 2253.021 of the Texas Government Code governs the requirements for performance bonds and payment bonds for government entities making public work contracts. A performance bond is required if the contract is in excess of $50,000 and is to be made for the full amount of the contract. A payment bond is required if the contract is in excess of $25,000 and is to be made for the full amount of the contract. The bonds are to be executed within ten (10) days after receipt of written notification of award of contract prior to beginning work on the project and must be executed by a corporate surety or sureties in accordance with the Texas Insurance Code. In the event the bond exceeds $100,000.00, the surety must also: (1) hold a certificate of authority from the United States secretary of the treasury to qualify as a surety on obligations permitted or required under federal law; or (2) have obtained reinsurance for any liability in excess of $100,000.00 from a reinsurer that is authorized and admitted as an insurer in this state and is the holder of a certificate of authority from the United States secretary of the treasury to qualify as a surety or reinsurer on obligations permitted or required under federal law. In determining whether the surety or reinsurer holds a valid certificate of authority the City may rely on the list of companies

holding certificates of authority as published in the Federal Register covering the date on which the bond is to be executed. If the public works contract is less than $50,000 the performance bond will not be required as long as the contract provides that payment is not due until the work is completed and accepted by the City. The purpose of a performance bond is for the protection of the government entity and is conditioned on the faithful performance of the work being done by the contractor in accordance with the plans, specifications and contract documents. The payment bond is for the protection of persons supplying labor and materials to the contractor to ensure payment.

12. Contract Times and Liquidated Damages – Respondents must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the City, and to fully complete the project within the specified time stated in the proposal. Respondents must agree to pay liquidated damages of as listed in *Section C-7* to the City for every day past the specified completion date stated in the proposal.

13. All of the items listed are to be on a "per unit" basis, stating a firm price per unit or unit quantity of each item. This price must be good from the date of proposal opening through the completion of the project. Proposals which do not state a fixed price will not be considered. The City Council may award a contract for the period implied or expressly stated in the lowest and/or best proposal.

14. The City reserves the right to award the contract on the basis of the respondent's qualifications, cost proposal, and any combination of alternative cost proposal items which appears most advantageous to the City, to reject any or all proposals, to waive objections based on failure to comply with formalities and to allow the correction of obvious or patent errors. Unless all proposals are rejected, City agrees to give Notice of Award of contract to the successful respondent within **sixty (60) days** from the date of the proposal opening or for such longer period of time that the Respondent may agree to in writing upon request of Owner.

15. Respondents for the construction work must submit a satisfactory cashier's or certified check, or proposal bond from a surety duly authorized and licensed in the State of Texas, payable without recourse to the order of the City, in an amount not less than five percent (5%) of the total cost proposal which check or bond shall be submitted as a guarantee that the respondent will enter into a contract and executed performance and payment bonds within ten (10) days after Notice of Award of contract is given to him for contracts in excess of $25,000.00. Proposals without the required check or bond will NOT be considered.

16. The successful respondent for the construction of the improvements must furnish a satisfactory Certificate of Insurance, and a satisfactory Performance Bond in the amount of 100% of the total contract price, and a satisfactory Payment Bond in such amount, both duly executed by such respondent as principal and by a corporate surety duly authorized so to act under the laws of the State of Texas. The successful respondent will be required to provide Performance and Payment Bonds issued by an insurance company which meets the minimum State requirements and is licensed in the State of Texas, and has a Best's Key Rating as follows:

Construction Contract	Rating
25,001 - 250,000	None
250,000 - 1,000,000	B
Over - 1,000,000	A

All lump sum and unit prices must be stated in both script and figures.

17. Respondents are expected to inspect the site of the work and to inform themselves regarding all local conditions.

18. Sales Tax: The City is by statute, exempt from the State Sales Tax and Federal Excise Tax.

19. Basis of Award - The City shall not be obligated to accept the lowest priced proposal but shall make an award to the Respondent that provides the "Best Value" to the City. "Best Value" shall be determined using the evaluation criteria outlined below. The proposals will be evaluated and scored by the City's evaluation committee. The intent of the selection process is to review submitted proposals and make an award based upon qualifications and best value as described herein. Should the respondent deemed best value and fail to negotiate and execute an acceptable contract with the City, the City may move to the next highest scoring respondent. A 100-point scale will be used to create the final evaluation recommendations. The factors and weighting on which proposals will be evaluated are:

    I. Qualifications and Similar Project Experience, Including References (20 Points)
    II. Experience with installation of masonry restoration & cleaning, wood & door restoration, plaster restoration, & permeable pavers. (20 Points)
    III. Timeline and previously demonstrated ability to stay on schedule (15 Points)
    IV. Fees/ Pricing (40 Points)
    V. Value Engineering (5 Points)

20. Best Final Offer (BFO) - Clarification discussions, at the City's sole option, may be conducted with Respondents who submit Solicitation Responses determined to be acceptable and competitive. Respondents shall be accorded fair and equal treatment with respect to any opportunity for discussion and/or written revisions of the Solicitation Responses. Such revisions may be permitted after submissions and prior to award solely for the purpose of obtaining BFOs. In conducting discussions, the City shall not disclose any information derived from the Solicitation Responses submitted by competing Respondents. The City evaluation committee shall score BFO responses in a manner consistent with the scoring of original solicitation responses. The criteria to be re-evaluated following a BFO shall depend on the type of clarification requested by the Committee from Respondent. Scores for any of the applicable selection criteria included in the Committee's request for BFO shall be replaced by the BFO scores.

Project: **STEPHENSON SCHOOL BUILDING & PARKING IMPROVEMENTS**

THIS PROPOSAL IS SUBMITTED TO:

City of Dripping Springs
City Hall
511 Mercer St.
Dripping Springs, Texas 78620

FROM:_____
Contractor

1. The undersigned RESPONDENT proposes and agrees, if this Cost Proposal is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Cost Proposal and in accordance with the other terms and conditions of the Contract Documents.

2. RESPONDENT agrees to commence Work under this Contract on a date to be specified in written "Notice to Proceed" of the OWNER and to reach Substantial Completion of the Work within **sixty (60) calendar days** thereafter. RESPONDENT further agrees to pay, as liquidated damages, the sum for each consecutive working day thereafter as provided in Division C, Section 7 thereafter that Substantial Completion has not been reached as provided in the Agreement.

3. RESPONDENT accepts all of the terms and conditions of the Advertisement, Notice to Respondents and Instructions to Respondents, including without limitation those dealing with the deposition of Proposal Security. This Cost Proposal will remain subject to acceptance for **60 calendar days** after the day of Proposal opening. RESPONDENT will sign and submit the Agreement with the Bonds and other documents required by the Proposal Requirements within **10 calendar days** after the date of CITY's Notice of Award.

4. In submitting Cost Proposal, RESPONDENT represents, as more fully set forth in the Agreement, that:

   A. RESPONDENT has examined copies of all the Proposal Documents and of the following Addenda (receipt of all which is hereby acknowledged):

      Addendum No.:_____ Dated: _____
      Addendum No.:_____ Dated: _____
      Addendum No.:_____ Dated: _____
      Addendum No.:_____ Dated: _____
      Addendum No.:_____ Dated: _____

   B. RESPONDENT has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance, or furnishing of the Work.

D. RESPONDENT has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, and studies that pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance, or furnishing of the Work as RESPONDENT considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, explorations, tests, reports, or similar information or data are or will be required by RESPONDENT for such purposes.

E. RESPONDENT has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, or similar information or data in respect of said Underground Facilities are or will be required by RESPONDENT, of the OWNER and/or the ENGINEER, in order to perform and furnish the Work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Contract Documents.

F. RESPONDENT has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.

G. RESPONDENT has given ENGINEER written notice of all conflicts, errors, or discrepancies that it has discovered in the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to RESPONDENT.

H. This Proposal is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation, and is not submitted in conformity with any Agreement or rules of any group, association, organization, or corporation; RESPONDENT has not directly or indirectly induced or solicited any other RESPONDENT to submit a false or sham Proposal; RESPONDENT has not solicited or induced any person, firm, or corporation to refrain from proposing; and RESPONDENT has not sought by collusion to obtain for itself any advantage over any other RESPONDENT or over OWNER.

5. The following documents (signed and completed) are attached to and made a condition of this Proposal:

A. Required Proposal Security in the form of a Proposal Bond, Cashier's Check, or Certified Check.
B. Non-Collusion Affidavit
C. Conflict of Interest Statement
D. Information From Respondents

RESPECTFULLY SUBMITTED on _____, 2025.

By:_____
(Authorized Signature)

Respondent, if Respondent is an individual
Partner, if the Respondent is a Partnership
Officer, if the Respondent is a Corporation

_____
(Typed or Printed Name and Title)

Respondent:_____
(Name of Company)

Business Address: _____

_____

_____

Telephone No: _____

IF Respondent is a Corporation:

ATTEST

_____
(Signature of Witness) (Corporate Seal)

_____
(State of Incorporation)

IF Respondent is a Joint Venture:

Each joint venture must sign a separate copy of this page. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.

DRIPPING SPRINGS
Texas

City of Dripping Springs / Stephenson Building and Parking Improvements

Bid Tabulation Summary- References

Bidder's Firm Name:

Bid Item	Project Element	Reference	Scope of Work / Remarks	Bid Amount
1	Stephenson Building- Adaptive Re-Use & Addition	Architexas Plans, Specs & Bid Docs Pkg.	Adaptive Re-Use of existing Historic Building, with an attached Addition of New Construction- Building Permit Case #2025-1075	$
2	Stephenson Parking Improvements (excluding Alternate "A" Parking Lot Power)	HDR / Doucet (Kleinfelder) Plans, Specs & Bid Docs Pkg	Parking Lot with associated Site Improvements- Site Development Permit Case #SD 2024-022	$
-		Bid Items 1+2	Subtotal- Building and Parking Improvements:	$
3	Add Alternate "A" Parking Lot Power & Electrical Service	E103, E502, E602 HDR / Doucet set	Add: Convenience Outlets and associated enabling Electrical Service to facilitate use of Parking Lot during City authorized events	$
4	Add Alternate "B" Rambo Lodge (offsite) Supplemental Paving	Rambo Lodge Easement Exhibit B	Add: Paving Mill & Overlay all deteriorated paving in Rambo Lodge parking area, per Agreement	$
Bid Recap	Total Project (All Elements, including Add Alternates)	Bid Items 1+2+3+4	Total Bid Summary:	$

NON-COLUSION AFFIDAVIT
PRIME RESPONDENT

STATE OF TEXAS {}

COUNTY OF HAYS {}

being first duly sworn, deposes and says

That he is _____
(a Partner of Officer of the firm of, etc.)

the party making the foregoing proposal, that such proposal is genuine and not collusive or sham; that said Respondent has not colluded, conspired, connived or agreed, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the cost proposal or affiant or of any other Respondent, or to secure any advantage against the City of Dripping Springs or any person interested in the proposed Contract; and that all statements in said proposal are true.

_____
Signature of

Respondent, if the Respondent is an individual
Partner, if the Respondent is a Partnership
Officer, if the Respondent is a Corporation

Subscribed and sworn before me this _____ day of _____, **2025**.

_____
Notary Public

My Commission expires:

_____

INFORMATION FROM RESPONDENTS

THE FOLLOWING INFORMATION MUST BE COMPLETED AND SUBMITTED WITH THE PROPOSAL. Failure to provide the information will cause the Proposal to be non-responsive and may cause its rejection.

Qualifications and Similar Experience: Provide information for 3 similar projects completed by Respondent within last 5 years.

1. Name of Project:_____
   Project Owner: _____
   Reference Contact Person & Phone No.:_____
   Value of Contract:_____
   Date Completed:_____
   Respondent's Project Manager:_____
   Respondent's Project Superintendent:_____
   Original Project Completion Date: _____
   Actual Project Completion Date: _____

2. Name of Project:_____
   Project Owner: _____
   Reference Contact Person & Phone No.:_____
   Value of Contract:_____
   Date Completed:_____
   Respondent's Project Manager:_____
   Respondent's Project Superintendent:_____
   Original Project Completion Date: _____
   Actual Project Completion Date: _____

3. Name of Project:_____
   Project Owner: _____
   Reference Contact Person & Phone No.:_____
   Value of Contract:_____
   Date Completed:_____
   Respondent's Project Manager:_____

Respondent's Project Superintendent:_____

Original Project Completion Date: _____

Actual Project Completion Date: _____

Experience with rehabilitation and preservation of historic buildings: Provide a statement in an additional attachment discussing the Respondent's Project Manager and Project Superintendent experience with rehabilitation and preservation of historic buildings.

Project Timeline: Provide a proposed project schedule from Notice to Proceed to Project Closeout.

Subcontractors and Suppliers: Submit a list of proposed Subcontractors who will perform the following work as well as list the proposed subcontractors who will perform work having a value of more than ten (10) percent of the total contract amount. If self-performing any items below, indicate in the space provided.

1. Masonry Restoration & Cleaning_____
2. Wood Window Restoration_____
3. Wood Door Restoration _____
4. Plaster Restoration_____

Value Engineering: In a separate attachment provide a list of value engineering considerations including potential savings on items contained in the Cost Proposal. A summary narrative of the value engineering considerations and how they would benefit the City may also be included.

Financial Status: A confidential financial statement will be submitted by the selected Respondent only if the City deems it necessary.

CITY OF DRIPPING SPRINGS CONFLICT OF INTEREST STATEMENT

I hereby acknowledge that I am aware of the Local Government Code of the State of Texas, Section 176.006 regarding conflicts of interest and will abide by all provisions as required by Texas law.

Certificate of Interested Parties (TEC Form 1295). For contracts needing City Council approval, or any subsequent changes thereto requiring City Council approval, the City may not accept or enter into a contract until it has received from the Contractor a completed, signed, and notarized TEC Form 1295 complete with a certificate number assigned by the Texas Ethics Commission ("TEC"), pursuant to Texas Government Code § 2252.908 and the rules promulgated thereunder by the TEC. The Contractor understands that failure to provide said form complete with a certificate number assigned by the TEC may prohibit the City from entering into this Agreement. Pursuant to the rules prescribed by the TEC, the TEC Form 1295 must be completed online through the TEC's website, assigned a certificate number, printed, signed and notarized, and provided to the City. The TEC Form 1295 must be provided to the City prior to the award of the contract. The City does not have the ability to verify the information included in a TEC Form 1295, and does not have an obligation or undertake responsibility for advising Contractor with respect to the proper completion of the TEC Form 1295. **The agreement number for this agreement will be STE06252025.**

Printed name of person submitting form:
Name of Company:
Date:
Signature of person submitting form:

NOTARIZED:

Sworn and subscribed before me,
by_____
on_____. **(date)**

CONSTRUCTION CONTRACT TEMPLATE

THIS CONSTRUCTION CONTRACT (hereinafter the "Contract") made this the _____ day of _____, 2025 ("Effective Date"), by and between _____
(a Texas limited liability company), whose address is _____
(hereinafter called the "Contractor"), and the CITY OF DRIPPING SPRINGS (hereinafter called the "City") acting herein by its Mayor, Bill Foulds, Jr. hereunto duly authorized.

WITNESSETH, that the Contractor and the City for the considerations stated herein mutually agree as follows:

ARTICLE 1. STATEMENT OF WORK

The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment and services, including utility and transportation services that are such an inseparable part of the work described that exclusion would render performance by Contractor impractical, illogical, or unconscionable. Furthermore, Contractor shall perform and complete all work required for the construction of the Improvements embraced in the Project; namely, STEPHENSON SCHOOL BUILDING & PARKING IMPROVEMENTS PROJECT and required supplemental work, all in strict accordance with the contract documents including all addenda thereto (hereinafter referred to as the "Work"). All Work shall be performed in a good and workmanlike manner according to industry standards. The parties agree that the Statement of Work and the addenda to this Contract is a description of Contractor's obligations and responsibilities and is deemed to include preliminary considerations and prerequisites.

ARTICLE 2. CONTRACTOR'S DUTIES

2.1 Construction. Contractor shall construct all Improvements embraced in the **Project** as described in the proposal documents.

2.2 Labor and Materials. The Contractor shall furnish all labor, materials, mechanical workmanship, transportation, equipment, and services necessary for the completion of the work described in this Contract and in accordance with the plan (if any) and other contract documents to conduct the construction required under this Contract in an efficient manner.

2.3 Completion of Work. Work, in accordance with the Contract dated _____, 2025, **Project**, shall commence after the date the Notice to Proceed is received by the Contractor following the preconstruction meeting, and Contractor shall complete the Work within **thirty (30) consecutive calendar days** after receiving the Notice to Proceed. The City shall provide Contractor with written acceptance of the Work upon completion. Payment of monies due hereunder does not constitute acceptance of the Work.

2.4 Invoicing. Contractor shall prepare an invoice for work completed and submit the involved to the City for payment. The proposal for the work is set forth in the proposal documents. Incomplete or inaccurate invoices shall be returned other Contractor for correction and re-submittal.

2.5 Insurance. Contractor shall assume all risk and liability for accidents and damages that may occur to persons or property during the performance of the work under this Contract. Contractor shall not be covered by the City's liability carrier. Contractor shall, at its sole expense, acquire and maintain during the full term of this Contract insurance coverage with insurers licensed to do business in the State of Texas and acceptable to the City. The Contractor shall comply with all insurance requirements contained in *Article 5 of General Conditions and Division C*, including maintaining worker's compensation and liability coverage in stated amounts and providing proof of such coverage. Contractor shall give the City thirty (30) days written notice of any material change or cancellation of coverage.

2.6 Change Orders. Change orders from the City or requested by the Contractor shall be controlled by *Articles 10, 11 and 12 of the General Conditions*. The City shall have the continuing right to inspect and, upon reasonable cause, reject any Work provided by Contractor under this Contract. Contractor will at Contractor's cost promptly re-perform any Work to the extent necessary to correct any rejected Work, to correct any breach or to make the Work conform to the provisions of this Contract and any applicable Statement of Work (collectively, "Corrective Work"). The City's failure to inspect or to discover defective Work will not relieve Contractor from any liability or responsibility. Payment of any funds by the City to Contractor will not constitute a waiver or acceptance of any defective Work.

2.7 Warranty and Maintenance Bond. The Contractor agrees to remedy all defects appearing in the work or developing in the materials furnished and the workmanship performed under this Contract during the warranty period of **two (2) years** after the date of final acceptance of the work by the City for the full amount of the work. Contractor further agrees to indemnify and hold the City harmless from any costs encountered in remedying such defects. Contractor shall agree to supply a **two (2) year** maintenance bond to the City at the time of acceptance of the work for the full amount of the work. Furthermore, Contractor shall:

(a) Timely perform the Work with due diligence, in a good, workmanlike and safe manner consistent with that high degree of skill, competence and professional care of generally accepted industry standards and in compliance with City policies and the provisions of this Contract and any applicable Statement of Work. Contractor will perform the Work within the period of time set by the City in each Statement of Work.
(b) Ensure that all employees of Contractor and Contractor Group maintain a current license while performing any Work for which a license is required under any applicable regional, state or federal law or regulatory agency.
(c) Use only materials, goods, tools, machinery and equipment of sufficient quality for their purposes, free from defect and meeting all standards and specifications customary for the Work being performed as well as standards and specifications provided by City, if any.

2.8 Mandatory Disclosures. Texas law requires that vendors make certain disclosures. Prior to the effective date of this Contract, the Contractor has submitted to the City a copy of the Conflict-of-Interest Questionnaire form (CIQ Form) approved by the Texas Ethics Commission (Texas Local Government Code Chapter 176) and the Affidavit regarding Prohibition on Contracts with Companies Boycotting Israel (Texas Government Code Chapter 2270). Contractor agrees by

approving this Contract that it is in compliance with the Prohibition on Contracts with Companies Boycotting Israel (Texas Government Code Chapter 2270). (Additional Disclosures may be required based on state and federal law and this will be included in the Contract.)

ARTICLE 3. THE CONTRACT PRICE

The City will pay the Contractor for the performance of the Contract, in current funds, subject to additions and deductions as provided in this Contract and Addenda, the sum of **$_____**. Payments will be made pursuant to this Contract and its Addenda. Contractor shall document and submit to City all time, mileage, travel, equipment, rentals, supplies, materials and other charges incurred for which City has agreed to reimburse Contractor. Contractor shall maintain correct records in connection with the Work and all transactions related to this Contract (including without limitation, complete and accurate records of all of Contractor's charges and expenses and documentation of items that are chargeable to City under this Contract) and shall retain all records for two years following the calendar year in which the final invoice for the Work was sent to City. City shall have the right, at City's expense, upon reasonable advance notice at the offices of Contractor and during Contractor's normal business hours, to inspect, copy, and audit all records (except Contractor's trade secrets or proprietary information) of Contractor in connection with the Work performed by or on behalf of Contractor for City's account and all payments made to or by Contractor. If the audit reveals a discrepancy between the amount or value of materials or services billed to City and that which is evidenced by Contractor's books and records, City shall have the right to adjust its account with Contractor, which adjustment may necessitate a refund by Contractor of funds disbursed to Contractor.

ARTICLE 4. THE CONTRACT

The executed contract documents shall consist of the following components:

Exhibit A	General Conditions
Exhibit B	Plans
Exhibit C	Specifications
Exhibit D	Instructions and Notice to Respondents
Exhibit E	Performance and Payment Bond
Exhibit F	Certificate of Insurance
Exhibit G	Wage Rates
Exhibit H	Addenda
Exhibit I	Contractor's Signed Cost Proposal
Exhibit J	Conflict of Interest Questionnaire

This Contract, together with other documents enumerated in this ARTICLE 4, which said other documents are as fully a part of this Contract as if hereto attached or herein repeated, forms the Contract between the parties hereto. If there is any inconsistency between the terms of this Contract and other documents listed herein Article 4, the terms of this Contract shall control. The City objects to and rejects any terms contained within Contractor's statements of work, purchase orders, work orders, invoices, bids, proposals, delivery tickets, or other document issued by Contractor that modify, alter, amend, or supplement the terms of this Contract, purport to affect the risk

allocation scheme in this Contract, or add additional requirements to this Contract or any Statement of Work. The Parties agree that no changes to the risk allocation scheme set forth in this Contract may be made unless an amendment to this Contract is executed by authorized representatives of both Parties that specifically identifies this Contract and the specific terms or provisions that are amended

ARTICLE 5. TERMINATION AND DELAYS

Terminations and delays are governed by *Articles 10, 12 and 15 of General Conditions*.

ARTICLE 6. MISCELLANEOUS

6. Non-Assignability. Neither the City nor the Contractor shall assign any interest in this Contract without the prior written consent of the other party outside of what is allowed in this Contract, or its the proposal documents described above.

6.2 Amendment. This Contract and the proposal documents described above embody the entire Contract between the parties and may not be modified unless in writing, executed by all parties.

6.3 Independent Contractor. Contractor is an independent contractor under this Contract. Services provided by Contractor pursuant to this Contract shall be subject to the supervision of the Contractor. In providing such services, neither Contractor nor Contractor's agents shall act as officers, employees, or agents of the City. No partnership, joint venture, or other join relationship is created hereby. City does not extend to Contractor or Contractor's agents any authority of any kind to bind City in any respect whatsoever.

6.4 Notice. Any notice and/or statement required or permitted by this Contract, shall be deemed to be given and delivered when deposited in the United States mail, certified with return receipt requested, postage prepaid, addressed to the appropriate Party at the following addresses, or such other address as amended by providing notice to the other party at the addresses below:

If to the City:	**If to the Contractor:**
City of Dripping Springs	_____
Attn: City Administrator	_____
PO Box 384	_____
Dripping Springs, TX 78620	_____

6.5 Force Majeure. No party to this Contract shall be deemed in violation if it is prevented from timely performing any of its obligations by reason of labor disputes, acts of God, acts of the public enemy, acts of superior governmental authority, or other circumstances for which the party is not responsible, or which is not in its control.

6.6 Law & Venue. This Contract shall be governed by the laws of the State of Texas. The venue for any disputes arising under this Contract shall be the district court of Hays County, Texas.

6.7 Severability. If the final judgment of a court of competent jurisdiction invalidates any part of this Contract, then the remaining parts shall be enforced, to the extent possible, consistent with the intent of the Parties as evidenced by this Contract.

6.8 Entire Contract. This Contract and the proposal documents described above in Article 4 herein constitutes the entire Contract of the Parties and supersedes any and all prior understandings, or oral or written Contracts, between the Parties on this subject matter.

6.09 Termination and Delays. Terminations and delays are governed by *Articles 10, 12 and 15 of Section D-1 of the General Conditions*.

6.10 Indemnification. Contractor hereby releases, and shall cause its insurers, its subcontractors, to release the City and its agents and assigns from any and all claims or causes of action which Contractor, its insurers, and/or its subcontractors might otherwise possess resulting in or from or in any way connected with any loss covered or which should have been covered by insurance maintained and/or required to be maintained by Contractor and/or its subcontractors pursuant to this contract, even if such claims of causes of action arise from or are attributed to the sole or concurrent negligence of any City agent or from strict liability.

6.11 Liquidated Damages. Failure on the part of the Contractor to sustain the required maintenance or perform under this Contract may result in liquidated damages. The City may assess liquidated damages as listed in Section C-7 for incomplete work until all work is completed.

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed in four (4) original copies on the day and year first above written.

CITY OF DRIPPING SPRINGS:

_____

Bill Foulds, Jr., Mayor

ATTEST:

_____

City Secretary

CONTRACTOR:

_____
Printed Name and Title

ATTEST:

_____
Signature

_____
Printed Name and Title

CORPORATE CERTIFICATIONS:

I, _____, certify that I am the Secretary / Treasurer of the corporation named as Contractor herein; that _____ who signed this Contract on behalf of the Contractor, was then _____ of said corporation; that said Contract was duly signed for and on behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

[CORPORATE SEAL]

_____
Corporate Secretary

_____
Printed Name

_____
Date

PERFORMANCE BOND
EXAMPLE TEMPLATE

(As required by Chapter 2253, Texas Government Code)

THE STATE OF {}
COUNTY OF {}

KNOW ALL MEN BY THESE PRESENTS: That we

(1)_____, a

(2) _____of hereafter called Principal and

(3) _____

of _____, State of _____, hereinafter called the Surety, are held and firmly

bound unto (4) the City of Dripping Springs, Texas hereinafter called Owner, in the penal sum of

_____($_____) Dollars

in lawful money of the United States, to be paid in (5) HAYS COUNTY, TEXAS for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by the these presents.

THE CONDITIONS OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with (6) the City of Dripping Springs the Owner, dated the ____ day of _____**2025**, a copy of which is hereto attached and made a part hereof for the construction of :

_____

_____

(hereinafter called the "Work").

Date of Bond must not be prior to Date of Contract.

These notes refer to the numbers in body of Contract above:

(1) Correct name of Contractor
(2) A Corporation, or Partnership or an Individual, as case may be
(3) Correct name of Surety
(4) Correct name of Owner
(5) County and State
(6) Owner

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform the work in accordance with the Plans, Specifications and Contract Documents during the original term thereof, and any extensions thereof which may be granted by the Owner with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expenses which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that if any legal action be filed upon this Bond, venue shall lie in Hays County, State of Texas, and that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed there under or the Specifications accompanying the same, shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or in the work or to the Specifications.

IN WITNESS WHEREOF, this Instrument is executed in six counterparts, each one of which shall be deemed an original, this the _____ day of _____, **2025**.

ATTEST:

_____
(Principal) Secretary

_____
PRINCIPAL

By: _____

(SEAL)

_____
Address (State & Zip Code)

_____
Witness as to Principal

_____
Telephone Number

_____
Address (State and Zip Code)

ATTEST:

_____
(Surety) Secretary

_____
SURETY

By:_____

(SEAL)

_____
Address (State and Zip Code)

_____
Witness as to Surety

_____
Telephone No. (Area Code)

_____

PAYMENT BOND
EXAMPLE TEMPLATE

(As required by Chapter 2253, Texas Government Code)

THE STATE OF {}
COUNTY OF {}

KNOW ALL MEN BY THESE PRESENTS: That we

(1) _____, a

(2) _____ of hereinafter called Principal and

(3) _____

of _____, State of _____, hereinafter called the Surety, are held and firmly bound unto (4) the City of Dripping Springs, Texas hereinafter called Owner, and unto all Persons, Firms, and Corporation who may furnish materials for, or perform labor upon the building or improvements hereinafter referred to in the penal sum of

_____($_____) Dollars in lawful money of the United States, to be paid in (5) HAYS COUNTY, TEXAS for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by the these presents.

THE CONDITIONS OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with (6) the City of Dripping Springs The Owner, dated the ___ day of _____, **2025**, a copy of which is hereto attached and made a part hereof for the construction of

_____

_____

(hereinafter called the "Work").

Date of Bond must not be prior to Date of Contract.

These notes refer to the numbers in body of Contract above:

(1) Correct name of Contractor
(2) A Corporation, or Partnership or an Individual, as case may be
(3) Correct name of Surety
(4) Correct name of Owner
(5) County and State
(6) Owner

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform the work in accordance with the Plans, Specifications and Contract Documents during the original term thereof, and any extensions thereof which may be granted by the Owner with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such Contract, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

This Bond is made and entered into solely for the prosecution of all claimants supplying labor and material in the prosecution of the work provided for in said Contract, and all such claimants shall have a direct right of action under the Bond as provided in Section 2253.073, Texas Government Code.

PROVIDED FURTHER, that if any legal action be filed upon this Bond, venue shall lie in Hays County, State of Texas, and that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same, shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or in the work or to the Specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, this the _____ day of _____ **2025**.

ATTEST:

_____
(Principal) Secretary

_____
PRINCIPAL

By: _____

(SEAL)

_____
Address (State & Zip Code)

_____
Witness as to Principal

_____
Telephone Number

_____
Address (State and Zip Code)

ATTEST:

_____
(Surety) Secretary

_____
SURETY

By:_____

(SEAL)

_____
Address (State and Zip Code)

_____
Witness as to Surety

_____
Telephone No. (Area Code)

_____
Address (State and Zip Code)

NOTE: If Contractor is Partnership, all Partners should execute Bond.

PERFORMANCE – PAYMENT BOND FORM
M-24, 25, Attach. Sa

_____ _____ (SEAL)
Individual Principal

_____ _____
Address (State and Zip Code) Business – Address

_____ _____
Telephone Number (Area Code) Telephone Number (Area Code)

ATTEST: _____
Corporate Principal

_____ _____
(State and Zip Code) Business Address Name

_____
Telephone Number (Area Code)

_____ _____
Address (State and Zip Code) (Affix Corporate Seal)

ATTEST: By: _____

_____
Address (State and Zip Code)

_____
Corporate

_____
Surety

_____
Business Address

_____
(Affix Corporate Seal)

_____
Telephone

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the Secretary of the Corporation named as Principal in the within Bond; that _____, who signed the said Bond on behalf of the Principal was then _____, of said Corporation; that I know his signature thereof is genuine; and that said Bond was duly signed, sealed, and attested for and on behalf of said Corporation by authority of its governing body.

_____
Title

_____ _____

Date: _____ (Affix Corporate Seal)

Telephone No.: _____

The rate of premium on this Bond is _____ per thousand.

Total of premium charge $_____.

NOTE: The above must be filled in by Corporate Surety. Power of Attorney of person signing for Surety Company must be attached.

SECTION C-4
CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE
CITY OF DRIPPING SPRINGS
MINIMUM INSURANCE PROVISIONS AND LIMITS
FOR CONSTRUCTION, REPAIR, INSTALLATION AND MAINTENANCE CONTRACTORS

***Contractor shall provide and continuously maintain the minimum insurance coverages set forth below during the term of its agreement with* the City of Dripping Springs (City); and Contractor shall require its subcontractors to purchase the same types and amounts of insurance, at a minimum, as set forth below with respect to statutory workers' compensation and liability insurance.**

1. Standard ISO commercial general liability insurance at minimum combined single limits of $1,000,000 per-occurrence and $2,000,000 general aggregate for bodily injury and property damage, which coverage shall include: products/completed operations ($2,000,000 products/completed operations aggregate); XCU (explosion, collapse, underground) hazards; and contractual liability. Without limitation, the commercial general liability coverage must cover all operations required in the contract, as well as contractual liability for the indemnity obligations assumed by the Contractor in the contract. Coverage must be written on an occurrence form.

2. Workers' compensation insurance at statutory limits, including employer's liability coverage at minimum limits of $1,000,000 each-occurrence, each accident/$1,000,000 by disease each-occurrence/$1,000,000 by disease aggregate.

3. Commercial automobile liability insurance at a minimum combined single limit of $1,000,000 per-occurrence for bodily injury and property damage, including non-owned and hired car coverage and owned vehicles if any are owned.

4. Umbrella liability or following-form excess liability at minimum limits of $ 1,000,000 each-occurrence/$2,000,000 aggregate where applicable in any underlying coverage. Coverage must be at least as broad as the underlying commercial general liability, auto liability, and employer's liability.

5. Waiver of Rights - Owner and Contractor intend that all policies purchased will protect Owner, Contractor, Subcontractors, and E/A, and all other individuals or entities identified in the Insurance Rider to be listed as additional named insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Upon receipt of payment for any loss or damage covered by an insurance policy required by the Insurance Rider or this Agreement, the Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against all other individuals or entities identified in the Insurance Rider to be listed as insured or additional named insured (and the officers, directors, partners, employees, agents,

consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

With reference to the foregoing insurance requirements, Contractor shall specifically endorse applicable insurance policies as follows:

1. City of Dripping Springs shall be named as an additional named insured on a primary and non-contributory basis, regardless of the application of other insurance, with respect to all liability coverages, except for the professional liability and workers' compensation.

2. All liability policies shall contain no cross-liability exclusions or insured versus insured restrictions.

3. A waiver of subrogation in favor of the City shall be contained in all policies.

4. All insurance policies shall be endorsed to require the insurer to immediately notify the City of any material change in the insurance coverage.

5. All insurance policies shall be endorsed to the effect that City will receive at least thirty (30) days' notice prior to cancellation or non-renewal of the insurance.

6. The additional insured coverage in the CGL policy in favor of the City must apply to the ongoing operations of Contractor for contract costs or up to $1,000,000 and expanded to include products/completed operation for contract costs in excess of $1,000,000.

7. Required limits may be satisfied by any combination of primary and umbrella/excess liability insurances.

8. Contractor may maintain reasonable and customary deductibles, subject to approval by the City.

9. Insurance must be purchased from insurers that are financially acceptable to the City with a minimum *A.M. Best* financial rating of A-:VII.

10. Coverage for commercial general liability must be maintained for at least (2) years after the project is completed.

11. For projects in excess of $10,000,000 in cost, a per-project aggregate limit must be included in the commercial general liability.

All insurance must be written on standard ISO or equivalent forms. Certificates of insurance shall be prepared and executed by the insurance company, or its authorized agent, shall be furnished to the City within ten (10) business days of being notified of the award of the contract, and shall contain provisions representing and warranting the following:

- Shall set forth all endorsements and insurance coverages according to requirements and instructions contained herein.

- Shall specifically set forth the notice-of-cancellation or termination provisions to the City.

- Copies of all required endorsements must be attached to the certificate of insurance. The certificates of insurance must be updated and resubmitted to the City to show renewal coverages, as applicable, at least thirty (30) days prior to expiration of any one or more policies.

Upon request, Contractor shall furnish the City with certified copies of all insurance policies.

NOTICE OF AWARD

To: _____
_____
_____

Project: STEPHENSON SCHOOL BUILDING & PARKING IMPROVEMENTS

The City of Dripping Springs has considered the bids submitted for the above described project in response to its advertisement for proposals dated **July 17, 2025** and related information to Proposers.

You are hereby notified that your proposal in the amount of $_____
_____, has been favorably considered for the project by the City. Pursuant to the Instructions to Proposers you are asked to sign the proposed Contract and to return the same, along with the required Certificate of Insurance and Payment Bond and Performance Bond within ten (10) days of your receipt of this Notice, for the approval and signature of the authorized representative of the City.

For the purpose of effective date of the Performance and Payment Bond, and the required Certificate of Insurance, the date of _____ may be considered the date of the Contract, if the Documents are approved by the City.

If you fail to submit the proposed Contract and the Performance and Payment Bonds and the Certificate of Insurance within ten (10) days from your receipt of this Notice, your bid will be considered as withdrawn and your bid bond will be forfeited.

You are asked to acknowledge receipt of this Notice by signing in the appropriate place below.

Dated this ____day of _____, 2025.

CITY OF DRIPPING SPRINGS

_____
City Engineer

ACKNOWLEDGEMENT:

Receipt of this Notice is hereby acknowledged.

Dated this _____day of _____, 2025.

_____
Authorized Signature

Title:_____

NOTICE TO PROCEED

Date: _____

To: _____

_____

_____

Project:_____

In accordance with the construction contract dated_____,

you are hereby notified to commence work no later than _____.

Contract time is: **365 calendar days**.

Substantial Completion Date is: _____

CITY OF DRIPPING SPRINGS

_____
City Engineer

The above NOTICE TO PROCEED is hereby acknowledged by

_____

on this the _____day of _____2025.

_____
Authorized Signature

_____
Name:

Title:_____

CONTRACT TIME & LIQUIDATED DAMAGES

The Contract Performance for this project shall be **365 Calendar Days**.

The time set forth in the proposal for the completion of the work is an essential element of the Contract. For each working day under the conditions described in the preceding Paragraph that any work shall remain uncompleted after the expiration of the calendar days specified in the Contract, together with any additional working days allowed, the amount per day given in the following schedule will be deducted from the money due or to become due the Contractor, not as a penalty but as liquidated damages.

	FOR AMOUNT OF CONTRACT	
From More Than	**To and Including**	**Amount of Liquidated Damages Per Working Days**
$0	$100,000	$200
$100,000	$500,000	$400
$500,000	$1,000,000	$550
$1,000,000	$2,000,000	$700
$2,000,000	$5,000,000	$850
$5,000,000	$10,000,000	$1,200
$10,000,000	$15,000,000	$1,500
$15,000,000	$20,000,000	$1,700
$20,000,000	Over $20,000,000	$2,500

EQUAL OPPORTUNITY CLAUSE

1. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex or natural origin. The Contractor will take Affirmative action to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, creed, color or national origin. Such action shall include, but not limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection of training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the non-discrimination clause.

2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or natural origin.

Equal Employment Opportunity is

THE LAW

Employers Holding Federal Contracts or Subcontracts

Applicants to and employees of companies with a Federal government contract or subcontract are protected under the following Federal authorities:

RACE, COLOR, RELIGION, SEX, NATIONAL ORIGIN

Executive Order 11246, as amended, prohibits job discrimination on the basis of race, color, religion, sex or national origin, and requires affirmative action to ensure equality of opportunity in all aspects of employment.

INDIVIDUALS WITH DISABILITIES

Section 503 of the Rehabilitation Act of 1973, as amended, prohibits job discrimination because of disability and requires affirmative action to employ and advance in employment qualified individuals with disabilities who, with reasonable accommodation, can perform the essential functions of a job.

VIETNAM ERA, SPECIAL DISABLED, RECENTLY SEPARATED, AND OTHER PROTECTED VETERANS

38 U.S.C. 4212 of the Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended, prohibits job discrimination and requires affirmative action to employ and advance in employment qualified Vietnam era veterans, qualified special disabled veterans, recently separarted veterans, and other protected veterans.

Any person who believes a contractor has violated its nondiscrimination or affirmative action obligations under the authorities above should contact immediately:

The Office of Federal Contract Compliance Programs (OFCCP), Employment Standards Administration, U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210 or call (202) 693-0101, or an OFCCP regional or district office, listed in most telephone directories under U.S. Government, Department of Labor.

Private Employment, State and Local Governments, Educational Institutions

Applicants to and employees of most private employers, state and local governments, educational institutions, employment agencies and labor organizations are protected under the following Federal laws:

RACE, COLOR, RELIGION, SEX, NATIONAL ORIGIN

Title VII of the Civil Rights Act of 1964, as amended, prohibits discrimination in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment, on the basis of race, color, religion, sex or national origin.

DISABILITY

The Americans with Disabilities Act of 1990, as amended, protects qualified applicants and employees with disabilities from discrimination in hiring, promotion, discharge, pay, job training, fringe benefits, classification, referral, and other aspects of employment on the basis of disability. The law also requires that covered entities provide qualified applicants and employees with disabilities with reasonable accommodations that do not impose undue hardship.

AGE

The Age Discrimination in Employment Act of 1967, as amended, protects applicants and employees 40 years of age or older from discrimination on the basis of age in hiring, promotion, discharge, compensation, terms, conditions or privileges of employment.

SEX (WAGES)

In addition to sex discrimination prohibited by Title VII of the Civil Rights Act of 1964, as amended (see above), the Equal Pay Act of 1963, as amended, prohibits sex discrimination in payment of wages to women and men performing substantially equal work in the same establishment.

Retaliation against a person who files a charge of discrimination, participates in an investigation, or opposes an unlawful employment practice is prohibited by all of these Federal laws.

If you believe that you have been discriminated against under any of the above laws, you should contact immediately:

The U.S. Equal Employment Opportunity Commission (EEOC), 1801 L Street, N.W., Washington, D.C. 20507 or an EEOC field office by calling toll free (800) 669-4000. For individuals with hearing impairments, EEOC's toll free TDD number is (800) 669-6820.

Programs or Activities Receiving Federal Financial Assistance

RACE, COLOR, RELIGION, NATIONAL ORIGIN, SEX

In addition to the protection of Title VII of the Civil Rights Act of 1964, as amended, Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color or national origin in programs or activities receiving Federal financial assistance. Employment discrimination is covered by Title VI if the primary objective of the financial assistance is provision of employment, or where employment discrimination causes or may cause discrimination in providing services under such programs. Title IX of the Education Amendments of 1972 prohibits employment discrimination on the basis of sex in educational programs or activities which receive Federal assistance.

INDIVIDUALS WITH DISABILITIES

Sections 501, 504 and 505 of the Rehabilitation Act of 1973, as amended, prohibits employment discrimination on the basis of disability in any program or activity which receives Federal financial assistance in the federal government. Discrimination is prohibited in all aspects of employment against persons with disabilities who, with reasonable accommodation, can perform the essential functions of a job.

If you believe you have been discriminated against in a program of any institution which receives Federal assistance, you should contact immediately the Federal agency providing such assistance.

WAGE DETERMINATION

Wage Rates. Pursuant to Section 2258.023(a), Texas Government Code, as amended, wage rates paid by the Contractor and any subcontractor on this Project shall be not less than the general prevailing rate of per diem wages for work of a similar character in this locality as specified in the schedule of general prevailing rates of per diem wages set forth by the Davis Bacon General Decision Number: TX20240007 01/05/2024 below:

"General Decision Number: TX20240007 01/05/2024

Superseded General Decision Number: TX20230007

State: Texas

Construction Types: Heavy and Highway

Counties: Atascosa, Bandera, Bastrop, Bell, Bexar, Brazos, Burleson, Caldwell, Comal, Coryell, Guadalupe, Hays, Kendall, Lampasas, McLennan, Medina, Robertson, Travis, Williamson and Wilson Counties in Texas.

HEAVY (excluding tunnels and dams, not to be used for work on Sewage or Water Treatment Plants or Lift / Pump Stations in Bell, Coryell, McClennon and Williamson Counties) and HIGHWAY Construction Projects

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and	. Executive Order 13658 generally applies to the

January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	contract. . The contractor must pay all covered workers at least $12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number 0 — Publication Date 01/05/2024

SUTX2011-006 08/03/2011

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER (Paving and Structures)	$ 12.56 **	
ELECTRICIAN	$ 26.35	
FORM BUILDER/FORM SETTER		
Paving & Curb	$ 12.94 **	
Structures	$ 12.87 **	
LABORER		
Asphalt Raker	$ 12.12 **	
Flagger	$ 9.45 **	
Laborer, Common	$ 10.50 **	
Laborer, Utility	$ 12.27 **	
Pipelayer	$ 12.79 **	
Work Zone Barricade Servicer	$ 11.85 **	
PAINTER (Structures)	$ 18.34	
POWER EQUIPMENT OPERATOR:		
Agricultural Tractor	$ 12.69 **	

```
     Asphalt Distributor.....$ 15.55 **
     Asphalt Paving Machine......$ 14.36 **
     Boom Truck..................$ 18.36
     Broom or Sweeper............$ 11.04 **
     Concrete Pavement
     Finishing Machine...........$ 15.48 **
     Crane, Hydraulic 80 tons
     or less.....................$ 18.36
     Crane, Lattice Boom 80
     tons or less................$ 15.87 **
     Crane, Lattice Boom over
     80 tons.....................$ 19.38
     Crawler Tractor.............$ 15.67 **
     Directional Drilling
     Locator.....................$ 11.67 **
     Directional Drilling
     Operator....................$ 17.24
     Excavator 50,000 lbs or
     Less........................$ 12.88 **
     Excavator over 50,000 lbs...$ 17.71
     Foundation Drill, Truck
     Mounted.....................$ 16.93 **
     Front End Loader, 3 CY or
     Less........................$ 13.04 **
     Front End Loader, Over 3 CY.$ 13.21 **
     Loader/Backhoe..............$ 14.12 **
     Mechanic....................$ 17.10 **
     Milling Machine.............$ 14.18 **
     Motor Grader, Fine Grade....$ 18.51
     Motor Grader, Rough.........$ 14.63 **
     Pavement Marking Machine....$ 19.17
     Reclaimer/Pulverizer........$ 12.88 **
     Roller, Asphalt.............$ 12.78 **
     Roller, Other...............$ 10.50 **
     Scraper.....................$ 12.27 **
     Spreader Box................$ 14.04 **
     Trenching Machine, Heavy....$ 18.48

Servicer.........................$ 14.51 **

Steel Worker
     Reinforcing.................$ 14.00 **
     Structural..................$ 19.29

TRAFFIC SIGNALIZATION:
Traffic Signal Installation
     Traffic Signal/Light Pole
     Worker......................$ 16.00 **

TRUCK DRIVER
     Lowboy-Float................$ 15.66 **
     Off Road Hauler.............$ 11.88 **
     Single Axle.................$ 11.79 **
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Single or Tandem Axle Dump Truck.....$ 11.68 **
Tandem Axle Tractor w/Semi Trailer.....$ 12.81 **

WELDER.....$ 15.97 **

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.20) or 13658 ($12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage

determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union

average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the

interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

The OWNER's design professional as outlined in Article 9 of the General Conditions:

Building Engineer/Architect (E/A):
Building Scope
Name: Alexis McKinney, AIA
Company: Architexas
Address: 1023 Springdale Road, Building 11 Suite E, Austin, TX 78721
Phone: 512-444-4220
E-mail: amckinney@architexas.com

Parking Lot/Site Engineers

Name: Joe Grasso, PE
Company: Doucet, A Kleinfelder Company
Address: 7401 B Hwy 71 West, Suite 160
Phone: 512.924.8485
E-mail: jgrasso@kleinfelder.com

The designated representative of the OWNER as outlined in Article 8 of the General Conditions:

Owner's Representative:
Name: Chad Gilpin, City Engineer
Company: City of Dripping Springs
Address: 511 Mercer St., Dripping Springs TX 78620
Phone: 512-858-4725
E-mail: cgilpin@cityofdrippingsprings.com

GENERAL CONDITIONS OF THE CONTRACT

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ARTICLE 1 – DEFINITIONS

Whenever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1.1 Addendum - Written instruments issued by the Contract Awarding Authority which clarify, correct or change the bidding requirements or the Contract Documents prior to the Due Date. "Addenda" is the plural form of Addendum.

1.2 Alternative Dispute Resolution - The process by which a disputed Claim may be settled if the OWNER and the CONTRACTOR cannot reach an agreement between themselves, as an alternative to litigation.

1.3 Bid - A complete, properly signed response to an Invitation for Bid that, if accepted, would bind the Bidder to perform the resultant Contract.

1.4 Bidder - A person, firm, or entity that submits a Bid in response to a Solicitation. Any Bidder may be represented by an agent after submitting evidence demonstrating the agent's authority. The agent cannot certify as to his own agency status.

1.5 Bid Documents - The advertisement or Invitation for Bids, instructions to Bidders, the Bid form, the Contract Documents and Addenda.

1.6 Calendar Day - Any day of the week; no days being excepted. Work on Saturdays, Sundays, and/or Legal Holidays shall be coordinated with OWNER.

1.7 Change Directive - A written directive to CONTRACTOR, signed by OWNER, ordering a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Amount or Contract Time, or both. A Change Directive may be used in the absence of total agreement on the terms of a Change Order. A Change Directive does not change the Contract Amount or Contract Time, but is evidence that the parties expect that the change directed or documented by a Change Directive will be incorporated in a subsequently issued Change Order.

1.8 Change Orders - Written agreements entered into between CONTRACTOR and OWNER authorizing an addition, deletion, or revision to the Contract, issued on or after the Execution Date of the Agreement.

1.9 Claim - A written demand seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract.

1.10 Contract - The binding legal agreement between the OWNER and the CONTRACTOR. The Contract represents the entire and integrated agreement between OWNER and CONTRACTOR for performance of the Work, as evidenced by the Contract Documents.

1.11 Contract Amount - The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents.

1.12 Contract Awarding Authority - A City department authorized to enter into Contracts on behalf of the City.

1.13 Contract Documents - Project Manual, Drawings, Addenda and Change Orders.

1.14 Contract Time - The number of days allowed for completion of the Work as defined by the Contract. When any period is referred to in days, it will be computed to exclude the first and include the last day of such period. A day of twenty-four hours measured from midnight to the next midnight will constitute a day.

1.15 CONTRACTOR - The individual, firm, corporation, or other business entity with whom OWNER has entered into the Contract for performance of the Work.

1.16 Critical Path - The longest series of tasks that runs consecutively from the beginning to the end of the project, as determined by duration and workflow sequence. This longest path sets the managerial standard for how quickly a project can be completed, given appropriate resources.

1.17 Drawings - Those portions of the Contract Documents which are graphic representations of the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been approved by OWNER. Drawings may include plans, elevations, sections, details, schedules and diagrams. Shop Drawings are not Drawings as so defined.

1.18 Due Date - The date and time specified for receipt of Bids.

1.19 Engineer/Architect (E/A) - The OWNER's design professional identified as such in the Contract. The titles of "Architect/Engineer," "Architect" and "Engineer" used in the Contract Documents shall read the same as Engineer/Architect (E/A). Nothing contained in the Contract Documents shall create any contractual or agency relationship between E/A and CONTRACTOR.

1.20 Equal - The terms "equal" or "approved equal" shall have the same meaning.

1.21 Execution Date - Date of last signature of the parties to the Agreement.

1.22 Field Order - A written order issued by Owner's Representative which orders minor changes in the Work and which does not involve a change in the Contract Amount or the Contract Time.

1.23 Final Completion - The point in time when OWNER determines that all Work has been completed and final payment to CONTRACTOR will be made in accordance with the Contract Documents.

1.24 Force Account - a basis of payment for the direct performance of Work with payment based on the actual cost of the labor, equipment and materials furnished and consideration for overhead and profit as set forth in Section 11.5.

1.25 Inspector - The authorized representative of any regulatory agency that has jurisdiction over any portion of the Work.

1.26 Invitation for Bid (IFB) - a Solicitation requesting pricing for a specified Good or Service which has been advertised for Bid in a newspaper and/or the Internet.

1.27 Legal Holidays

1.27.1 The following are recognized by the OWNER:

Holiday	Date Observed
New Year's Day	January 1
President's Day	Third Monday in February
Memorial Day	Last Monday in May
Independence Day	July 4
Labor Day	First Monday in September
Veteran's Day	November 11
Thanksgiving Day	Fourth Thursday in November
Friday after Thanksgiving	Friday after Thanksgiving
Christmas Eve	December 24
Christmas Day	December 25

1.27.2 If a Legal Holiday falls on Saturday, it will be observed on the preceding Friday. If a Legal Holiday falls on Sunday, it will be observed on the following Monday.

1.27.3 Christmas Eve is observed only if it falls on a Monday through Thursday. If Christmas Eve falls on a Friday, that day is observed as the Christmas Day holiday.

1.28 Milestones - A significant event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

1.29 Notice to Proceed - A Written Notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

1.30 OWNER - City of Dripping Springs, Texas, a municipal corporation, general law, Type A city and political subdivision organized and existing under the laws of the State of Texas, acting through the City Council's designee, officers, agents or employees to administer design and construction of the Project.

1.31 Owner's Representative - The designated representative of the OWNER.

1.32 Partial Occupancy or Use - Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work, provided OWNER and CONTRACTOR have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, utilities, corrective work, insurance and warranties.

1.33 Project - The subject of the Work and its intended result.

1.34 Project Manual - That portion of the Contract Documents which may include the following: introductory information; bidding requirements, Contract forms and General and Supplemental General Conditions; General Requirements; Specifications; Drawings; MBE/WBE or DBE Procurement Program Package; Project Safety Manual; and Addenda.

1.35 Resident Project Representative - The authorized representative of E/A who may be assigned to the site or any part thereof.

1.36 Shop Drawings - All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR as required by the Contract Documents.

1.37 Specifications - Those portions of the Contract Documents consisting of written technical descriptions as applied to the Work, which set forth to CONTRACTOR, in detail, the requirements which must be met by all materials, equipment, construction systems, standards, workmanship, equipment and services in order to render a completed and useful project.

1.38 Solicitation - Solicitation means, as applicable, an Invitation for Bid or a Request for Proposal.

1.39 Substantial Completion - The stage in the progress of the Work when the Work, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents so OWNER can occupy or utilize the Work for its intended use, as evidenced by a Certificate of Substantial Completion approved by OWNER.

1.40 Subcontractor - An individual, firm, corporation, or other business entity having a direct contract with CONTRACTOR for the performance of a portion of the Work under the Contract.

1.41 Sub-Subcontractor - A person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the work.

1.42 Superintendent - The representative of CONTRACTOR authorized in writing to receive and fulfill instructions from the Owner's Representative, and who shall supervise and direct construction of the Work.

1.43 Supplemental General Conditions - The part of the Contract Documents which amends or supplements the General Conditions. All General Conditions which are not so amended or supplemented remain in full force and effect.

1.44 Supplier - An individual or entity having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

1.45 Time Extension Request - An approved request for time extension on a form acceptable to OWNER.

1.46 Work - The entire completed construction, or the various separately identifiable parts thereof, required to be furnished under the Contract Documents.

1.47 Working Day - Any day of the week, not including Saturdays, Sundays, or Legal Holidays in which conditions under the CONTRACTOR's control will permit work for a continuous period of not less than seven (7) hours between 7:00 a.m. and 6:00 p.m. Upon agreement with Owner's Representative, work on Saturdays, Sundays and/or Legal Holidays may be allowed and will be considered a Working Day.

1.48 Working Hours

1.48.1 Working Day Contract: All Work shall be done between 7:00 a.m. and 5:00 p.m. unless authorized by Owner's Representative. However, emergency work may be done without prior permission as indicated in paragraph 6.11.5. If night Work is authorized and conditions under CONTRACTOR's control will permit Work for a continuous period of not less than seven (7) hours between 12:00 a.m. and 11:59 p.m. it will be considered a Working Day. Night Work may be revoked at any time by OWNER if CONTRACTOR fails to maintain adequate equipment and supervision for the prosecution and control of the night Work.

1.48.2 Calendar Day Contract: All Work shall be done between 7:00 a.m. and 6:00 p.m. unless authorized by Owner's Representative. However, emergency work may be done without prior permission as indicated in paragraph 6.11.5. Night Work may be revoked at any time by OWNER if CONTRACTOR fails to maintain adequate equipment and supervision for the prosecution and control of the night Work.

1.49 Written Notice - Written communication between OWNER and CONTRACTOR. Written Notice shall be deemed to have been duly served if delivered in person to Owner's Representative or CONTRACTOR's duly authorized representative, or if delivered at or sent by registered or certified mail to the attention of Owner's Representative or CONTRACTOR's duly authorized representative at the last business address known to the party giving notice.

ARTICLE 2 - PRELIMINARY MATTERS

2.1 Delivery of Agreement, Bonds, Insurance, etc.: Within ten (10) Calendar Days after written notification of award of Contract, CONTRACTOR shall deliver to OWNER signed Agreement, Bond(s), Insurance Certificate(s) and other documentation required for execution of Contract.

2.2 Copies of Documents: OWNER shall furnish to CONTRACTOR with digital copies of the Contract Documents unless otherwise specified. CONTRACTOR will be responsible for furnishing hardcopies for CONTRACTOR and subcontractor use.

2.3 Commencement of Contract Times; Notice to Proceed: The Contract Time(s) will begin to run on the day indicated in the Notice to Proceed. Notice to Proceed will be given at any

time within sixty (60) calendar days after the Execution Date of the Agreement, unless extended by written agreement of the parties.

2.4 Before Starting Construction:

2.4.1 No Work shall be done at the site prior to the preconstruction conference without OWNER's approval. Before undertaking each part of the Work, CONTRACTOR shall carefully study the Contract Documents to check and verify pertinent figures shown thereon compare accurately to all applicable field measurements. CONTRACTOR shall promptly report in writing to Owner's Representative any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from Owner's Representative before proceeding with any Work affected thereby. CONTRACTOR shall be liable to OWNER for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents of which CONTRACTOR knew or reasonably should have known.

2.4.2 It is mutually agreed between CONTRACTOR and OWNER that successful completion of the Work within the Contract completion date is of primary importance. Therefore, the CONTRACTOR hereby agrees to submit to the Owner's Representative for review and approval, or acceptance, as appropriate, all information requested within this section, including a Baseline Schedule, no later than three working days prior to the preconstruction conference. The Owner's Representative will schedule the preconstruction conference upon the timely submittal of the required documents, unless time is extended by written mutual agreement. CONTRACTOR will submit the following:

.1 A proposed Baseline Schedule developed using Microsoft Project software, unless otherwise approved by Owner's Representative ("Baseline Schedule") to confirm that all Work will be completed within the Contract time. The Baseline Schedule must (i) indicate the times (number of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents, (ii) identify the Critical Path for completing the Work, (iii) identify when all Subcontractors will be utilized, and (iv) take into consideration any limitations on Working Hours, including baseline Rain Days on Calendar Day Contracts. This Baseline Schedule, a copy of which shall be made available at the job site(s), must contain sufficient detail to indicate that the CONTRACTOR has properly identified required Work elements and tasks, has provided for a sufficient and proper workforce and integration of Subcontractors, has provided sufficient resources and has considered the proper sequencing of the Work required to result in a successful Project that can be completed within the Contract time;

.2 An organizational chart showing the principals, management personnel, Superintendent and project manager who will be involved with the Work, including each one's responsibilities for the Work;

.3 A preliminary schedule of Shop Drawing and sample submittals;

.4 A preliminary schedule of values for all of the Work, subdivided into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will be deemed to include an appropriate amount of overhead and profit applicable to each item of Work;

.5 If applicable, an excavation safety system plan;

.6 If applicable, a plan illustrating proposed locations of temporary facilities;

.7 A letter designating the Texas Registered Professional Land Surveyor for layout of the Work, if the Work requires the services of a surveyor; and

.8 Appropriate safety training certificates for workers that will initially be on site.

2.4.3 Neither the acceptance nor the approval of any of the submittals required in paragraph 2.4.2, above, will constitute the adoption, affirmation, or direction of the CONTRACTOR'S means and methods.

2.5 Preconstruction Conference: Prior to commencement of Work at the site, CONTRACTOR must attend a preconstruction conference with Owner's Representative and others, as set forth in Contract documents.

2.6 Initially Acceptable Schedules: Unless otherwise provided in the Contract Documents, CONTRACTOR shall obtain approval of Owner's Representative on the Baseline Schedule submitted in accordance with paragraph 2.4.2.1 before the first progress payment will be made to CONTRACTOR. The Baseline Schedule must provide for an orderly progression of the designated portion of the Work to completion within any specified Milestones and Contract Times. Acceptance of the schedule by Owner's Representative will neither impose on Owner's Representative responsibility or liability for the sequencing, scheduling or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility for such Work. CONTRACTOR's schedule of Shop Drawings and sample submissions must provide an acceptable basis for reviewing and processing the required submittals.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.1 Intent:

3.1.1 The intent of the Contract Documents is to include all information necessary for the proper execution and timely completion of the Work by CONTRACTOR. The CONTRACTOR will execute the Work described in and reasonably inferable from the Contract Documents as necessary to produce the results indicated by the Contract Documents. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. In cases of disagreement, the following order of precedence shall generally govern (top item receiving priority of interpretation):

Signed Agreement
Addendum to the Contract Documents, including approved changes
Supplemental General Conditions
General Conditions
Other Bidding Requirements and Contract Forms
Special Provisions to the Standard Technical Specifications
Special Specifications
Standard Technical Specifications
Drawings (figured dimensions shall govern over scaled dimensions)
Project Safety Manual (if applicable),

with the understanding that a common sense approach will be utilized as necessary so that the Contract Documents produce the intended response.

3.1.2 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

3.2 Reporting and Resolving Discrepancies: If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provisions of any such law or regulation applicable to the performance of the Work or of any such standard, specification, manual or code or instructions of any Supplier, CONTRACTOR shall report it to Owner's Representative in writing at once, and CONTRACTOR shall not proceed with the Work affected thereby until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.3.1 or 3.3.2. CONTRACTOR shall be liable to OWNER for failure to report any such conflict, error, ambiguity or discrepancy of which CONTRACTOR knew or reasonably should have known.

3.3 Amending and Supplementing Contract Documents:

3.3.1 The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

.1 Change Order.

.2 Change Directive.

.3 Time Extension Request.

3.3.2 In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

.1 Field Order.

.2 Review of a Shop Drawing or sample.

.3 Written interpretation or clarification.

3.4 Reuse of Documents Prohibited: CONTRACTOR and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of E/A or E/A's consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents or copies on extensions of the Project or any other project without written consent of OWNER and E/A.

3.5 In the event of the breach by the OWNER or CONTRACTOR of any of its obligations under the Contract, so as to support a claim by the other party, the provisions of this Contract will be equitably construed to allow the resolution of such a claim and all of the other provisions of this Contract shall continue in full force and effect as to the rights, responsibilities, and remedies of the OWNER and CONTRACTOR.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE & PHYSICAL CONDITIONS

4.1 Availability of Lands: The OWNER will provide access to all land and interests in land required for the Work and will notify CONTRACTOR of any restrictions in such access. CONTRACTOR may make a claim if OWNER fails to provide timely access to the Work. CONTRACTOR must obtain any additional temporary construction facilities, stockpiling or storage sites not otherwise provided.

4.2 Subsurface and Physical Conditions:

4.2.1 CONTRACTOR specifically represents that it has carefully examined the plans, the geotechnical report, if any, and the site of the proposed Work and is thoroughly familiar with all of the conditions surrounding construction of the Project, having had the opportunity to conduct any and all additional inquiry, tests and investigation that he/she deems necessary and proper. CONTRACTOR acknowledges the receipt of the geotechnical report, if any, and agrees that the report, while it is an accurate record of the geotechnical conditions at the boring locations, is not a guarantee of specific site conditions which may vary between boring locations.

4.2.2 CONTRACTOR must notify OWNER in writing as soon as reasonably possible, but no later than three (3) calendar days, if unforeseen conditions are encountered at the site which are (i) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (ii) unknown physical conditions of an unusual nature, that differ materially from those normally encountered in the type of work being performed under this Contract. CONTRACTOR may not disturb the conditions until OWNER conducts an investigation. Owner's Representative and E/A will promptly investigate such conditions with E/A. If it is determined that such conditions differ materially and cause an increase or decrease in the CONTRACTOR's cost of or time required for performance of any part of the Work, Owner's Representative will recommend an equitable adjustment in the Contract Amount or Contract Time, or both. If it is determined that such conditions are not materially different from those indicated in the Contract Documents, Owner's Representative will notify CONTRACTOR in writing of such findings and the Contract will not be adjusted. CONTRACTOR may dispute such a determination in accordance with Article 16.

4.2.3 Notwithstanding any other provision of this Contract, CONTRACTOR is solely responsible for the location and protection of any and all public utility lines and utility customer service lines in the Work area. "Public utility lines" means the utility distribution and supply system, and "utility customer service lines" means the utility lines connecting customers to the utility distribution and collection system. Generally, existing utility customer service line connections are not shown on the Drawings. CONTRACTOR shall notify "One Call" and exercise due care to locate, mark, uncover and otherwise protect all such lines in the construction zone and any of CONTRACTOR's work or storage areas. CONTRACTOR's responsibility for the location and protection of utilities is primary and nondelegable. **CONTRACTOR shall indemnify or reimburse such expenses or costs (including fines that may be levied against OWNER) that may result from unauthorized or accidental damage to all public lines and utility customer service lines in the work area.** OWNER reserves the right to repair any damage CONTRACTOR causes to such utilities at CONTRACTOR's expense. If a public line and/or customer service line is damaged by CONTRACTOR, CONTRACTOR shall give verbal notice within one (1) hour and written notice within twenty-four (24) hours to the Owner's Representative.

4.2.4 CONTRACTOR shall take reasonable precaution to avoid disturbing primitive records and antiquities of archaeological, paleontological or historical significance. No objects of this nature shall be disturbed without written permission of OWNER and Texas Historical Commission. When such objects are uncovered unexpectedly, CONTRACTOR shall stop all Work in close proximity and notify Owner's Representative and Texas Historical Commission of their presence and shall not disturb them until written permission and permit to do so is granted. All primitive rights and antiquities uncovered on OWNER's property shall remain property of State

of Texas, Texas Historical Commission conforming to Texas Natural Resources Code. If it is determined by OWNER, in consultation with Texas Historical Commission, that exploration or excavation of primitive records or antiquities on Project site is necessary to avoid loss, CONTRACTOR shall cooperate in salvage work attendant to preservation. If the Work stoppage or salvage work causes an increase in CONTRACTOR's cost of, or time required for, performance of the Work, the Contract Amount and/or Contract Time will be equitably adjusted.

4.3 Reference Points: All control lines and benchmarks suitable for use in layout will be furnished by CONTRACTOR, unless otherwise specified. Controls, bench marks and property boundary markers shall be carefully preserved by CONTRACTOR by use of flags, staffs or other visible devices and in case of destruction or removal by CONTRACTOR or its employees, such controls and bench marks shall be replaced by a Registered Professional Land Surveyor at CONTRACTOR's expense. City survey monuments damaged by CONTRACTOR will be reestablished by OWNER at CONTRACTOR's expense.

4.4 Hazardous Materials:

4.4.1 CONTRACTOR shall immediately notify Owner's Representative of any suspected hazardous materials encountered before or during performance of the Work and shall take all necessary precautions to avoid further disturbance of the materials.

4.4.2 CONTRACTOR shall be responsible for any hazardous materials brought to the site by CONTRACTOR, Subcontractor, Suppliers or anyone else for whom CONTRACTOR is responsible.

4.4.3 The CONTRACTOR shall not knowingly use, specify, request or approve for use any asbestos containing materials or lead-based paint without the OWNER'S written approval. When a specific product is specified, the CONTRACTOR shall endeavor to verify that the product does not include asbestos containing material.

4.4.4 Hazardous material definitions and procedures.

.1 Unless otherwise expressly provided in the Contract Documents to be part of the Work, CONTRACTOR is not responsible for any unexpected Hazardous Materials encountered at the site. Upon encountering any Hazardous Conditions, CONTRACTOR must stop Work immediately in the affected area and duly notify OWNER and, if required by applicable law or regulations, all government or quasi-government entities with jurisdiction over the Project or site.

.2 Upon receiving notice of the presence of suspected Hazardous Materials, OWNER shall take the necessary measures required to ensure that the Hazardous Materials are remediated or rendered harmless. Such necessary measures shall include OWNER retaining qualified independent experts to (i) ascertain whether Hazardous Materials have actually been encountered, and, if they have been encountered, (ii) prescribe the remedial measures that OWNER must take either to remove the Hazardous Materials or render the Hazardous Materials harmless.

.3 CONTRACTOR shall be obligated to resume Work at the affected area of the Project only after OWNER's Representative provides written certification that (i) the Hazardous Materials have been removed or rendered harmless and (ii) all necessary approvals have been obtained from all government and quasi-government entities having jurisdiction over the Project or site. The CONTRACTOR shall be responsible for continuing the Work in the unaffected portion of the Project and site.

.4 CONTRACTOR will be entitled, in accordance with these General Conditions, to an adjustment in its Contract Amount and/or Contract Time(s) to the extent CONTRACTOR's cost and/or time of performance have been adversely impacted by the presence of Hazardous Materials.

.5 Notwithstanding the preceding provisions of this Section 4.1, OWNER is not responsible for Hazardous Materials introduced to the Site by CONTRACTOR, Subcontractors or anyone for whose acts they may be liable. **CONTRACTOR shall indemnify, defend and hold harmless OWNER and OWNER's officers, directors, employees and agents from and against all claims, losses, damages, liabilities and expenses, including attorneys' fees and expenses, arising out of or resulting from those hazardous materials introduced to the site by CONTRACTOR, Subcontractors or anyone for whose acts they may be liable.**

4.4.5 CONTRACTOR shall be responsible for use, storage and remediation of any hazardous materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers or anyone else for whom CONTRACTOR is responsible.

ARTICLE 5 - BONDS AND INSURANCE

5.1 Surety and Insurance Companies: All bonds and insurance required by the Contract Documents shall be obtained from solvent surety or insurance companies that are duly licensed by the State of Texas and authorized to issue bonds or insurance policies for the limits and coverages required by the Contract Documents. The bonds shall be in a form acceptable to OWNER and shall be issued by a surety which complies with the requirements of Texas Insurance Code, Title 12, Chapter 3503. The surety must obtain reinsurance for any portion of the risk that exceeds 10% of the surety's capital and surplus. For bonds exceeding $100,000, the surety must also hold a certificate of authority from the U.S. Secretary of the Treasury or have obtained reinsurance from a reinsurer that is authorized as a reinsurer in Texas and holds a certificate of authority from the U.S. Secretary of the Treasury.

5.2 Workers' Compensation Insurance Coverage:

5.2.1 Definitions:

.1 Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on the Project, for the duration of the Project.

.2 Duration of the Project - includes the time from the beginning of the Work on the Project until the CONTRACTOR's/ person's Work on the Project has been completed and accepted by OWNER.

.3 Persons providing services on the Project ("subcontractor" in Texas Labor Code, Section 406.096) - includes all persons or entities performing all or part of the services the CONTRACTOR has undertaken to perform on the Project, regardless of whether that person contracted directly with the CONTRACTOR and regardless of whether that person has employees. This includes, without limitation, independent contractors, Subcontractors, leasing companies, motor

carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the Project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

5.2.2 CONTRACTOR shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the CONTRACTOR providing services on the Project, for the duration of the Project.

5.2.3 CONTRACTOR must provide a certificate of coverage to OWNER prior to being awarded the Contract.

5.2.4 If the coverage period shown on the CONTRACTOR's current certificate of coverage ends during the duration of the Project, the CONTRACTOR must, prior to the end of the coverage period, file a new certificate of coverage with OWNER showing that coverage has been extended.

5.2.5 CONTRACTOR shall obtain from each person providing services on the Project, and provide to OWNER:

.1 A certificate of coverage, prior to that person beginning Work on the Project, so OWNER will have on file certificates of coverage showing coverage for all persons providing services on the Project; and

.2 No later than seven (7) days after receipt by CONTRACTOR, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.

5.2.6 CONTRACTOR shall retain all required certificates of coverage for the duration of the Project and for one (1) year thereafter.

5.2.7 CONTRACTOR shall notify OWNER in writing by certified mail or personal delivery, within ten (10) days after CONTRACTOR knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.

5.2.8 CONTRACTOR shall post on each Project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

5.2.9 CONTRACTOR shall contractually require each person with whom it contracts to provide services on a Project, to:

.1 Provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the Project, for the duration of the Project;

.2 Provide to CONTRACTOR, prior to that person beginning Work on the Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the Project, for the duration of the Project;

.3 Provide CONTRACTOR, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

.4 Obtain from each other person with whom it contracts, and provide to CONTRACTOR: a) a certificate of coverage, prior to the other person beginning Work on the Project; and b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

.5 Retain all required certificates of coverage on file for the duration of the Project and for one (1) year thereafter;

.6 Notify OWNER in writing by certified mail or personal delivery, within ten (10) days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and

.7 Contractually require each person with whom it contracts, to perform as required by paragraphs 5.2.9.1 - 5.2.9.7, with the certificates of coverage to be provided to the person for whom they are providing services.

5.2.10 By signing this Contract or providing or causing to be provided a certificate of coverage, CONTRACTOR is representing to OWNER that all employees of the CONTRACTOR who will provide services on the Project will be covered by workers' compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the Texas Worker's Compensation Commission's Division of Self- Insurance Regulation. Providing false or misleading information may subject CONTRACTOR to administrative penalties, criminal penalties, civil penalties, or other civil actions.

5.2.11 CONTRACTOR's failure to comply with any of these provisions is a breach of Contract by CONTRACTOR which entitles OWNER to declare the Contract void if CONTRACTOR does not remedy the breach within ten (10) days after receipt of notice of breach from OWNER.

5.3 Other Bond and Insurance Requirements: For additional insurance requirements, refer to Division C.

5.4 Bonds:

5.4.1 General.

.1 Bonds, when required, shall be executed on forms furnished by or acceptable to OWNER. All bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

.2 If the surety on any bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in the State of Texas or it ceases to meet the requirements of the preceding paragraph, CONTRACTOR shall within ten (10) days thereafter substitute another bond and surety, both of which must be acceptable to OWNER.

.3 When Performance Bonds and/or Payment Bonds are required, each shall be issued in an amount of one hundred percent (100%) of the Contract Amount as security for the faithful performance and/or payment of all CONTRACTOR's obligations under the Contract Documents. Performance Bonds and Payment Bonds shall be issued by a solvent surety company authorized to do business in the State of Texas, and shall meet any other requirements established by law or by OWNER pursuant to applicable law. Any surety duly authorized to do

business in Texas may write Performance and Payment Bonds on a project without reinsurance to the limit of ten percent (10%) of its capital and surplus. Such a surety must reinsure any obligations over ten percent (10%).

5.4.2 Performance Bond.

.1 If the Contract Amount exceeds $100,000, CONTRACTOR shall furnish OWNER with a Performance Bond.

.2 If the Contract Amount exceeds $25,000 but is less than or equal to $100,000, CONTRACTOR shall furnish OWNER with a Performance Bond, unless the original Contract Time is 60 Calendar Days/40 Working Days or less, in which case CONTRACTOR can agree to the following terms and conditions for payment in lieu of providing a Performance Bond: no moneys will be paid to CONTRACTOR until completion and acceptance of the Work by OWNER; CONTRACTOR shall be entitled to receive 95% of the Contract Amount following Final Completion, and the remaining 5% of the Contract Amount following the two (2) year warranty period.

.3 If the Contract Amount is less than or equal to $25,000, CONTRACTOR will not be required to furnish a Performance Bond; provided that no moneys will be paid to CONTRACTOR until completion and acceptance of the Work by OWNER under the following terms and conditions: CONTRACTOR shall be entitled to receive 95% of the Contract Amount following Final Completion, and the remaining 5% of the Contract Amount following the two (2) year warranty period.

.4 If a Performance Bond is required to be furnished, it shall extend for the two (2) year warranty period.

5.4.3 Payment Bond.

.1 If the Contract Amount exceeds $50,000, CONTRACTOR shall furnish OWNER with a Payment Bond.

.2 If the Contract Amount is less than or equal to $50,000, CONTRACTOR will not be required to furnish a Payment Bond; provided that no moneys will be paid to CONTRACTOR until completion and acceptance of the Work by OWNER under the terms and conditions specified in paragraph 5.4.2.3.

5.4.4 Maintenance Bond.

.1 Before final payment and acceptance, CONTRACTOR shall furnish the OWNER with a maintenance bond to assure the quality of the materials and workmanship, and maintenance of all required improvements including the OWNER'S costs for collecting the guarantee of funds and administering the correction and/or replacement of covered improvements.

.2 The maintenance bond shall be satisfactory to the OWNER as to form, sufficiency, and manner of execution.

.3 Said bond shall be in an amount equal to one hundred percent (100%) of the cost of improvements verified by the ENGINEER and shall run for a period of two (2) calendar years measured from the date of final acceptance.

.4 In an instance where a maintenance bond has been posted and a defect or failure of any required improvements occurs within the period of coverage, the OWNER shall require that the improvements be repaired or replaced by the CONTRACTOR who issued the bond. If the improvements or repairs are not

completed in what the OWNER deems to be a timely manner, the OWNER may declare said bond to be in default and require that improvements be repaired or replaced by the bonding company.

.5 Whenever a defect or failure of any required improvement occurs within the period of coverage, OWNER may require that a new maintenance bond be posted for a period of two (2) full calendar years sufficient to cover the corrected defect or failure.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.1 Supervision and Superintendence:

6.1.1 CONTRACTOR shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

6.1.2 CONTRACTOR shall have an English-speaking, competent Superintendent on the Work at all times that work is in progress. The Superintendent will be CONTRACTOR's representative on the Work and shall have the authority to act on the behalf of CONTRACTOR. All communications given to the Superintendent shall be as binding as if given to CONTRACTOR. Either CONTRACTOR or the Superintendent shall provide a cellular telephone number and an emergency and home telephone number at which one or the other may be reached if necessary when work is not in progress. The Superintendent must be an employee of the CONTRACTOR, unless such requirement is waived in writing by the Owner's Representative. If the CONTRACTOR proposes a management structure with a Project Manager supervising, directing, and managing construction of the work in addition to or in substitution of a Superintendent, the requirements of these Construction Documents with respect to the Superintendent shall likewise apply to any such Project Manager.

.1 CONTRACTOR shall present the resume of the proposed Superintendent to the Owner's Representative showing evidence of experience and successful superintendence and direction of work of a similar scale and complexity. If, in the opinion of the Owner's Representative, the proposed Superintendent does not indicate sufficient experience in line with the Work, he/she will not be allowed to be the designated Superintendent for the Work.

.2 The Superintendent shall not be replaced without Written Notice to Owner's Representative. If CONTRACTOR deems it necessary to replace the Superintendent, CONTRACTOR shall provide the necessary information for approval, as stated above, on the proposed new Superintendent.

.3 A qualified substitute Superintendent may be designated in the event that the designated Superintendent is temporarily away from the Work, but not to exceed a time limit acceptable to the Owner's Representative. CONTRACTOR shall replace the Superintendent upon OWNER's request in the event the Superintendent is unable to perform to OWNER's satisfaction.

6.2 Labor, Materials and Equipment:

6.2.1 CONTRACTOR shall maintain a work force adequate to accomplish the Work within the Contract Time. CONTRACTOR agrees to employ only orderly and competent workers, skillful in performance of the type of Work required under this Contract. CONTRACTOR, Subcontractors, Sub-subcontractors, and their employees may not use or possess any alcoholic or other intoxicating beverages, illegal drugs or controlled substances while on the job or on OWNER's property, nor may such workers be intoxicated, or under the influence of alcohol or drugs, on the job. Subject to the applicable provisions of Texas law, CONTRACTOR, Subcontractors, Sub-subcontractors, and their employees may not use or possess any firearms or other weapons while on the job or on OWNER'S property. If OWNER or Owner's Representative notifies CONTRACTOR that any worker or representative of Contractor is incompetent, disorderly, abusive, or disobedient, has knowingly or repeatedly violated safety regulations, has possessed any firearms in contravention of the applicable provisions of Texas law, or has possessed or was under the influence of alcohol or drugs on the job, CONTRACTOR shall immediately remove such worker or representative, including an officer or owner of CONTRACTOR, from performing Contract Work, and may not employ such worker or representative again on Contract Work without OWNER's prior written consent. CONTRACTOR shall at all times maintain good discipline and order on or off the site in all matters pertaining to the Project.

6.2.2 Unless otherwise specified in the contract documents, CONTRACTOR shall provide and pay for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.2.3 All materials and equipment shall be of good quality and new (including new products made of recycled materials, pursuant to Section 361.426 of the Texas Health & Safety Code), except as otherwise provided in the Contract Documents. If required by Owner's Representative, CONTRACTOR shall furnish satisfactory evidence (reports of required tests, manufacturer's certificates of compliance with material requirements, mill reports, etc.) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

6.2.4 Substitutes and "Approved Equal" Items:

.1 Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains words reading that no like, equivalent or "approved equal" item or no substitution is permitted, other items of material or equipment of other Suppliers may be submitted by CONTRACTOR, at CONTRACTOR'S sole risk, including disruptions to the Critical Path of the Progress Schedule, to E/A through Owner's Representative under the following circumstances:

.1.1 "Approved Equal": If in E/A's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by E/A as an "approved equal" item, in which case review of the proposed item may, in E/A's sole discretion, be accomplished without compliance with some or all of the requirements for evaluation of

proposed substitute items. CONTRACTOR shall provide E/A with the documentation required for E/A to make its determination.

.1.2 Substitute Items: If in E/A's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "approved equal" item under subparagraph 6.2.4.1.1, it will be considered a proposed substitute item. CONTRACTOR shall submit sufficient information to allow E/A to determine that the item of material or equipment proposed is essentially equivalent to that named and a substitute therefore.

.2 Substitute Construction Methods and Procedures: If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may, at CONTRACTOR'S sole risk, including disruptions to the Critical Path of the Progress Schedule, with prior approval of E/A furnish or utilize a substitute means, method, technique, sequence, or procedure of construction. CONTRACTOR shall submit sufficient information to Owner's Representative to allow E/A, in E/A's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by E/A will be same as that provided for substitute items.

.3 E/A's Evaluation: E/A will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to subparagraphs 6.2.4.1.1 and 6.2.4.1.2. E/A will be the sole judge of acceptability. No "approved equal" or substitute shall be ordered, installed, or utilized until E/A's review is complete, which will be evidenced by either a Change Order or completion of the Shop Drawing review procedure. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety bond with respect to any "approved equal" or substitute or for any other delay or disruption to the Critical Path of the Project Schedule attributable to any such substitution. OWNER shall not be responsible for any delay due to review time for any "approved equal" or substitute.

.4 CONTRACTOR's Expense: All data and documentation to be provided by CONTRACTOR in support of any proposed "approved equal" or substitute item will be at CONTRACTOR's expense.

.5 The approval of the E/A will not relieve the CONTRACTOR from primary responsibility and liability for the suitability and performance of any proposed substitute item, method or procedure and will not relieve CONTRACTOR from its primary responsibility and liability for curing defective Work and performing warranty work, which the CONTRACTOR shall cure and perform, regardless of any claim the CONTRACTOR may choose to advance against the E/A or manufacturer.

6.2.5 CONTRACTOR agrees to assign to OWNER any rights it may have to bring antitrust suits against its Suppliers for overcharges on materials incorporated in the Project growing out of illegal price fixing agreements. CONTRACTOR further agrees to cooperate with OWNER should OWNER wish to prosecute suits against Suppliers for illegal price fixing.

6.3 Progress Schedule: Unless otherwise provided in the contract documents, CONTRACTOR shall adhere to the Baseline Schedule established in accordance with paragraph 2.6 as it may be adjusted from time to time as provided below:

6.3.1 CONTRACTOR shall submit to Owner's Representative for review and approval any proposed adjustments in the Progress Schedule that will not change the Contract

Times or Milestones on a monthly basis. Any such proposed adjustments must be substantiated with documentation of any changes to the underlying logic of the Progress Schedule. CONTRACTOR's Progress Schedule must show how the CONTRACTOR will consistently advance the progress of the Work in accordance with the Critical Path of the Work and the Contract Time or Milestones. Such adjustments will conform generally to the Progress Schedule then in effect and additionally will comply with any provisions of the contract documents applicable thereto.

6.3.2 Proposed adjustments in the Progress Schedule that will change the Contract Times or Milestones shall be submitted in accordance with the requirements of Article 12. Any such proposed adjustments must be substantiated with documentation of any changes to the underlying logic of the Progress Schedule. Such adjustments may only be made by a Change Order or Time Extension Request in accordance with Article 12.

6.4 Concerning Subcontractors, Suppliers and Others:

6.4.1 Assignment: CONTRACTOR agrees to retain direct control of and give direct attention to the fulfillment of this Contract. CONTRACTOR agrees not to, by Power of Attorney, or otherwise, assign said Contract without the prior written consent of OWNER. In addition, without OWNER'S written consent, the CONTRACTOR will not subcontract the performance of the entire Work or the supervision and direction of the Work.

6.4.2 Award of Subcontracts for Portions of the Work: CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization, whether initially or as a substitute, against whom OWNER may have reasonable objection. OWNER will communicate such objections by Written Notice. If OWNER requires a change without good cause of any Subcontractor, person or organization previously accepted by OWNER, the Contract Amount shall be increased or decreased by the difference in the cost occasioned by any such change, and appropriate Change Order shall be issued. CONTRACTOR shall not substitute any Subcontractor, person or organization that has been accepted by OWNER, unless the substitute has been accepted in writing by OWNER. No acceptance by OWNER of any Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER to reject defective Work.

6.4.3 CONTRACTOR shall enter into written agreements with all Subcontractors and Suppliers which specifically binds the Subcontractors or Suppliers to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and E/A. The OWNER reserves the right to specify that certain requirements shall be adhered to by all Subcontractors and Sub-subcontractors as indicated in other portions of the Contract Documents and these requirements shall be made a part of the agreement between CONTRACTOR and Subcontractor or Supplier. Subject to and in accordance with the above requirements, the CONTRACTOR must provide and will be deemed for all purposes to have provided in its contracts with major Subcontractors or Suppliers on the Project (those contracts of more than $10,000) the following specific provision: alternative dispute resolution (paragraphs 16.2 and 16.3), which shall be mandatory in the event of a subcontractor or supplier claim and a prerequisite for the submission of any derivative claim. The CONTRACTOR's standard subcontract form is subject to the OWNER's review and approval. The OWNER may request and the CONTRACTOR will provide within five (5) working days a copy of any subcontract requested by the OWNER.

6.4.4 CONTRACTOR shall be fully responsible to OWNER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just

as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between OWNER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or E/A to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by laws and regulations.

6.4.5 CONTRACTOR shall be solely responsible for efficiently scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR in order to avoid any delays or inefficiencies in the prosecution of the Work. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with Owner's Representative through CONTRACTOR.

6.4.6 The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing or delineating the Work to be performed by any specific trade.

6.4.7 CONTRACTOR shall pay each Subcontractor and Supplier their appropriate share of payments made to CONTRACTOR not later than ten (10) Calendar Days of CONTRACTOR’s receipt of payment from OWNER.

6.4.8 To the extent allowed by Texas law, the OWNER shall be deemed to be a third party beneficiary to each subcontract and may, if OWNER elects, following a termination of the CONTRACTOR, require that the Subcontractor(s) perform all or a portion of unperformed duties and obligations under its subcontract(s) for the benefit of the OWNER, rather than the CONTRACTOR; however, if the OWNER requires any such performance by a Subcontractor for the OWNER’s direct benefit, then the OWNER shall be bound and obligated to pay such Subcontractor the reasonable value for all Work performed by such Subcontractor to the date of the termination of the CONTRACTOR, less previous payments, and for all Work performed thereafter. In the event that the OWNER elects to invoke its right under this section, OWNER will provide notice of such election to the CONTRACTOR and the affected Subcontractor(s).

6.5 Patent Fees and Royalties:

6.5.1 CONTRACTOR shall be responsible at all times for compliance with applicable patents or copyrights encompassing, in whole or in part, any design, device, material, or process utilized, directly or indirectly, in the performance of the Work or the formulation or presentation of its Bid.

6.5.2 CONTRACTOR shall pay all royalties and license fees and shall provide, prior to commencement of Work hereunder and at all times during the performance of same, for lawful use of any design, device, material or process covered by letters, patent or copyright by suitable legal agreement with the patentee, copyright holder, or their duly authorized representative whether or not a particular design, device, material, or process is specified by OWNER.

6.5.3 CONTRACTOR shall defend all suits or claims for infringement of any patent or copyright and shall save OWNER harmless from any loss or liability, direct or indirect, arising with respect to CONTRACTOR's process in the formulation of its Bid or the performance of the Work or otherwise arising in connection

therewith. OWNER reserves the right to provide its own defense to any suit or claim of infringement of any patent or copyright in which event CONTRACTOR shall indemnify and save harmless OWNER from all costs and expenses of such defense as well as satisfaction of all judgments entered against OWNER.

6.5.4 OWNER shall have the right to stop the Work and/or terminate this Agreement at any time in the event CONTRACTOR fails to disclose to OWNER that CONTRACTOR's work methodology includes the use of any infringing design, device, material or process.

6.6 Permits, Fees: Unless otherwise provided in the Supplemental General Conditions, CONTRACTOR shall obtain and pay for all construction permits, licenses and fees required for prosecution of the Work.

6.7 Laws and Regulations:

6.7.1 CONTRACTOR shall give all notices and comply with all laws and regulations applicable to furnishing and performing the Work, including arranging for and obtaining any required inspections, tests, approvals or certifications from any public body having jurisdiction over the Work or any part thereof. Except where otherwise expressly required by applicable laws and regulations, neither OWNER nor E/A shall be responsible for monitoring CONTRACTOR's compliance with any laws and regulations.

6.7.2 Maintaining clean water, air and earth or improving thereon shall be regarded as of prime importance. CONTRACTOR shall plan and execute its operations in compliance with all applicable Federal, State and local laws and regulations concerning control and abatement of water pollution and prevention and control of air pollution.

6.7.3 If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to laws or regulations, CONTRACTOR shall bear all claims, costs, losses and damages arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with laws and regulations, but this does not relieve CONTRACTOR of CONTRACTOR's obligations under Article 3.

6.7.4 This Work is subject to the Texas Pollution Discharge Elimination System (TPDES) permitting requirements for the installation and maintenance of temporary and permanent erosion and sediment controls and storm water pollution prevention measures throughout the construction period.

As applicable based TCEQ requirements related to project size and area of disturbance CONTRACTOR shall be responsible for:

.1 Prepare Storm Water Pollution Prevention Plan (SWPPP).

.2 CONTRACTOR shall file the Notice of Intent to the Texas Commission on Environmental Quality (TCEQ). CONTRACTOR shall pay the TPDES storm water application fee.

.3 Posting of TCEQs "Construction Site Notice" near the main entrance of the work.

.4 Inspection and Maintenance of all erosion/sedimentation controls.

.5 Update the SWPPP as necessary to comply with TPDES permitting requirements, which includes noting changes in erosion / sedimentation controls and other

best management practices that are part of the SWPPP and which may be necessary due to the results of inspection reports.

.6 .Upon completion of the Work, provide TPDES records to OWNER."

6.8 Taxes:

6.8.1 CONTRACTOR shall pay only those sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the laws and regulations of the State of Texas in the performance of this public works contract.

6.8.2 OWNER is an exempt organization as defined by Chapter 11 of the Property Tax Code of Texas and is thereby exempt from payment of Sales Tax under Chapter 151, Limited Use Sales, Excise and Use Tax, Texas Tax Code, and Article 1066 (C), Local Sales and Use Tax Act, Revised Civil Statutes of Texas.

6.9 Use of Premises:

6.9.1 CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by laws and regulations, right-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of or in connection with the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. **CONTRACTOR shall indemnify, defend and hold harmless OWNER, E/A, E/A'S Consultants and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages (including court costs and reasonable attorney's fees) arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, E/A or any other party indemnified hereunder to the extent caused by or based upon performance of the work or failure to perform the Work.**

6.9.2 During the progress of the Work and on a daily basis, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. CONTRACTOR shall leave the site clean and ready for occupancy by OWNER at Substantial Completion of the Work. CONTRACTOR shall, at a minimum, restore to original condition all property not designated for alteration by the Contact Documents. If the CONTRACTOR fails to clean up at the completion of the Work, OWNER may do so and the cost thereof will be charged against the CONTRACTOR.

6.9.3 CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.10 Record Documents: CONTRACTOR shall maintain in a safe place at the site, or other location acceptable to OWNER, one (1) record copy of all Drawings, Specifications, Addenda, Change Orders, Change Directives, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.5) in good order and annotated to show all changes made during construction. These record documents together with all final samples and all final Shop Drawings will be available to OWNER and E/A for reference during performance of the Work. Upon Substantial Completion of the Work, these record documents, samples and Shop Drawings shall be promptly delivered to Owner's Representative.

6.11 Safety and Protection:

6.11.1 CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Upon request, and prior to installation of measures, CONTRACTOR shall submit a site security plan for approval by OWNER. By reviewing the plan or making recommendations or comments, OWNER will not assume liability nor will CONTRACTOR be relieved of liability for damage, injury or loss. CONTRACTOR shall take all necessary precautions for the safety of and shall provide the necessary protection to prevent damage, injury or loss to:

.1 all persons on the Work site or who may be affected by the Work;

.2 all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

.3 other property at the site or adjacent thereto, including, but not limited to, trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction.

6.11.2 CONTRACTOR shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of underground facilities, and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.11.1.2 and 6.11.1.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, Subcontractor, Supplier or any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER, or E/A, or E/A's consultant or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the faults or negligence of CONTRACTOR or any Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and protection of the Work shall continue until such time as all the Work is completed and Owner's Representative has issued a notice to OWNER and CONTRACTOR in accordance with Article 14 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion). Without limitation, CONTRACTOR shall comply with the following specific provisions:

It shall be the duty and responsibility of CONTRACTOR and all of its subcontractors to be familiar with and comply with 29 USC Section 651, et seq., the Occupational

Safety and Health Act of 1970, as amended ("OSHA") and to enforce and comply with all provisions of this Act.

The CONTRACTOR and all of its subcontractors shall comply with all applicable requirements of Subpart P of Part 1926 of 29 C.F.R, OSHA Safety and Health Standards, Texas Health and Safety Code Section 756.023, as amended, and shall submit a unit price for the particular excavation safety systems to be utilized by the Contractor for all excavations which exceed a depth of five feet (5').

Before commencing any excavation which will exceed a depth of five feet (5'), the CONTRACTOR shall provide the Owner with detailed plans and specifications regarding the safety systems to be utilized. Said plans and specifications shall include a certification from a Texas licensed professional engineer indicating full compliance with the OSHA provisions cited above.

6.11.3 Safety Representative: CONTRACTOR shall designate in writing a qualified and experienced safety representative (the "Safety Representative") at the site whose duties and responsibilities shall include safety training; identifying and mitigating hazardous conditions and unsafe work practices; and developing, maintaining and supervising the implementation of safe work practices and safety programs as deemed necessary and appropriate for the Project. The term "Safety Representative" includes any designated Safety Supervisor, Superintendent or Safety Manager. The Safety Representative shall exercise due diligence in the execution of all Project related safety duties. The Safety Representative shall report directly to a company executive, not an on site project manager. Upon request of OWNER, CONTRACTOR shall provide certifications or other acceptable documentation of the Safety Representative's qualifications.

6.11.4 Hazard Communication Programs: CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with laws and regulations.

6.11.5 Emergencies:

.1 In emergencies affecting the safety or protection of persons or the Work at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or E/A, is obligated to act reasonably to prevent threatened damage, injury or loss and to mitigate damage or loss to the Work. CONTRACTOR shall give Owner's Representative telephone notification as soon as reasonably practical and a prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If Owner's Representative determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Change Directive or Change Order will be issued to document the consequences of such action; otherwise OWNER will not be responsible for CONTRACTOR's emergency action.

.2 Authorized agents of CONTRACTOR shall respond immediately to call-out at any time of any day or night when circumstances warrant the presence on Project site of CONTRACTOR or his agent to protect the Work or adjacent property from damage, restriction or limitation or to take such action or measures pertaining to the Work as may be necessary to provide for the safety of the public. Should CONTRACTOR and/or their agent fail to respond and take action to alleviate such an emergency situation, OWNER may direct other forces to take action as

necessary to remedy the emergency condition, and OWNER will deduct any cost of such remedial action from the funds due CONTRACTOR under this Contract.

.3 In the event there is an accident involving injury to any individual or damage to any property on or near the Work, CONTRACTOR shall provide to Owner's Representative verbal notification within one (1) hour and written notification within twenty-four (24) hours of the event and shall be responsible for recording the location of the event and the circumstances surrounding the event through photographs, interviewing witnesses, obtaining medical reports, police accident reports and other documentation that describes the event. Copies of such documentation shall be provided to Owner's Representative, for OWNER's and E/A's records, within forty-eight (48) hours of the event. Contractor shall cooperate with OWNER on any OWNER investigation of any such incident.

6.12 Continuing the Work: CONTRACTOR shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as OWNER and CONTRACTOR may otherwise agree in writing.

6.13 CONTRACTOR's General Warranty and Guarantee:

6.13.1 CONTRACTOR warrants and guarantees to OWNER that all Work will conform to the plans and specifications, be performed in a good and workmanlike manner in accordance with the Contract Documents and will not be defective. This warranty will survive the termination or expiration of the Contract. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

.1 abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or Suppliers; or

.2 normal wear and tear under normal usage.

6.13.2 CONTRACTOR's obligation to perform and complete the Work in a good and workmanlike manner in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

.1 observations by Owner's Representative and/or E/A;

.2 recommendation of any progress or final payment by Owner's Representative;

.3 the issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;

.4 use or occupancy of the Work or any part thereof by OWNER;

.5 any acceptance by OWNER or any failure to do so;

.6 any review of a Shop Drawing or sample submittal;

.7 any inspection, test or approval by others; or

.8 any correction of defective Work by OWNER.

6.14 INDEMNIFICATION:

6.14.1 CONTRACTOR shall defend, indemnify and hold harmless OWNER, E/A, E/A'S Consultants and Subconsultants and their respective officers, directors, partners, employees, agents and

other Consultants and any of them (the "INDEMNIFIED PARTIES") from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage:

.1 Is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom, and

.2 Is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of the INDEMNIFIED PARTIES hereunder or whether liability is imposed upon such INDEMNIFIED PARTY by laws and regulations regardless of the negligence of any such person or entity.

In the event that indemnification of the INDEMNIFIED PARTIES is prohibited by law, CONTRACTOR shall nonetheless be solely responsible for any liability arising out of or resulting from the performance of the Work, subject to the limitations set forth above, and shall indemnify and hold harmless the remaining INDEMNIFIED PARTIES, who may be legally indemnified, from such liability of the CONTRACTOR and the associated costs described above.

6.14.2 The indemnification obligation under paragraph 6.14.1 shall not be limited in any way by any limitation on the amount or type of damages, or compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

6.14.3 The obligations of CONTRACTOR under paragraph 6.14.1 shall not extend to the liability of OWNER, E/A, E/A's consultants, and their officers, directors, partners, employees or agents caused primarily by negligent preparation of maps, drawings, surveys, designs or specifications upon which is placed the applicable state-authorized design professional seal of OWNER's, E/A's or E/A's consultant's officers, directors, partners, employees or agents.

6.14.4 In the event CONTRACTOR fails to follow OWNER's directives concerning use of the site, scheduling or course of construction, or engages in other conduct which proximately causes damage to property based on inverse condemnation or

otherwise, then and in that event, CONTRACTOR shall indemnify OWNER against all costs resulting from such claims.

6.14.5 In the event CONTRACTOR unreasonably delays progress of the work being done by others on the site so as to cause loss for which OWNER becomes liable, then CONTRACTOR shall indemnify OWNER from and reimburse OWNER for such loss.

6.15 Survival of Obligations: All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

6.16 Losses from Natural Causes: Unless otherwise specified, all loss or damage to CONTRACTOR arising out of the nature of the Work to be done or from action of the elements, floods or from unforeseeable circumstances in prosecution of the Work or from unusual obstructions or difficulties which may be encountered in prosecution of the Work, shall be sustained and borne by CONTRACTOR at its own cost and expense.

6.17 Notice of Claim: Should CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of OWNER or of any of OWNER's employees or agents or others for whose acts OWNER is liable, a Claim must be made to the other party within ninety (90) calendar days of the event giving rise to such injury or damage. The provisions of this paragraph 6.17 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or statute of repose.

6.18 Liquidated Damages: CONTRACTOR or its Surety shall be liable for liquidated damages for the failure of the CONTRACTOR to timely complete the Work or any portion thereof within the Contract Time.

ARTICLE 7 - OTHER WORK

7.1 OWNER may perform other work related to the Project at the site by OWNER's own forces, or let other contracts therefore, or have other work performed by utility owners. CONTRACTOR and OWNER agree to and shall use best efforts to cooperate and coordinate the Work with others performing work and other work related to the Project in order to avoid conflicts and delays in the Work. If CONTRACTOR believes that delay or additional cost is involved because of such action by OWNER, CONTRACTOR may make a Claim as provided in Article 11 or 12.

7.2 CONTRACTOR shall afford other contractors who are in a contract with OWNER and each utility owner (and OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of Owner's Representative and the other contractors whose work will be affected. CONTRACTOR shall promptly remedy damage wrongfully caused by CONTRACTOR to completed or partially completed construction or to property of the OWNER or separate contractors.

7.3 If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and

promptly report to Owner's Representative in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent or non-apparent defects and deficiencies in such other work.

7.4 OWNER shall provide for coordination of the activities of the OWNER's own forces and of each separate contractor with the Work of CONTRACTOR, who shall cooperate with them. CONTRACTOR shall participate with other separate contractors and Owner's Representative in reviewing their construction Progress Schedules when directed to do so. On the basis of such review, CONTRACTOR shall make any revisions to the construction Progress Schedule deemed necessary after a joint review and mutual agreement. The agreed upon construction Progress Schedules shall then constitute the Progress Schedules to be used by CONTRACTOR, separate contractors and OWNER until subsequently revised.

7.5 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefore.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.1 Prior to the start of construction, OWNER will designate a person or entity to act as Owner's Representative during construction. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through Owner's Representative.

8.2 OWNER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto. OWNER is not responsible for any failure of CONTRACTOR to comply with laws and regulations applicable to furnishing or performing the Work. OWNER is not responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents. Failure or omission of OWNER to discover, or object to or condemn any defective Work or material shall not release CONTRACTOR from the obligation to properly and fully perform the Contract.

8.3 OWNER is not responsible for the acts or omissions of CONTRACTOR, or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work. CONTRACTOR acknowledges and agrees that OWNER'S direction to perform Work in accordance with the approved Progress Schedule is not a demand for acceleration or a dictation of CONTRACTOR'S means or methods.

8.4 Information or services under the OWNER's control shall be furnished by the OWNER with reasonable promptness to avoid delay in orderly progress of the Work. The OWNER shall have a reasonable amount of time to investigate site conditions, review submittals, analyze requests for changes, and to make other decisions in the orderly administration of the Contract. CONTRACTOR must notify the OWNER in writing, if the time for the investigation, review, analysis of any submittals, required for changes or otherwise required for OWNER'S decision, impacts in any way the Critical Path of the approved Progress Schedule.

8.5 The foregoing are in addition to other duties and responsibilities of the OWNER enumerated herein and especially those in respect to Article 4 (Availability of Lands; Subsurface and Physical Conditions; Reference Points), Article 7 (Other Work) and Article 14 (Payments to CONTRACTOR and Completion).

8.6 **Notice of Claim:** Should OWNER suffer injury or damage to person or property because of any error, omission or act of CONTRACTOR or of any of CONTRACTOR's employees or agents

or others for whose acts CONTRACTOR is liable, a Claim will be made to the other party within thirty (30) calendar days of receipt of actual or constructive notice of the event giving rise to such injury or damage. The provisions of this paragraph 8.6 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or statute of repose.

ARTICLE 9 - ENGINEER/ARCHITECT'S STATUS DURING CONSTRUCTION

9.1 E/A's Authority and Responsibilities:

9.1.1 The duties and responsibilities and the limitations of authority of E/A during construction, as set forth in the Contract Documents, may be assigned or assumed by the OWNER, but shall not be extended without written consent of OWNER and/or E/A. The assignment of any authority, duties or responsibilities to E/A under the Contract Documents, or under any agreement between OWNER and E/A, or any undertaking, exercise or performance thereof by E/A, is intended to be for the sole and exclusive benefit of OWNER and not for the benefit of CONTRACTOR, Subcontractor, Supplier, or any other person or organization, or for any surety or employee or agent of any of them.

9.1.2 E/A will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto. E/A is not responsible for any failure of CONTRACTOR to comply with laws and regulations applicable to the furnishing or performing the Work. E/A is not responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents. Failure or omission of E/A to discover, or object to or condemn any defective Work or material shall not release CONTRACTOR from the obligation to properly and fully perform the Contract.

9.1.3 E/A is not responsible for the acts or omissions of CONTRACTOR, or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9.1.4 If OWNER and E/A agree, E/A will review the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and other documentation required to be delivered by Article 14, but only to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with, the Contract Documents.

9.1.5 The limitations upon authority and responsibility set forth in this paragraph 9.1 shall also apply to E/A's Consultants, Resident Project Representative and assistants.

9.2 E/A assisting Owner's Representative: E/A will assist the Owner's Representative designated under paragraph 8.1 during the construction period. The duties and responsibilities and the limitations of authority of E/A in assisting the Owner’s representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and E/A. E/A shall not have the authority to bind the Owner as that authority lies with the Owner’s representative, but E/A may communicate on behalf of Owner in all Project matters.

9.3 Visits to Site: If OWNER and E/A agree, E/A will make visits to the site at intervals appropriate to the various stages of construction as E/A deems necessary in order to observe

as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, E/A will endeavor for the benefit of OWNER to determine, in general, if the Work is proceeding in accordance with the Contract Documents. E/A will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. E/A's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, E/A will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work. E/A's visits and on-site observations are subject to all the limitations on E/A's authority and responsibility set forth in paragraph 9.1 and 9.2.

9.4 Resident Project Representative: If OWNER and E/A agree, E/A will furnish a Resident Project Representative to assist E/A in providing more continuous observation of the Work. The responsibilities and authority and limitations of any such Resident Project Representative and assistants will be as provided in paragraph 9.1, 9.2 and Division C. OWNER may designate another representative or agent to represent OWNER at the site who is not E/A, E/A's consultant, agent or employee.

9.5 Clarifications and Interpretations: E/A may determine that written clarifications or interpretations of the requirements of the Contract Documents (in the form of drawings or otherwise) are necessary. Such written clarifications or interpretations will be consistent with the intent of and reasonably inferable from the Contract Documents, will be issued with reasonable promptness by Owner's Representative and will be binding on OWNER and CONTRACTOR. If OWNER or CONTRACTOR believes that a written clarification or interpretation justifies an adjustment in the Contract Amount or the Contract Times, OWNER or CONTRACTOR may make a Claim therefore as provided in Article 11 or 12.

9.6 Rejecting Defective Work: E/A will recommend that OWNER disapprove or reject Work which E/A believes to be defective, or believes will not produce a completed Project that conforms to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

9.7 Shop Drawings: Refer to Contract documents for E/A's authority concerning Shop Drawings.

ARTICLE 10 - CHANGES IN THE WORK

10.1 Changes:

10.1.1 Without invalidating the Contract and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work. Such changes in the Work will be authorized by Change Order, Change Directive or Field Order. In the event that the OWNER and the CONRACTOR are unable to negotiate the terms of a Change Order for the performance of additional Work, the OWNER may, at its election, perform such additional Work with its own forces or with another contractor and such work will be considered "Other Work" in accordance with Article 7.

10.1.2 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and CONTRACTOR shall proceed promptly, unless otherwise provided in the Change Order, Change Directive or Field Order. CONTRACTOR's proposals for changes in the Contract Amount and/or Contract Time shall be submitted within ten (10) Calendar Days of request by Owner's Representative, including impacts to the approved Progress Schedule, unless Owner's Representative grants an extension. OWNER will review each proposal and respond to CONTRACTOR within ten (10)

Calendar Days. After review by OWNER, CONTRACTOR shall provide any supporting data requested by Owner's Representative within seven (7) Calendar Days, unless Owner's Representative grants an extension. OWNER will determine within seven (7) Calendar Days whether to pursue the change in Work.

10.1.3 CONTRACTOR shall not be entitled to an increase in the Contract Amount or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.3.1 and 3.3.2, except in the case of an emergency as provided in paragraph 6.11.5 or in the case of uncovering Work as provided in paragraph 13.4.

10.1.4 Except in the case of an emergency as provided in paragraph 6.11.5, a Change Order or Change Directive is required before CONTRACTOR commences any activities associated with a change in the Work which, in CONTRACTOR's opinion, will result in a change in the Contract Amount and/or Contract Times.

10.1.5 If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Amount or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

10.2 Change Orders:

10.2.1 OWNER and CONTRACTOR shall execute appropriate written Change Orders covering:

.1 a change in the Work;

.2 the amount of the adjustment in the Contract Amount, if any; and

.3 the extent of the adjustment in the Contract Time, if any.

10.2.2 An executed Change Order shall represent the complete, equitable, and final amount of adjustment in the Contract Amount and/or Contract Time owed to CONTRACTOR or OWNER as a result of the occurrence or event causing the change in the Work encompassed by the Change Order.

10.3 Change Directives:

10.3.1 Without invalidating the Contract, OWNER may, by written Change Directive, using the Force Account method, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Amount and Contract Time being adjusted as necessary. "Force Account" means a basis of payment for the direct performance of Work with payment based on the actual cost of the labor, equipment and materials furnished and consideration for overhead and profit as set forth in Section 11.5, below. A Change Directive shall be used in the absence of complete and prompt agreement on the terms of a Change Order. Where practicable, any items of Work that may be agreed upon, prior to the performance of Work under this Section, will be included in a separate Change Order. For example, the cost of the installation of additional asphalt may be agreed upon based on the unit prices in the Bid.

10.3.2 If the Change Directive provides for an adjustment to the Contract Amount, the adjustment shall be based on the method provided in paragraph 11.5.

10.3.3 A Change Directive shall be effective immediately and shall be recorded later by preparation and execution of an appropriate Change Order.

10.3.4 Upon receipt of a Change Directive, CONTRACTOR shall promptly proceed with the change in the Work involved, provided, prior to the commencement of any Work under this section, the CONTRACTOR must submit its proposed Work plan, anticipated schedule, and a list of its work force and equipment proposed to be used in the Work for OWNER'S approval. Upon such approval, CONTRACTOR must promptly commence and make continuous progress in the Work. The OWNER reserves the right to withhold payment for low production or lack of progress.

10.4 Field Order:

10.4.1 Owner's Representative may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Amount or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These shall be accomplished by written Field Order and shall be binding on OWNER and on CONTRACTOR who shall perform the Work involved promptly.

10.4.2 If CONTRACTOR believes that a Field Order would require an adjustment in the Contract Amount and/or Contract Times, CONTRACTOR shall make a prompt written request to Owner's Representative for a Change Order. Any request by CONTRACTOR for an adjustment in Contract Amount and/or Contract Times must be made in writing prior to beginning the work covered by the Field Order.

10.5 No Damages for Delay: CONTRACTOR EXPRESSLY WAIVES ANY RIGHT TO AN ADJUSTMENT IN CONTRACT PRICE FOR ANY EVENT OF DELAY. CONTRACTOR'S SOLE REMEDY FOR ANY DELAY SHALL BE LIMITED TO AN ADJUSTMENT IN CONTRACT TIME.

ARTICLE 11 - CHANGE OF CONTRACT AMOUNT

11.1 The Contract Amount is stated in the Agreement and, including authorized adjustments, is the total amount payable by OWNER to CONTRACTOR for performance of the Work under the Contract Documents.

11.2 The original Contract Amount may not be increased by more than twenty-five percent (25%) and it may not be decreased more than twenty-five percent (25%) without the consent of the CONTRACTOR to such decrease, except in the event of a termination for convenience under paragraph 15.2 or the failure of the City Council to appropriate sufficient funding for the Project, in which events it is agreed that the consent of the CONTRACTOR will not be required.

11.3 The Contract Amount shall only be changed by a Change Order. Any claim for an adjustment in the Contract Amount shall be made by Written Notice delivered by the party making the Claim to the other party promptly (but in no event later than thirty (30) calendar days) after the start of the occurrence or event giving rise to the Claim and stating the general nature of the Claim. Notice of the amount of the Claim with supporting data shall be delivered within thirty (30) calendar days after Written Notice of Claim is delivered by claimant, and shall represent that the adjustment claimed covers all known amounts to which claimant is entitled as a result of said occurrence or event. If OWNER and CONTRACTOR cannot otherwise agree, all Claims for adjustment in the Contract Amount shall be determined as set out in Article 16.

11.4 Determination of Value of Work:

11.4.1 The value of any Work covered by a Change Order for an adjustment in the Contract Amount will be determined by one or more of the following methods:

.1 by application of unit prices contained in the Contract Documents to the quantities of the items involved.

.2 by a mutually agreed lump sum properly itemized and supported by sufficient substantiating data, including documentation by subcontractors performing the work, to permit evaluation.

.3 by cost of Work plus CONTRACTOR's fee for all overhead costs and profit (determined as provided in paragraph 11.5).

.4 No cost will be included in the change order for time spent preparing the change order, nor will costs be included for an estimate of time to negotiate the change order costs for machinery, tools, or equipment as described in subparagraph 11.5.3

11.4.2 Before using the method described in paragraph 11.4.1.3, OWNER and CONTRACTOR agree to negotiate a Change Order using the methods identified in paragraphs 11.4.1.1 and 11.4.1.2, as appropriate, to determine the adjustment in the Contract Amount.

11.5 Cost of Work: If neither of the methods defined in paragraphs 11.4.1.1 nor 11.4.1.2 can be agreed upon before a change in the Work is commenced which will result in an adjustment in the Contract Amount, then the change in the Work will be performed by Change Directive, using the Force Account method, and payment will be made as follows:

11.5.1 For all personnel, CONTRACTOR will receive actual field cost wage rates for each hour that said personnel are actually engaged in such Work, as substantiated by its certified payroll, to which will be added an amount equal to twenty-five percent (25%) of the sum thereof as compensation for CONTRACTOR's and any effected Subcontractor's total overhead and profit. No separate charge will be made by CONTRACTOR or its Subcontractor(s) for organization or overhead expenses. In no case will the rate of wage be less than the minimum shown in the Contract for a particular category. CONTRACTOR will also receive an amount equal to 55% of the wages paid personnel, excluding the 25% compensation provided above, for CONTRACTOR's and any effected Subcontractor's cost of premiums on public liability insurance, workers' compensation insurance, social security and unemployment insurance. The actual cost of CONTRACTOR's bond(s) on the extra Work will be paid based on invoices from surety. No charge for superintendence will be made unless considered necessary and ordered by OWNER.

11.5.2 CONTRACTOR will receive the actual cost, including freight charges, of the materials used and installed on such Work, to which costs will be added a sum equal to twenty-five percent (25%) thereof as compensation for CONTRACTOR's and any effected Subcontractor's total overhead and profit. In case material invoices indicate a discount may be taken, the actual cost will be the invoice price minus the discount.

11.5.3 For machinery, trucks, power tools, or other similar equipment (the "equipment") agreed to be necessary by OWNER and CONTRACTOR, OWNER will allow CONTRACTOR the applicable daily, weekly or monthly rate as given in the latest edition of the "Rental Rate Blue Book" as published by Equipment Watch (1-800-669-3282) for each hour that said equipment is in use on such work, which rate includes the cost of fuel, lubricants and repairs. The established equipment rates will be paid for each hour that the equipment is utilized in the Work. In the event that the equipment is used intermittently during the Work, full payment for an eight-hour day will be made if the equipment is not idle more than four (4) hours of the day. If the equipment is idle more than four (4) hours in a day, then payment will be made only for the actual hours worked. No additional compensation will be

allowed on the equipment for CONTRACTOR's or any affected Subcontractor's overhead and profit. OWNER may accept an actual rental invoice in lieu of the method of calculation set forth in paragraph 11.5.3 for equipment rented exclusively for Force Account Work or for equipment not included in the Rental Rate Blue Book.

11.5.4 The compensation, as herein provided for, shall be received by CONTRACTOR and any affected Subcontractor as payment in full for work done by Change Directive and will include use of small tools, and total overhead expense and profit. CONTRACTOR and Owner's Representative shall compare records of work done by Change Directive at the end of each day. Copies of these records will be made upon forms provided for this purpose by OWNER and signed by both Owner's Representative and CONTRACTOR, with one copy being retained by OWNER and one by CONTRACTOR. Refusal by CONTRACTOR to sign these records within two (2) working days of presentation does not invalidate the accuracy of the record.

11.6 Unit Price Work:

11.6.1 Where the Contract Documents provide that all or part of the Work is to be unit price Work, initially the Contract Amount will be deemed to include for all unit price work an amount equal to the sum of the established unit price for each separately identified item of unit price work times the estimated quantity of each item as indicated in the Bid. The estimated quantities of items of unit price work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Amount. Determinations of the actual quantities and classifications of unit price work performed by CONTRACTOR will be made by Owner's Representative. Owner's Representative will review with CONTRACTOR the preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise).

11.6.2 When "plan quantity" is indicated for a Bid item, CONTRACTOR shall be paid amount specified in the Contract Documents without any measurements.

11.6.3 Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.6.4 A Major Item is any individual Bid item in the Bid that has a total cost equal to or greater than five percent (5%) of the original Contract Amount or $50,000, whichever is greater, computed on the basis of Bid quantities and Contract unit prices.

11.6.5 OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Amount in accordance with Article 11 if:

.1 the actual quantity of any Major Item should become as much as twenty percent (20%) more than or twenty percent (20%) less than that in the Bid; or

.2 CONTRACTOR presents documentation contesting accuracy of "plan quantity" and Owner's Representative verifies quantity and determines original value is in error by five percent (5%) or more;

Provided, however, in the event a Major Item is reduced by twenty percent (20%) or more of the amount in the Bid, no additional Article 11 profit or overhead will be added, if, due to other additions in the Work, the net value of the Contract Amount is not reduced.

ARTICLE 12 - CHANGE OF CONTRACT TIMES

12.1 Working Day and Calendar Day Contracts:

12.1.1 The Contract Times (or Milestones) may only be changed by Change Order or Time Extension Request duly executed by both CONTRACTOR and Owner's Representative. Any claim for an adjustment of the Contract Times (or Milestones) shall be made by Written Notice delivered by the party making the Claim to the other party promptly (but in no event later than thirty (30) calendar days after the start of the occurrence or event giving rise to the delay) and stating the general nature of the delay. Notice of the extent of the delay with supporting data shall be delivered within thirty (30) calendar days after Written Notice of Claim is delivered by claimant, and shall represent that the adjustment claimed is the entire adjustment to which claimant is entitled as a result of said occurrence or event. If OWNER and CONTRACTOR cannot otherwise agree, all Claims for adjustment in the Contract Times (or Milestones) shall be determined as set out in Article 16. No Claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph.

12.1.2 When CONTRACTOR is at fault and OWNER stops the Work, so that corrections in the Work can be made by CONTRACTOR, no extension in time will be allowed.

12.1.3 When CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. If performance by the CONTRACTOR or OWNER is interrupted by any occurrence not occasioned by its own conduct, whether such occurrence be an act of god or the result of war, riot, civil commotion, sovereign conduct, or the conduct of a third party, then such performance will be excused for a period of time necessary to remedy its effects, provided, however, in such an event, a conference will be held within three (3) business days to establish a proposed new Progress Schedule for the Project.

12.1.4 OWNER will consider time extension requests and may grant CONTRACTOR an extension of time because of:

.1 Changes ordered in the work which justify additional time.

.2 Failure of materials or products being at the Project site due to delays in transportation or failures of Suppliers, which are not the result of CONTRACTOR’s, Subcontractor’s or Supplier’s negligence. The request for an extension of time shall be supported by a citation of acts demonstrating that the delays are beyond CONTRACTOR's control, including, but not limited to, CONTRACTOR's efforts to overcome such delays documented as follows:

a) Copy of purchase order for delayed item(s) indicating date ordered by CONTRACTOR/ Subcontractor and date purchase order received by Supplier.

b) If item(s) require Shop Drawings or other submittal information in accordance with the Contract Documents, provide record of date submittal(s) forwarded to Owner's Representative, date submittal(s) returned to CONTRACTOR, and date submittal(s) forwarded to Supplier.

c) Copy of document(s) from Supplier, on Supplier's letterhead, indicating date(s) item(s) would be ready for shipment and/or actual shipment date(s).

d) Copies of all correspondence between CONTRACTOR / Subcontractor and Supplier indicating CONTRACTOR / Subcontractor's efforts to expedite item(s).

e) If item(s) are being purchased by a Subcontractor, provide correspondence, meeting notes, etc., that reflect CONTRACTOR's efforts with the Subcontractor to expedite delivery of the item(s).

.3 When acts of OWNER, E/A, utility owners or other contractors employed by OWNER delay progress of work through no fault of CONTRACTOR. The CONTRACTOR will only be entitled to an extension of time for delays that affect the Critical Path of the Work and that are not caused by the CONTRACTOR.

.4 When CONTRACTOR is delayed by strikes, lockouts, fires, losses from natural causes, or other unavoidable cause or causes beyond CONTRACTOR's control.

12.2 Calendar Day Contracts:

12.2.1 Under a Calendar Day Contract, CONTRACTOR may be granted an extension of time because of unusual inclement weather, including but not limited to unusual rainfall events, which are beyond the normal rainfall recorded and expected for Dripping Springs, Texas. However, the CONTRACTOR will not be granted an extension of time for "normal rainfall", as described below.

12.2.2 "Unusual Inclement Weather" is defined as a rain event or other weather related event which occurs at the site and is of sufficient magnitude to prevent CONTRACTOR from performing units of Work critical to maintaining the Progress Schedule.

12.2.3 Baseline Rain Day Determination. "Normal rainfall" compiled by the State climatologist, based on U.S. Weather Bureau Records for Dripping Springs, Texas, is considered a part of the Calendar Day Contract, and is not a justification for an extension of time. Listed below are the number of days in each month for which no compensatory days for rainfall events ("Rain Days") in such months may be claimed:

January	5 days	July	4 days
February	4 days	August	4 days
March	5 days	September	5 days
April	4 days	October	5 days
May	5 days	November	4 days
June	6 days	December	4 days

Rain Days in addition to the baseline Rain Day determination described above will be measured with the Owner's Representative's approval at the nearest operational public weather data collection facility to the site, including but not limited to the OWNER's early warning flood gauge system.

12.2.4 CONTRACTOR may receive credit in any month for Unusual Inclement Weather, and specifically for any Rain Days in that month which exceed the number of Rain Days

allocated to that month, if a Claim is made in accordance with paragraph 12.1.1 and the weather event meets the definition for "Unusual Inclement Weather", and as applicable, "Rain Day" and such claimed day is a day on which Work critical to maintaining the Progress Schedule is scheduled to be performed and is otherwise capable of being performed.

ARTICLE 13 - TESTS & INSPECTIONS; DEFECTIVE WORK

13.1 Notice of Defects: Prompt notice of all defective Work of which OWNER or E/A has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected or accepted as provided in Article 13. CONTRACTOR must give OWNER and E/A prompt notice of any defective Work of which CONTRACTOR has actual knowledge.

13.2 Access to Work: OWNER, E/A, E/A's Consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies having jurisdiction will have access to the Work at reasonable times for observing, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access, and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

13.3 Tests and Inspections:

13.3.1 CONTRACTOR shall give timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.3.2 OWNER shall employ and pay for services of an independent testing laboratory to perform all inspections, tests or approvals required by the Contract Documents except:

.1 for inspections, tests or approvals covered by paragraph 13.3.3 below;

.2 that costs incurred with tests or inspections conducted pursuant to paragraph 13.4.3 below shall be paid as provided in paragraph 13.4.3;

.3 for reinspecting or retesting defective Work, including any associated costs incurred by the testing laboratory for cancelled tests or standby time; and

.4 as otherwise specifically provided in the Contract Documents. All testing laboratories shall meet the requirements of ASTM E-329.

13.3.3 If laws or regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith and furnish Owner's Representative the required certificates of inspection or approval.

13.3.4 CONTRACTOR shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for OWNER's and E/A's review of materials or equipment to be incorporated in the Work, or of materials, mix designs or equipment submitted for review prior to CONTRACTOR's purchase thereof for incorporation in the Work.

13.4 Uncovering Work:

13.4.1 If any Work (or the work of others) that is to be inspected, tested or approved is covered by CONTRACTOR without written concurrence of Owner's Representative,

or if any Work is covered contrary to the written request of Owner's Representative, it must, if requested by Owner's Representative, be uncovered and recovered at CONTRACTOR's expense.

13.4.2 If Owner's Representative considers it necessary or advisable that covered Work be observed, inspected or tested, CONTRACTOR shall uncover, expose or otherwise make available for observation, inspection or testing that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others).

13.5 OWNER May Stop the Work:

13.5.1 If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers, suitable materials, and/or equipment; or fails to furnish or perform the Work in such a way that the Work in progress or the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any surety or other party.

13.5.2 If CONTRACTOR fails to correct defective Work or submit a satisfactory plan to take corrective action, with procedure and time schedule, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until cause for such order has been eliminated, or take any other action permitted by this Contract. A notice to stop the Work, based on defects, shall not stop calendar or working days charged to the Project.

13.6 Correction or Removal of Defective Work: If required by OWNER, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Owner's Representative, remove it from the site and replace it with Work that is not defective. CONTRACTOR shall correct or remove and replace defective Work, or submit a plan of action detailing how the deficiency will be corrected, within the time frame identified in the notice of defective Work. CONTRACTOR shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.7 Warranty period:

13.7.1 If within two year after the date of Substantial Completion or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents (e.g. paragraph 14.11.2), any Work, including work performed after the Substantial Completion date, is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions:

(i) correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with Work that is not defective, and

(ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting there from.

If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and

all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR. The warranty period will be deemed to be renewed and recommenced in connection with the completed items of Work requiring correction.

13.7.2 In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the warranty period for that item may start to run from an earlier date if so provided in the Contract Documents.

13.7.3 If correction of defective Work will affect the function or use of the facility CONTRACTOR shall not proceed with correction of defective Work without prior coordination and approval of OWNER.

13.7.4 The obligations of the CONTRACTOR to perform warranty work will survive the acceptance of the Work and any termination of the Contract.

13.8 Acceptance of Defective Work: If, instead of requiring correction or removal and replacement of defective Work, OWNER decides to accept it, OWNER may do so. CONTRACTOR shall pay all claims, costs, losses and damages attributable to OWNER's evaluation of and determination to accept such defective Work. If any such acceptance occurs prior to recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents and compensating OWNER for the diminished value of the defective Work. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER after a calculation by OWNER of the diminution in value of the defective Work.

13.9 OWNER May Correct Defective Work: If CONTRACTOR fails within a reasonable time after Written Notice of OWNER to correct defective Work, or to remove and replace rejected Work, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven (7) calendar days' Written Notice to CONTRACTOR, correct and remedy any such deficiency. If, in the opinion of the Owner's Representative, significant progress has not been made during this seven (7) calendar day period to correct the deficiency, the OWNER may exercise any actions necessary to remedy the deficiency. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, its agents and employees, OWNER's other contractors, E/A and E/A's consultants access to the site to enable OWNER to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's defective Work. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones), or claims of damage because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.1 Application for Progress Payment:

14.1.1 No more often than once a month, CONTRACTOR shall submit to Owner's Representative for review an Application for Payment, in a form acceptable to OWNER, filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

14.1.2 Such applications shall not include requests for payment on account of changes in the Work which have been properly authorized by Change Directives but not yet included in Change Orders.

14.1.3 Such applications shall not include requests for payment of amounts the CONTRACTOR does not intend to pay to a Subcontractor or Supplier because of a dispute or other reason.

14.1.4 If payment is requested on the basis of materials or equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall be accompanied by such bills of sale, data and other procedures satisfactory to OWNER substantiating OWNER's title to such materials or equipment or otherwise protecting OWNER's interest. Payment on account of such materials or equipment will not include any amount for CONTRACTOR's overhead or profit or relieve CONTRACTOR of its obligation to protect and install such materials or equipment in accordance with the requirements of the Contract and to restore damaged or defective Work. If materials or equipment are stored at another location, at the direction of the OWNER they shall be stored in a bonded and insured facility, accessible to E/A and OWNER, and shall be clearly marked as property of OWNER. Title to materials delivered to the site of the Work or a staging area will pass to OWNER upon payment by OWNER without the necessity for further documentation. Risk of loss will not pass to OWNER until acceptance.

14.1.5 Where the original Contract Amount is less than $400,000, OWNER will pay CONTRACTOR total amount of approved Application for Payment, less ten percent (10%) of amount thereof, which ten percent (10%) will be retained until final payment, less all previous payments and less all other sums that may be retained by OWNER under the terms of this Agreement. Where the original Contract Amount is $400,000 or more, OWNER will pay CONTRACTOR total amount of approved Application for Payment, less five percent (5%) of amount thereof, which five percent (5%) will be retained until final payment, less all previous payments and less all other sums that may be retained by OWNER under the terms of this Agreement. In either case, if the Work is near completion and delay occurs due to no fault or neglect of CONTRACTOR, OWNER may pay a portion of the retained amount to CONTRACTOR. CONTRACTOR, at OWNER's option, may be relieved of the obligation to complete the Work and, thereupon, CONTRACTOR shall receive payment of the balance due under the Contract subject to the conditions stated under paragraph 15.2.

14.1.6 Applications for Payment shall include the following documentation:

.1 updated Progress Schedule;

.2 monthly subcontractor report;

.3 any other documentation required under the Supplemental General Conditions.

14.2 CONTRACTOR's Warranty of Title: CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER free and clear of all Liens no later than the time of payment to CONTRACTOR.

14.3 Review of Applications for Progress Payment:

14.3.1 Owner's Representative will, within ten (10) calendar days after receipt of each Application for Payment, either indicate a recommendation for payment and forward the Application for processing by OWNER, or return the Application to CONTRACTOR indicating Owner's Representative's reasons for refusing to recommend payment. In the latter case, CONTRACTOR shall make the necessary corrections and resubmit the Application.

14.3.2 Owner's Representative's recommendation of any payment requested in an Application for Payment will constitute a representation by Owner's Representative, based upon Owner's Representative's on-site observations of the executed Work and on Owner's Representative's review of the Application for Payment and the accompanying data and schedules, that to the best of Owner's Representative's knowledge, information and belief:

.1 the Work has progressed to the point indicated; and

.2 the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for unit price Work, and to any other qualifications stated in the recommendation).

14.3.3 By recommending any such payment, Owner's Representative will not thereby be deemed to have represented that:

.1 exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work;

.2 examination has been made to ascertain how or for what purpose CONTRACTOR has used money previously paid on account of the Contract Amount;

.3 CONTRACTOR's construction means, methods, techniques, sequences or procedures have been reviewed; or

.4 that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

14.4 Decisions to Withhold Payment:

14.4.1 OWNER may withhold or nullify the whole or part of any payment to such extent as may be necessary on account of:

.1 defective Work not remedied;

.2 third party Claims filed or reasonable evidence indicating probable filing of such Claims;

.3 failure of CONTRACTOR to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Amount;

.5 damage to OWNER or another contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

.7 failure of CONTRACTOR to submit a schedule of values in accordance with the Contract Documents;

.8 failure of CONTRACTOR to submit a submittal schedule in accordance with the Contract Documents;

.9 failure of CONTRACTOR to submit and update a construction Progress Schedule in accordance with the Contract Documents;

.10 failure of CONTRACTOR to maintain a record of changes on drawings and documents;

.11 failure of CONTRACTOR to maintain weekly payroll reports and, as applicable, provide copies of reports in a timely manner upon request of OWNER;

.12 failure of CONTRACTOR to submit monthly subcontractor reports;

.13 CONTRACTOR's neglect or unsatisfactory prosecution of the Work, including failure to clean up;

.14 failure of CONTRACTOR to comply with any provision of the Contract Documents.

14.4.2 When the above reasons for withholding payment are removed, CONTRACTOR shall resubmit a statement for the value of Work performed. Payment will be made within thirty (30) calendar days of receipt of approved Application for Payment.

14.5 Payment Becomes Due: Thirty days after presentation of the Application for Payment to Owner with E/A's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

14.6 Arrears: No money shall be paid by OWNER upon any claim, debt, demand or account whatsoever, to any person, firm or corporation who is in arrears to City for taxes; and City shall be entitled to counterclaim and automatically offset against any such debt, claim, demand or account in the amount of taxes so in arrears and no assignment or transfer of such debt, claim, demand or account after said taxes are due, shall affect the right of OWNER to so offset said taxes, and associated penalties and interest if applicable, against the same.

14.7 Substantial Completion:

14.7.1 When the CONTRACTOR considers that the Work, or a portion thereof which the OWNER agrees to accept separately, is substantially complete, the CONTRACTOR shall notify Owner's Representative in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as Incomplete) and request a determination as to whether the Work or designated portion thereof is substantially complete. If Owner's Representative does not consider the Work substantially complete, Owner's Representative will notify CONTRACTOR giving reasons therefore. After performing any required Work, CONTRACTOR shall then submit another request for Owner's Representative to determine Substantial Completion. If Owner's Representative considers the Work substantially complete, Owner's Representative will prepare and deliver a certificate of Substantial Completion which shall establish the date of Substantial Completion, shall include a punch list of items to be completed or corrected before final payment, shall establish the time within which CONTRACTOR shall finish the punch list, and shall establish

responsibilities of the OWNER and CONTRACTOR for security, maintenance, heat, utilities, damage to the Work, warranty and insurance. Failure to include an item on the punch list does not alter the responsibility of CONTRACTOR to complete all Work in accordance with the Contract Documents. If a Certificate of Occupancy is required by public authorities having jurisdiction over the Work, said certificate shall be issued before the Work or any portion thereof is considered substantially complete. The certificate of Substantial Completion shall be signed by OWNER and CONTRACTOR to evidence acceptance of the responsibilities assigned to them in such certificate.

14.7.2 If some or all of the Work has been determined not to be at a point of Substantial Completion, Contractor shall reimburse Owner for any costs and expenses incurred by Owner for re-inspection or re-testing, such costs to be set off against subsequent payments or memorialized in a Change Order.

14.7.3 OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER will allow CONTRACTOR reasonable access to complete or correct items on the punch list and complete warranty work.

14.8 Partial Utilization: Use by OWNER, at OWNER's option, of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) OWNER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work in accordance with the following:

14.8.1 OWNER at any time may request CONTRACTOR to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR shall certify to Owner's Representative that such part of the Work is substantially complete and request Owner's Representative to issue a notice specifying what portion of the Work is substantially complete for the purpose of payment and what Work remains to be done on the portion being accepted. CONTRACTOR at any time may notify Owner's Representative that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request Owner's Representative to issue a notice specifying what portion of the Work is partially completed for the purpose of payment and what Work remains to be done on the portion being accepted. The provisions of paragraphs 14.7.1 and 14.7.2 will apply with respect to the notice specifying what portion of the Work is partially completed for the purpose of payment and what Work remains to be done on the portion being accepted.

14.8.2 Such partial utilization is authorized by public authorities having jurisdiction over the Work.

14.9 Final Inspection: Upon Written Notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, Owner's Representative will make a final inspection with CONTRACTOR and provide Written Notice of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.10 Final Application for Payment: CONTRACTOR may make application for final payment following the procedure for progress payments after CONTRACTOR has completed all such corrections to the satisfaction of Owner's Representative and delivered the following documents:

14.10.1 Affidavit by CONTRACTOR certifying the payment of all debts and claims;

14.10.2 Three (3) complete operating and maintenance manuals, each containing maintenance and operating instructions, schedules, guarantees, and other documentation required by the Contract Documents;

14.10.3 Record documents (as provided in paragraph 6.10);

14.10.4 Consent of surety, if any, to final payment. If surety is not provided, complete and legally effective releases or waivers (satisfactory to OWNER) of all claims arising out of or filed in connection with the Work;

14.10.5 Certificate evidencing that required insurance will remain in force after final payment and through the warranty period;

14.10.6 Any other documentation called for in the Contract Documents.

14.11 Final Payment and Acceptance:

14.11.1 If, on the basis of observation of the Work during construction, final inspection, and review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Owner's Representative is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled and there are no outstanding claims, Owner's Representative will recommend the final Application for Payment and thereby notify the OWNER, who will pay to CONTRACTOR the balance due CONTRACTOR under the terms of the Contract. If the sole remaining unfinished item to complete the Work is the reestablishment of vegetation, CONTRACTOR may execute a revegetation letter with fiscal posted (letter of credit) to ensure completion of this item. This Work must be accomplished within one hundred twenty (120) Calendar Days of the date of Final Completion of the Work. When the permanent erosion control has been established, OWNER will initiate an inspection for final acceptance of the erosion controls. If the revegetation is not completed within the one hundred twenty (120) Calendar Days, OWNER, at its option, may complete the Work using the posted fiscal.

14.11.2 If the Contract measures Contract Time to Final Completion, rather than Substantial Completion, Owner's Representative will issue a letter of final acceptance to CONTRACTOR which establishes the Final Completion date and initiates the two-year warranty period. If the sole remaining unfinished item to complete the Work is the reestablishment of vegetation and CONTRACTOR has executed a revegetation letter with fiscal posted (letter of credit) to ensure completion of this item, the Owner's Representative will issue a letter of conditional acceptance to CONTRACTOR which established the Final Completion date and initiates the two-year warranty period.

14.11.3 Final payment is considered to have taken place when CONTRACTOR or any of its representatives negotiates OWNER's final payment check, whether labeled final or not, for cash or deposits check in any financial institution for its monetary return.

14.11.4 The OWNER will withhold funds sufficient to cover the amount of any unresolved contract claims from final payment for six months under the following limited conditions:

.1 CONTRACTOR must provide written notice to the claimant (via certified mail or hand delivery) that (i) OWNER will hold funds in the amount of the disputed claim for six (6) months from the date of the receipt of the notice and (ii) CONTRACTOR and the claimant have certain alternative dispute resolution rights; and

.2 CONTRACTOR must provide OWNER with a copy of the receipted notice.

Provided the claimant has received notice under this section, OWNER will release the withheld funds, if the CONTRACTOR provides a bond in substantial compliance with the provisions of Section 52.231 of the Texas Property Code; when the OWNER receives a settlement or release of the claim with accompanying instructions regarding payment; upon resolution of the claim in litigation, if suit is filed within such six (6) month period and the OWNER receives written notice of such filing; or when such six (6) month period has passed, if no such bond, settlement, release, or notice of filing of suit have been received. The above provisions notwithstanding, if efforts to timely resolve a disputed claim are not being made to OWNER'S reasonable satisfaction, OWNER may, in its complete discretion, file an interpleader action and deposit the withheld funds in the registry of a court of competent jurisdiction. In addition, CONTRACTOR must include a provision in each of its subcontracts that the prevailing party in any litigation arising thereunder will be entitled to recover its costs of court and reasonable attorney's fees.

14.12 Waiver of Claims: The making and acceptance of final payment will constitute:

14.12.1 a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.1 OWNER May Suspend Work Without Cause: At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than ninety (90) calendar days by Written Notice to CONTRACTOR which will fix the date on which the Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Amount or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved Claim therefore as provided in Articles 11 and 12.

15.2 OWNER May Terminate Without Cause: Upon seven (7) calendar days' Written Notice to CONTRACTOR, OWNER may, without cause and without prejudice to any right or remedy of OWNER, elect to terminate the Agreement. In such case, CONTRACTOR shall be paid (without duplication of any items):

15.2.1 for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

15.2.2 for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

15.2.3 other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

15.3 OWNER May Terminate With Cause:

15.3.1 Upon the occurrence of any one or more of the following events:

.1 if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents;

.2 if CONTRACTOR disregards laws or regulations of any public body having jurisdiction;

.3 if CONTRACTOR disregards the authority of Owner's Representative;

.4 if CONTRACTOR makes fraudulent statements;

.5 if CONTRACTOR fails to maintain a work force adequate to accomplish the Work within the Contract Time;

.6 if CONTRACTOR fails to make adequate progress and endangers successful completion of the Contract; or

.7 if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if any) seven (7) calendar days Written Notice terminate the services of CONTRACTOR. OWNER, at its option, may proceed with negotiation with surety for completion of the Work. Alternatively, OWNER may under these circumstances exclude CONTRACTOR from the site and take possession of the Work (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Amount exceeds all claims, costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses and damage exceed such unpaid balance, CONTRACTOR or surety shall pay the difference to OWNER.

15.3.2 Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR and surety then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability. In the event OWNER terminates Contract with cause, OWNER may reject any and all future Bids submitted by CONTRACTOR.

15.4 CONTRACTOR May Stop Work or Terminate: If through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety (90) calendar days by OWNER or under an order of court or other public authority, or (except during disputes) Owner's Representative fails to forward for processing any mutually acceptable Application for Payment within thirty (30) calendar days after it is submitted, or (except during disputes) OWNER fails for sixty (60) calendar days after it is submitted to pay CONTRACTOR any sum finally determined by OWNER to be due, then CONTRACTOR may, upon seven (7) calendar days' Written Notice to OWNER, and provided OWNER does not remedy such suspension or failure within that time, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.2. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if (except during disputes) Owner's Representative has failed to forward for processing any mutually acceptable Application for Payment within thirty (30) calendar days after it is submitted, or (except during disputes) OWNER has failed for sixty (60) calendar days after it is submitted to pay CONTRACTOR any sum finally determined by OWNER to be due, CONTRACTOR may upon seven (7) calendar days' Written Notice to OWNER stop the Work until payment of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.4 are not intended to preclude CONTRACTOR from making a Claim under Articles 11 and 12 for an increase in Contract

Amount or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping Work as permitted by this paragraph.

15.5 Discretionary Notice to Cure: In its complete discretion, OWNER may, but is not required to, provide a Notice to Cure to CONTRACTOR and its surety to cure an event of default described above and/or an anticipatory breach of contract and, if required by OWNER, to attend a meeting with OWNER, regarding the Notice to Cure, the event of default, and/or the anticipatory breach of contract. The Notice to Cure will set forth the time limit in which the cure is to be completed or commenced and diligently prosecuted. Upon receipt of any Notice to Cure, CONTRACTOR shall prepare a report describing its program and measures to affect the cure of the event of default and/or anticipatory breach of contract within the time required by the Notice to Cure. The CONTRACTOR'S report must be delivered to OWNER at least three (3) days prior to any requested meeting with the OWNER and surety.

15.6 Bankruptcy: If CONTRACTOR declares bankruptcy or is adjudged bankrupt or makes an assignment for the benefit of creditors or if a receiver is appointed for the benefit of creditors or if a receiver is appointed by reason of CONTRACTOR'S insolvency, CONTRACTOR may be unable to perform this Contract in accordance with the Contract requirements. In such an event, OWNER may demand CONTRACTOR or its successor in interest provide OWNER with adequate assurance of CONTRACTOR'S future performance in accordance with the terms and conditions of the Contract. If CONTRACTOR fails to provide adequate assurance of future performance to OWNER'S reasonable satisfaction within ten (10) days of such a request, OWNER may terminate the CONTRACTOR'S services for cause or without cause, as set forth above. If CONTRACTOR fails to provide timely adequate assurance of its performance and actual performance, OWNER may prosecute the Work with its own forces or with other contractors on a time and material or other appropriate basis and the cost of which will be charged against the Contract balance.

15.7 Duty to Mitigate: In the event of any termination or suspension under this Contract, the CONTRACTOR agrees to and shall take all reasonable actions to mitigate its damages and any and all claims which may be asserted against the OWNER.

15.8 Responsibility during Demobilization: While demobilizing, the CONTRACTOR will take all necessary and reasonable actions to preserve and protect the Work, the site and other property of the OWNER or others at the site.

ARTICLE 16 - DISPUTE RESOLUTION

16.1 Filing of Claims:

16.1.1 Claims arising from the circumstances identified in paragraphs 3.2, 4.1, 4.2.2, 4.2.4, 6.4.2, 6.11.5.2, 6.17, 7.5, 8.6, 9.5, 10.4.2, 13.4.3, 13.8, 13.9, 15.1, 15.2, 15.3, or 15.4, or other occurrences or events, shall be made by Written Notice delivered by the party making the Claim to the other party within thirty (30) calendar days after the start of the occurrence or event giving rise to the Claim and stating the general nature of the Claim. Notice of the amount of the Claim with supporting data shall be delivered in writing within thirty (30) calendar days after Written Notice of Claim is delivered by claimant and shall represent that the adjustment claimed covers all known amounts and/or extensions of time to which claimant is entitled.

16.1.2 Within thirty (30) calendar days of receipt of notice of the amount of the Claim with supporting data, Owner's Representative and CONTRACTOR shall meet to discuss the Claim, after which an offer of settlement or notification of no settlement offer will be made to claimant. If claimant is not satisfied with the proposal presented, claimant shall have thirty (30) calendar days in which to: (i) submit additional

supporting data requested by the other party; (ii) modify the initial Claim; or (iii) request Alternative Dispute Resolution.

16.2 Alternative Dispute Resolution:

16.2.1 If a dispute exists concerning a Claim, the parties agree to use the following procedure prior to pursuing any other available remedies. OWNER reserves the right to include the E/A as a party.

16.2.2 Negotiating with Previously Uninvolved Personnel: Either party may make a written request for a meeting to be held between representatives of each party within fourteen (14) Calendar Days of the request or such later period that the parties may agree to. Each party shall endeavor to include, at a minimum, one (1) previously uninvolved senior level decision maker (an owner, officer, or employee of each organization) empowered to negotiate on behalf of their organization. If a previously uninvolved senior level decision maker is unavailable due to the size of the CONTRACTOR'S organization or any other reason, the CONTRACTOR shall nonetheless provide an appropriate senior level decision maker for the meeting. The purpose of this and any subsequent meetings will be good faith negotiations of the matters constituting the dispute. Negotiations shall be concluded within thirty (30) Calendar Days of the first meeting, unless mutually agreed otherwise. This step may be waived by a written agreement signed by both parties, in which event the parties may proceed directly to mediation as described below.

16.2.3 Mediation:

.1 If the procedure described in 16.2.2 proves unsuccessful or is waived pursuant to its terms, the parties shall initiate the mediation process. OWNER and CONTRACTOR agree to select within thirty (30) calendar days a mediator trained in mediation skills, to assist with resolution of the dispute. OWNER and CONTRACTOR agree to act in good faith in the selection of the mediator and to give consideration to qualified individuals nominated to act as mediator. Nothing in this agreement prevents the parties from relying on the skills of a person who also is trained in the subject matter of the dispute and/or a contract interpretation expert. Should the parties fail to agree on a mediator within thirty (30) calendar days of initiation of the mediation process, the parties agree to submit such claims to the jurisdiction of the State District Court of Hays County, Texas, which is the exclusive venue for final dispute resolution.

.2 Mediation is a forum in which an impartial person, the mediator, facilitates communication between parties to promote reconciliation, settlement, or understanding among them. The parties hereby agree that mediation, at a minimum, shall provide for (i) conducting an on-site investigation, if appropriate, by the mediator for fact gathering purposes, (ii) a meeting of all parties for the exchange of points of view and (iii) separate meetings between the mediator and each party to the dispute for the formulation of resolution alternatives. The parties agree to participate in mediation in good faith for up to thirty (30) calendar days from the date of the first mediation session, unless mutually agreed otherwise.

16.3 Resolution of Disputes between Contractor and Subcontractor or Supplier: If a dispute exists concerning a claim between a CONTRACTOR and a Subcontractor or Supplier, the CONTRACTOR agrees to participate with such Subcontractor and/or Supplier in a process substantially paralleling the steps set out in paragraphs 16.1 and 16.2 above, including the delivery of written notices, submission of supporting data, negotiation with previously uninvolved personnel, and, if such alternative dispute resolution process is unsuccessful,

mediation between the parties to the claim. If the CONTRACTOR and Subcontractor or Supplier agreement provides an alternative dispute resolution process, which provides substantially equivalent rights to those set forth herein, it may be followed, unless the CONTRACTOR and affected Subcontractor or Supplier agree to follow the process outlined above. The OWNER is not a party to the alternative dispute resolution process between the CONTRACTOR and Subcontractor or Supplier and will not pay any costs incurred in the process. Each party will be responsible for its own expenses incurred in the process, which will include an equal share of the mediation expenses, unless otherwise determined by the mediator. NOTICE: THE PROCESS SET FORTH HEREIN IS NOT A SUBSTITUTE FOR THE STATUTORY PAYMENT BOND CLAIM PROCESS.

16.4 RESERVED

ARTICLE 17 – MISCELLANEOUS

17.1 Venue: In the event of any suit at law or in equity involving the Contract, venue shall be exclusively in Hays County, Texas and the laws of the State of Texas shall apply to the interpretation and enforcement of the Contract.

17.2 Extent of Agreement: This Contract represents the entire and integrated agreement between the OWNER and CONTRACTOR with respect to the subject matter hereof and supersedes all prior negotiations, representations or agreements, either written or oral.

17.3 Cumulative Remedies: The rights and remedies available to the parties are not to be construed in any way as a limitation of any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations, by special warranty or guarantees or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. Specifically, the OWNER is not required to only assess liquidated damages, and OWNER may elect to pursue its actual damages resulting from the failure of the CONTRACTOR to complete the Work in accordance with the requirements of the Contract Documents.

17.4 Severability: If any word, phrase, clause, sentence or provision of the Contract, or the application of same to any person or set of circumstances is for any reason held to be unconstitutional, invalid or unenforceable, that finding shall only effect such word, phrase, clause, sentence or provision, and such finding shall not effect the remaining portions of this Contract; this being the intent of the parties in entering into the Contract; and all provisions of the Contract are declared to be severable for this purpose.

17.5 Independent Contractor: The Contract shall not be construed as creating an employer/employee relationship, a partnership, or a joint venture. CONTRACTOR is an independent contractor and CONTRACTOR's services shall be those of an independent contractor. CONTRACTOR agrees and understands that the Contract does not grant any rights or privileges established for employees of OWNER.

17.6 Prohibition of Gratuities: OWNER may, by Written Notice to CONTRACTOR, terminate the Contract without liability if is determined by OWNER that gratuities were offered or given by CONTRACTOR or any agent or representative of CONTRACTOR to any officer or employee of OWNER with a view toward securing the Contract or securing favorable treatment with respect to the awarding or amending or the making of any determinations with respect to the performing of such Contract. In the event the Contract is terminated by OWNER pursuant to this provision, OWNER shall be entitled, in addition to any other rights and remedies, to

recover or withhold the amount of the cost incurred by CONTRACTOR in providing such gratuities.

17.7 Prohibition Against Personal Interest in Contracts: No officer, employee, independent consultant, or elected official of OWNER who is involved in the development, evaluation, or decision-making process of the performance of any solicitation shall have a financial interest, direct or indirect, in the Contract resulting from that solicitation. Any violation of this provision, with the knowledge, expressed or implied, of CONTRACTOR shall render the Contract voidable by OWNER.

17.8 OWNER'S Right to Audit:

17.8.1 Records means all records generated by or on behalf of CONTRACTOR and each Subcontractor and Supplier of CONTRACTOR, whether paper, electronic, or other media, which are in any way related to performance of or compliance with this Contract, including, without limitation:

.1 accounting records;

.2 written policies and procedures;

.3 subcontract files (including proposals of successful and unsuccessful Bidders, Bid recaps, etc.);

.4 original estimates and estimating work sheets;

.5 correspondence;

.6 Change Order files (including documentation covering negotiated settlements);

.7 back charge logs and supporting documentation;

.8 general ledger entries detailing cash and trade discounts earned, insurance rebates and dividends;

.9 lump sum agreements between CONTRACTOR and any Subcontractor or Supplier;

.10 records necessary to evaluate: Contract compliance, Change Order pricing, and any Claim submitted by CONTRACTOR or any of its payees; and

.11 any other CONTRACTOR record that may substantiate any charge related to this Contract.

17.8.2 CONTRACTOR shall allow OWNER'S agent or its authorized representative to inspect, audit, and/or reproduce, or all three, all Records generated by or on behalf of CONTRACTOR and each Subcontractor and Supplier, upon OWNER'S written request. Further, CONTRACTOR shall allow OWNER'S agent or authorized representative to interview any of CONTRACTOR'S employees, all Subcontractors and all Suppliers, and all their respective employees.

17.8.3 CONTRACTOR shall retain all its Records, and require all its Subcontractors and Suppliers to retain their respective Records, during this Contract and for three (3) years after final payment, until all audit and litigation matters that OWNER has brought to the attention of CONTRACTOR are resolved, or as otherwise required by law, whichever is longer. OWNER'S right to inspect, audit, or reproduce Records, or interview employees of CONTRACTOR or its respective Subcontractors or Suppliers exists during this Contract, and for three (3) years after final payment, until all audit and litigation matters that OWNER has brought to CONTRACTOR'S attention are resolved, or as otherwise required by law, whichever is longer, and at no cost to

OWNER, either from CONTRACTOR or any of its Subcontractors or Suppliers that may furnish Records or make employees available for interviewing.

17.8.4 CONTRACTOR must provide sufficient and accessible facilities during its normal business hours for OWNER to inspect, audit, or reproduce Records, or all three, and to interview any person about the Records.

17.8.5 CONTRACTOR shall insert these requirements in each written contract between CONTRACTOR and any Subcontractor or Supplier and require each Subcontractor and Supplier to comply with these provisions.

17.9 Survival: The terms and conditions of this Contract, which contemplate a period of time beyond completion or termination will survive such completion or termination and not be merged therein or otherwise terminated.

17.10 No Waiver: The waiver of any provision of this Contract will not be deemed to be a waiver of any other provision of this Contract. No waiver of any provision of this Contract will be deemed to constitute a continuing waiver unless expressly provided in writing, nor will a waiver of any default be deemed a waiver of any subsequent defaults of the same type. The failure at any time to enforce this Contract, whether the default is known or not, shall not constitute a waiver or estoppel of the right to do so.

17.11 Conditions Precedent to Right to Sue. Notwithstanding anything herein to the contrary, the CONTRACTOR will have at least 90 days to give notice of a claim for damages as a condition precedent to the right to sue on the Contract, subject to the contractual claim and alternative dispute resolution processes set forth herein.

17.12 Waiver of Trial by Jury. OWNER and CONTRACTOR agree that they have knowingly waived the right to trial by jury and have instead agreed that, in the event of any litigation arising out of or connected to this Contract, to proceed with a trial before the court, unless both parties subsequently agree otherwise in writing.

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NOTE: REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION

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Geotechnical Report
Environmental Reports
- Hazardous Materials Testing Report
- Asbestos Abatement Project Design
- Lead Paint Removal Workplan



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SECTION 011100

SUMMARY OF WORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Project description.
2. Work by Others.
3. Contractor's use of site and premises.
4. Owner furnished Products.

1.2 PROJECT DESCRIPTION

A. Work of this Project is described as the renovation and addition to the existing Stephenson School building as a multi-purpose space for the city of Dripping Springs, Texas.

B. Work includes:
1. Selective interior and exterior demolition including lead and asbestos abatement to remove non-original or damaged elements, assemblies, and finishes.
2. Site construction including sidewalks, accent paver and aggregate paving areas, perimeter drain, planting areas, irrigation system, and re-grading, utilities.
3. Exterior restoration including masonry cleaning, selective repointing, stone replacement/repairs, replacement of galvanized metal area wells for crawlspace ventilation, installation of crawlspace vapor barrier, roof replacement, related roof flashings, gutters, and downspouts, window frame restoration including replacement of sashes, replacement of concrete stairs, ramps, and landings, addition of aluminum and glass storefront at main entrance.
4. Interior restoration including new MEP systems, fire sprinkler and alarm protection systems, AV system, structural reinforcing of existing wood framed roof and floor, restored wood flooring, restored and new wood and metal door assemblies, new gypsum board ceiling systems, restoration of flat plaster, restored and new standing and running trim, interior and exterior painting finishes, window treatments, new interior wood frame partitions with gypsum board finish.
5. Addition exterior work includes concrete slab on grade construction with wood framed exterior bearing cavity walls, cut stone veneer and corrugated metal exterior finish, aluminum and glass storefront entrances, aluminum clad wood windows, TPO roof and insulated corrugated metal roof systems.
6. Addition interior work includes polished concrete and carpet tile floor finishes, interior wood framed partitions with gypsum board finish, gypsum board and acoustic tile ceiling systems.

C. The Project will be constructed under a single prime contract.

1.3 WORK BY OTHERS

A. Separate Contracts:
1. The Owner may execute contracts for additional work at the site, that is excluded from the work of this Contract, including but not limited to the following:
a. Adjacent parking lot development work to be under separate contract.
2. Work under separate contract may be executed concurrent with Work of this Contract.
3. Cooperate with the Owner and separate contractors to accommodate this requirement.

1.4 CONTRACTOR'S USE OF SITE AND PREMISES

A. Limit use of site and premises to allow for:
1. Work by separate contractors.
2. Work by Owner.
3. Use of adjacent premises by the public.

B. Follow following best management practices for noise mitigation, in accordance with City of Dripping Springs and Owner requirements:
   1. If any work occurs in hours that are beyond limits set by City of Dripping Springs and/or Owner, submit schedule of work at least 48 hours in advance.
   2. Muffle or control construction equipment with high noise generating potential, including equipment powered by internal combustion engines.
   3. Turn off machinery, including motors, when not in use.
   4. Do not allow mobile equipment to run idle near residential areas.

C. Conform to City of Dripping Springs, Owner, and any neighborhood requirements for:
   1. Site access.
   2. Dust control.
   3. Working hours.

D. Move any stored products under Contractor's control that interfere with the operations of the Owner or separate contractors.

E. Assume full responsibility for protection and safekeeping of products under this Contract stored on site.

F. Obtain and pay for use of any additional storage or work areas needed for operations.

G. Coordinate use of site and premises with the Owner:
   1. Employee parking: In designated areas.
   2. Access to site and premises: In designated areas.
   3. Storage and staging areas: In designated areas.
   4. Transport materials and equipment to and from construction area along routes approved by Owner.

H. Do not use or store hazardous or flammable materials on premises without Owner's approval; follow requirements of governing authorities having jurisdiction over the work.

I. Prohibit smoking within interior spaces.

1.5 OWNER FURNISHED PRODUCTS

A. Owner's Responsibilities:
   1. Arrange for and deliver necessary Shop Drawings, Product Data and Samples to Contractor.
   2. Arrange and pay for product delivery to site, in accordance with Progress Schedule.
   3. Deliver supplier's bill of materials to Contractor.
   4. Inspect deliveries jointly with Contractor.
   5. Submit claims for transportation damage.
   6. Arrange for replacement of damaged, defective, and missing items.
   7. Arrange for manufacturers' warranties, service, and inspections, as required.

B. Contractor's Responsibilities:
   1. Designate delivery date for each product in Progress Schedule.
   2. Review Shop Drawings, Product Data and Samples. Submit to Architect with notification of any discrepancies or problems anticipated in use of product.
   3. Receive and unload products at site.
   4. Promptly inspect products jointly with Owner; record shortages, damage, and defective items.
   5. Handle products at site, including uncrating and storage.
   6. Protect products from exposure to elements and from damage.
   7. Assemble, install, connect, adjust, and finish products, as stipulated in respective specification section.
   8. Repair or replace any items damaged by Contractor.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 012100

ALLOWANCES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cash allowances.

B. Related Sections
   1. Section 012900 - Payment Procedures.
   2. Section 013216 - Construction Progress Schedules.
   3. Individual specification sections.

C. Include in Contract Sum cash allowances as scheduled at the end of this Section.

D. Designate in Construction Progress Schedule specified in Section 013216 delivery dates for products under each allowance.

E. Designate in Schedule of Values specified in Section 012900 quantities of materials specified under unit cost allowances.

1.2 CASH ALLOWANCES

A. General:
   1. Purchase products under each allowance as directed by Architect.
   2. Amount of allowance includes:
      a. Net cost of product, less any applicable trade discounts.
      b. Delivery to site.
      c. Applicable taxes.
      d. Labor required under allowance, only when labor is specified to be included in allowance.
   3. In addition to amounts of allowances, include in Contract Sum, Contractor's costs for:
      a. Handling at site, including unloading, uncrating, and storing.
      b. Protection from elements and from damage.
      c. Labor required for installation and finishing, except where installation is specified to be part of allowance.
      d. Other expenses required to complete installation.
      e. Overhead and profit.

B. Selection of Products:
   1. Architect's Duties:
      a. Consult with Contractor in consideration of products and suppliers.
      b. Make selection; designate products to be used.
      c. Prepare Change Orders.
   2. Contractor's Duties:
      a. Assist Architect in determining:
         1) Supplier or installer, as applicable.
         2) Cost, delivered and unloaded at site.
      b. Obtain proposals from suppliers when requested by Architect.
      c. Notify Architect of any effect anticipated by selection of product or supplier under consideration on construction schedule or contract sum.
      d. On notification of selection, enter into purchase agreement with designated supplier.

C. Delivery:
   1. Contractor's Duties:
      a. Arrange for delivery and unloading.
      b. Promptly inspect products for damage or defects.
      c. Submit any claims for transportation damage.

D. Installation: Comply with requirements of referenced specification section.

E. Use of Allowances:
   1. Use the allowance only as directed by the Architect for Owner's purposes.
   2. The Architect will submit a Proposal Request for allowance work. The Contractor will submit a Change Order Request for allowance amount used for approval by the Architect and Owner. The COR shall provide a break down for materials/labor and include invoices or other data to substantiate actual quantity used. Upon Owner approval, the Architect will issue a no-cost Change Order.
   3. At Project closeout, Architect shall credit unused amounts remaining in the allowance to Owner by Change Order.

F. Adjustment of Costs:
   1. Should actual purchase cost be more or less than specified amount of allowance, Contract Sum will be adjusted by Change Order equal to amount of difference.
   2. Amount of Change Order will recognize any changes in handling costs at site, labor, installation costs, overhead, profit, and other expenses caused by selection under allowance.
   3. For products specified under unit cost allowance, unit cost shall apply to quantity listed in Schedule of Values.
   4. Submit invoices or other data to substantiate quantity actually used.
   5. Submit any claims for additional costs at site or other expenses caused by selection under allowances, prior to execution of work. Failure to do so will constitute waiver of claims for additional costs.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 ALLOWANCE SCHEDULE

A. Allowance No. 1 – Window Restoration: Include a cash allowance of $5,000 for additional repairs beyond that indicated in the base contract.
   1. Related Specification Sections:
      a. Section 012200 – Unit Prices.
      b. Section 079200 – Joint Sealants.
      c. Section 080383 – Wood Window Restoration.
      d. Section 088000 – Glazing.
      e. Section 099100 – Painting.

B. Allowance No. 2 – Masonry Restoration: Include a cash allowance of $7,500 for additional masonry restoration work beyond that indicated in the base contract.
   1. Related Specification Sections:
      a. Section 012200 – Unit Prices.
      b. Section 040342 – Restoration Mortar.
      c. Section 040341 – Masonry Restoration.

C. Allowance No. 3 – Plaster Restoration: Include a cash allowance of $5,000 for additional interior finish repairs beyond that indicated in the base contract.
   1. Related Specification Sections:
      a. Section 012200 – Unit Prices.
      b. Section 090391 – Gypsum Plaster Restoration.
      c. Section 099100 – Painting.

D. Allowance No. 4 - Wood Floor Restoration: Include a cash allowance of $7,500 for additional replacement of wood floorboards beyond that indicated in the base contract.

   1. Related Specification Sections:
      a. Section 012200 – Unit Prices.
      b. Section 079200– Joint Sealants.
      c. Section 090396 – Wood Floor Restoration.
      d. Section 099100 – Painting.

E. Allowance No. 5 – Wood Restoration: Include a cash allowance of $5,000 for additional wood base replacement beyond that indicated in the base contract.
   1. Related Specification Sections:
      a. Section 012200 – Unit Prices.
      b. Section 060122 – Wood Restoration.
      c. Section 099100 – Painting.

G. Allowance No. 6 – Wood Restoration: Include a cash allowance of $5,000 for replacement of additional exterior fascia and soffit boards beyond that indicated in the base contract.
   1. Related Specification Sections:
      a. Section 012200 – Unit Prices.
      b. Section 060122 – Wood Restoration.
      c. Section 099100 – Painting.

H. Allowance No. 7 – Stage Light Bar: Include a cash allowance of $10,000 for a suspended light bar for owner's installation of owner-provided stage lights and control system.

I. Allowance No. 8 - Wood Rafter Tail Replacement: Include a cash allowance of $5,000 for replacement of additional rafter tails beyond that indicated in the base contract.
   1. Related specification sections:
      a. Section 012200 - Unit Prices
      b. Section 060122 - Wood Restoration
      c. Section 099100 – Painting

J. Allowance No. 9 - Carpet Tile: Include a cash allowance of $45 per square yard (materials only). Installation is included in base Contract work.
   1. Unit of Measurement: Per square yard.
   2. Quantity Allowance: 100% of total area as shown on construction drawings for carpet.
   3. Related Specification Sections:
      a. Section 096813 – Tile Carpeting

END OF SECTION

SECTION 012200

UNIT PRICES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SUMMARY

A. This section specifies administrative and procedural requirements for unit prices.

1. A unit price is an amount proposed by Bidders and stated on the Bid Form as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.

B. Unit prices include all necessary equipment, materials, overhead, and profit and applicable taxes.

C. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.

PART 2 - PRODUCTS

A. Not used.

PART 3 - EXECUTION

2.1 UNIT PRICE SCHEDULE

A. Unit Price No. 1 – Stone Repairs

1. Limestone Removal and Replacement
   a. Unit of Measurement: Per square foot.
2. Limestone Re-pointing
   a. Unit of Measurement: Per lineal foot.
3. Limestone Patching Repair
   a. Unit of Measurement: Per location (not to exceed 6-inch x 6-inch by 1-inch deep).
4. Limestone Crack Repair
   a. Unit of measurement: Per location (not to exceed 18-inches long).
5. Related Specification Section(s):
   a. Section 024120 – Selective Demolition.
   b. Section 040341 – Restoration Mortar.
   c. Section 040342 – Masonry Restoration.

B. Unit Price No. 2 – Window Repairs

1. Brick Mold Replacement
   a. Unit of Measurement: Per window unit.
2. Wood Sill Replacement

a. Unit of Measurement: Per window unit.

3. Wood Dutchman Repair at Frame or Blind Stop
   a. Unit of Measurement: Per location.
4. Frame or Blind Stop Replacement in Lieu of Wood Dutchman Repair
   a. Unit of Measurement: Per Location.
5. Replace Mullion Cover Board.
   a. Unit of Measurement: Per location.
6. Related Specification Section(s):
   a. Section 080383 – Wood Window Restoration.

C. Unit Price No. 3 – Plaster Repair / Replacement

1. Plaster Finish Repair / Replacement.
   a. Unit of Measurement: Per square foot.
2. Related Specification Section(s):
   a. Section 090391 – Gypsum Plaster Restoration.

D. Unit Price No. 4 – Baseboard Replacement

1. Wood Baseboard Replacement
   a. Unit of Measurement: Per lineal foot.
2. Related Specification Section(s):
   a. Section 060122 – Wood Restoration

E. Unit Price No. 5 – Exterior Wood Trim Replacement

1. Wood Fascia Board Replacement
   a. Unit of Measurement: Per lineal foot.
2. Wood Roof Eave Soffit Board Replacement: Per lineal foot.
3. Wood Rafter Tail Replacement
   a. Unit of measurement: Per lineal foot.
4. Related Specification Section(s):
   a. Section 060122 – Wood Restoration

F. Unit Price No. 6 – Wood Floor Restoration

1. Wood Floorboard Replacement
   a. Unit of Measurement: Per lineal foot.
2. Related Specification Section(s):
   a. Section 090396 – Wood Flooring Restoration

END OF SECTION

SECTION 012300

ALTERNATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes
1. Documentation of changes to Contract Sum and Contract Time.

B. Contract Documents contain pertinent requirements for materials and methods to accomplish work described herein.

C. Provide alternate costs for inclusion in Contract Sum if accepted by Owner.

1.2 RELATED REQUIREMENTS

A. Owner/Construction Manager Agreement: Alternates accepted by Owner for incorporation into the Work.

B. Individual specification sections identified.

1.3 PROCEDURES

A. Alternates will be exercised at the option of Owner.

B. Coordinate related work and modify surrounding work as required to complete the work, including changes under each Alternate, when acceptance is designated in Owner/Construction Manager Agreement.

1.4 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Replace Windows at Existing Building:
1. Base Bid: Restore wood frames and replace sashes as indicated in Drawings and Section 080283.
2. Alternate Bid: Remove existing windows and frames throughout and replace with Mahogany Marvin Ultimate Wood Single Hung or Marvin Ultimate Wood Single Hung Magnum windows and frames with insulating glazing. Match original windows in style and muntin patterning. Customize as required for height of west elevation windows.

B. Alternate No. 2: Roof Thermal and Acoustic Insulation at Existing Building:
1. Base Bid: 5 1/2” rigid insulation between existing 2x6 rafters, 1/2” gypsum wallboard thermal barrier at underside of rafters, 2” spray applied acoustic insulation ceiling finish.
2. Alternate Bid: 5 1/2” batt insulation between existing 2x6 rafters, 2” black acoustic board at underside of rafters.

C. Alternate No. 3: Under-platform Storage at Existing Building:
1. Base Bid: Provide wood framed storage space below existing platform in Multi-Use B. Scope includes additional wood framing, reinforcement of existing framing, storage room floor and walls, and hinged access doors. Refer to drawings S2.01, A4.21, A6.05, and A6.11.
2. Alternate Bid: Omit all work associated with under-platform storage.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Product Substitution Procedures.

1.2 GENERAL

A. Definition: Proposal by Contractor to use manufacturer, product, material, or system different from one required in Contract Documents.

B. Do not substitute Products unless a substitution request has been approved by Architect.

C. Substitutions during Bidding: Refer to Instructions to Bidders.

D. Architect will consider substitution requests within 30 days after award of Contract. After initial 30 day period, substitutions requests will be considered only due to non-availability of a specified Product through no fault of Contractor.

E. In case of non-availability of a specified Product notify Architect in writing as soon as non-availability becomes apparent.

1.3 SUBSTITUTION REQUESTS

A. Submit substitution requests on form provided by Architect.

B. Document specified product and proposed substitution with complete data, including:
1. Product identification, including name and address of manufacturer.
2. Product description, performance and test data, and reference standards.
3. Sample, if requested.
4. Description of any anticipated effect that acceptance of proposed substitution will have on Progress Schedule, construction methods, or other items of Work.
5. Description of any differences between specified product and proposed substitution.
6. Difference in cost between specified product and proposed substitution.

C. Burden of proof for substantiating compliance of proposed substitution with Contract Document requirements remains with Contractor.

D. A request constitutes a representation that the Contractor:
1. Has investigated the proposed Product and determined that it meets or exceeds the quality level of the specified Product.
2. Will provide the same warranty for the substitution as for the specified Product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Will reimburse Architect for design services associated with re-approval by authorities or revisions to Contract Documents to accommodate the substitution.

E. Substitutions will not be considered if:
1. They are indicated or implied on Shop Drawings or other submittals without submittal of a substitution request.
2. Architect will require substantial revision of Contract Documents without additional compensation to Architect.

F. Submit electronically in Adobe PDF format.

G. Architect will notify Contractor of approval or rejection of each Substitution Request.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

DOCUMENT 012519

SUBSTITUTION REQUEST FORM

DATE: _____

TO: _____

ATTENTION: _____

PROJECT: _____

We submit for your consideration the following product as a substitution for the specified product:

Section No. Paragraph Specified Product

_____ _____ _____

Proposed Substitution: _____

_____

Reason for Substitution: _____

_____

Product Data:

Attach complete technical data for both the specified product and the proposed substitution. Include information on changes to Contract Documents that the proposed substitution will require for its proper installation.

Samples:

___ Attached ___ Will be furnished upon request

Does the substitution affect dimensions shown on Drawings?

___ No ___ Yes (explain) _____

_____

Effects of proposed substitution on other Work:

_____

_____

Differences between proposed substitution and specified Product:

_____

_____

Manufacturer's warranties of the proposed substitution are:

___ Same ___ Different (explain) _____

_____

Maintenance service and spare parts are available for proposed substitution from:

_____

_____

Previous installations where proposed substitution may be seen:

Project: _____ Project: _____

Owner: _____ Owner: _____

Architect: _____ Architect: _____

Date Installed: _____ Date Installed: _____

Cost savings to be realized by Owner, if proposed substitution is approved:

_____

Change to Contract Time, if proposed substitution is approved:

___ No Change ___ Add _____ days ___ Deduct _____ days

Submittal constitutes a representation that Contractor has read and agrees to the provisions of Section 012500.

Submitted by Contractor:

_____
Signature

_____
Firm

For Use by Architect:

Based on the information supplied by the Contractor, the Architect has reviewed the proposed substitution on the basis of design concept of the Work and conformance with information given in Contract Documents.

___ Approved ___ Approved as Noted ___ Rejected

Submit Additional Information: _____

_____

By: _____ Date: _____

SECTION 012600

CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Supplemental Instructions.
2. Proposal Requests.
3. Contractor proposed changes.
4. Construction Change Directives.
5. Change Orders.

B. Related Sections:
1. Section 016000 - Product Requirements.

1.2 CHANGE PROCEDURES

A. Architect's Supplemental Instructions:
1. Format: AIA Document G710 - Architect's Supplemental Instructions.
2. Architect will advise of minor changes in Work not involving an adjustment to Contract Sum or Contract Time as authorized by the Conditions of the Contract.

B. Proposal Requests:
1. Format: AIA Document G709 - Proposal Request.
2. Architect may issue a Proposal Request that includes a detailed description of a proposed change with supplemental or revised Drawings and specifications.
3. Prepare and submit an estimate of any change to Contract Sum or Contract Time within 7 days after receipt. Include:
   a. Quantities and unit costs, with total cost or credit to Owner. If requested, furnish documentation of quantities.
   b. Taxes, delivery charges, equipment rentals, and trade discounts as applicable.
   c. If change in Contract Time is involved, provide updated Progress Schedule.
4. Do not stop work or initiate changes in response to a Proposal Request. If approved, Architect will prepare and issue a Change Order.
5. Submit electronically in Adobe PDF format.

C. Contractor Proposed Changes:
1. Format: Contractor’s standard.
2. Contractor may propose a change by submitting request for change to Architect.
3. Describe proposed change, reason for change, its full effect on Work, and any change to Contract Sum or Contract Time. Include:
   a. Quantities and unit costs, with total cost or credit to Owner. If requested, furnish documentation of quantities.
   b. Taxes, delivery charges, equipment rentals, and trade discounts as applicable.
   c. If change in Contract Time is involved, provide updated Progress Schedule.
4. Document any required substitutions in accordance with Section 016000.
5. Submit electronically in Adobe PDF format.

D. Construction Change Directive:
1. Architect may issue a directive, signed by Owner, instructing Contractor to proceed with a change for subsequent inclusion in a Change Order.
2. Documentation will describe changes in Work and designate method of determining any change to Contract Sum or Contract Time. Promptly execute change.
3. Format: AIA Document G713 - Construction Change Directive.

E. Change Orders:
   1. Format: AIA Document G701 - Change Order.
   2. Execution: Prepare Change Orders for signature of parties as provided in Conditions of the Contract.
   3. Submit electronically in Adobe PDF format.

1.3 DISTRIBUTION

A. Distribute copies of change procedure documents to Owner, Architect, and subcontractors and suppliers as applicable.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 012613

REQUESTS FOR INFORMATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Requests for Information (RFI's).

B. Related Sections:
   1. Section 012500 - Substitution Procedures.
   2. Section 012600 - Contract Modification Procedures.
   3. Section 013300 - Submittal Procedures.
   4. Section 017700 - Closeout Procedures.

1.2 GENERAL

A. Request for Information (RFI): Request from Contractor seeking interpretation or clarification of Contract Documents not involving Substitutions or changes to Contract Sum or Contract Time.

B. RFI's constitute a request for information only.

C. Do not submit RFI's:
   1. To request approval of Substitutions; refer to Section 012500.
   2. To request changes known to include changes to Contract Sum or Contract Time; refer to Section 012600.
   3. To request approval of submittals; refer to Section 013300.
   4. To submit Project Record Documents; refer to Section 017700.

1.3 SUBMITTAL

A. Submit RFI's on Contractor's Standard Form.

B. Include on each RFI:
   1. Name of Contractor.
   2. Project name.
   3. Date submitted.
   4. Sequential RFI number.
   5. Applicable Drawing sheet and detail numbers or Specification Section numbers.
   6. Date when response information is required to avoid impact on Construction Schedule and Construction Cost.
   7. Contractor's suggested resolution: If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
   8. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation
      a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. Review and sign RFI's submitted by Subcontractors, Sub-Subcontractors, or Suppliers prior to submittal to Architect.

D. Maintain log of RFI's showing RFI number and current status of each RFI.

E. When RFI's require submittal of drawings, follow submittal procedures specified for Shop Drawings in Section 013300.

F. Submit electronically in Adobe PDF format.

G. Allow minimum 7 days for Architect's review and response to each RFI.

H. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect or Construction Manager of additional information.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 012900

PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Schedule of Values.
   2. Applications for Payment.

B. Related Sections:
   1. Section 017700 - Closeout Procedures.

1.2 SCHEDULE OF VALUES

A. General:
   1. Submit a Schedule of Values to Architect at least 20 days prior to submitting first Application for Payment.
   2. Upon request of Architect, furnish additional data to support values given that will substantiate their correctness.
   3. Approved Schedule of Values will be used as basis for reviewing Contractor's Applications for Payment.

B. Form and Content:
   1. Format: AIA Document G703 - Continuation Sheet of Application and Certification for Payment.
   2. Use Table of Contents of Project Manual as basis of format for listing costs of Work.
   3. List installed value of component parts of Work in sufficient detail to serve as basis for computing values for progress payments.
   4. Include separate line items for:
      a. Site mobilization.
      b. Bonds and insurance.
      c. Contractor's overhead and profit.
   5. For items on which payment will be requested for stored materials, break down value into:
      a. Cost of materials, delivered and unloaded , with taxes paid.
      b. Total installed value.
   6. For each line item that has a value of more than $25,000.00, break down costs to list major products or operations under each item.
   7. Total of costs listed in Schedule shall equal Contract Sum.

C. Submit electronically in Adobe PDF format.

D. Review and Resubmittal:
   1. After initial review by Architect, revise and resubmit if required.
   2. Revise and resubmit along with next Application for Payment when a Change Order is issued. List each Change Order as a new line item.

1.3 APPLICATIONS FOR PAYMENT

A. Preparation:
   1. Format: AIA Document G702 - Application and Certification for Payment, supported by AIA Document G703 - Continuation Sheet.
   2. Prepare required information in typewritten format or on electronic media format.
   3. Use data from reviewed Schedule of Values. Provide dollar value in each column for each line item representing portion of work performed.
   4. List each authorized Change Order as a separate line item, listing Change Order number and dollar value.
   5. Prepare Application for Final Payment as specified in Section 017700.

B. Waivers of Lien:
   1. Along with the each Application for Payment, submit waivers of lien from Contractor and each Subcontractor or Sub-subcontractor included on the current month's Application for Payment.
   2. Submit partial waivers on each item for amount requested, prior to deduction of retainage.
   3. For completed items, submit full or final waiver.

C. Substantiating Data:
   1. When Architect requires substantiating information, submit data justifying dollar amounts in question.
   2. Provide one copy of data with cover letter showing Application number and date, and line item number and description.

D. Submittal:
   1. Submit electronically in Adobe PDF format.
   2. Payment period: Submit at intervals stipulated in Owner/Contractor Agreement.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 013100

PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Project coordination.
   2. Project meetings.

B. Related Sections:
   1. Section 017700 - Contract Closeout.

1.2 PROJECT COORDINATION

A. Submit required project submittals electronically in Adobe PDF format.

B. Coordinate scheduling, submittals, and work of various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.

C. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.

D. Coordinate space requirements and installation of mechanical and electrical items that are indicated diagrammatically on Drawings.
   1. Follow routing shown as closely as practical; place runs parallel with building lines.
   2. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean up of work of separate Sections in preparation for Substantial Completion.

G. After Owner occupancy, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents to minimize disruption of Owner's activities.

1.3 PROJECT MEETINGS

A. Schedule and administer preconstruction conference, progress meetings, and pre-installation conferences.

B. Make physical arrangements for meetings; notify involved parties at least 4 days in advance.

C. Prepare the meeting agenda. Distribute the agenda to all invited attendees.

D. Record significant proceedings and decisions at each meeting; reproduce and distribute copies to parties in attendance and others affected by proceedings and decisions made.

1.4 PRECONSTRUCTION CONFERENCE

A. Schedule within 15 days after date of Notice to Proceed at Project field office.

B. Attendance:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. Major subcontractors and suppliers as Contractor deems appropriate.

C. Review and Discuss:
   1. Relation and coordination of various parties, and responsible personnel for each party.
   2. Use of premises, including office and storage areas, temporary controls, and security procedures.
   3. Construction schedule and critical work sequencing.
   4. Processing of:
      a. Contract modifications.
      b. Shop Drawings, Product Data, and Samples.
      c. Applications for Payment.
      d. Substitutions.
      e. Requests for Information.
      f. Other required submittals.
   5. Adequacy of distribution of Contract Documents.
   6. Procedures for maintaining contract closeout submittals.
   7. Installation and removal of temporary facilities.
   8. Notification procedures and extent of testing and inspection services.

1.5 PROGRESS MEETINGS

A. Schedule periodic progress meetings.

B. Location: Project field office.

C. Attendance:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. Subcontractors and suppliers as appropriate to agenda.
   5. Others as appropriate to agenda.

D. Review and Discuss:
   1. Work progress since previous meeting, including:
      a. Field observations, deficiencies, conflicts, and problems.
      b. Progress and completion date.
      c. Corrective measures needed to maintain quality standards, progress, and completion date.
   2. Status of:
      a. Requests for information.
      b. Submittals.
      c. Contract modifications.
   3. Coordination between various elements of Work.
   4. Maintenance of Project Record Documents.

1.6 PRE-INSTALLATION CONFERENCES

A. Where required in individual specification Section, convene a pre-installation conference at project site or other designated location.

B. Require attendance of parties directly affecting or affected by work of the specific Section.

C. Review conditions of installation, preparation and installation procedures, and coordination with related work.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 013216

CONSTRUCTION PROGRESS SCHEDULES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Construction progress schedule.

B. Related Sections:
1. Section 011100 - Summary of Work.
2. Section 012900 - Payment Procedures.

1.2 FORMAT

A. Prepare Progress Schedule as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work day of each week.

B. Sequence of Listings: The chronological order of the start of each item of Work.

C. Scale and Spacing: To provide space for notations and revisions.

D. Sheet Size: Multiples of 8-1/2 x 11 inches.

1.3 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification Section number.

C. Identify work of separate floors and other logically grouped activities.

D. Provide subschedules to define critical portions of the entire Progress Schedule.

E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

F. Provide separate schedule of submittal dates for Shop Drawings, Product Data, and Samples, including:
1. Dates reviewed submittals will be required from Architect.
2. Decision dates for selection of finishes.
3. Delivery dates for Owner furnished products.

G. Coordinate content with Schedule of Values specified in Section 012900.

H. Revisions:
1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.

I. Provide narrative report to define problem areas, anticipated delays, and impact on Progress Schedule. Report corrective action taken, or proposed, and its effect.

1.4 SUBMITTAL

A. Submit initial Progress Schedule within 15 days after date of Notice to Proceed. After review, resubmit required revised data within 10 days.

B. Submit revised Progress Schedule with each Application for Payment.

C. Submit electronically in Adobe PDF format.

1.5 DISTRIBUTION

A. Distribute copies of approved Progress Schedule to project site file, Subcontractors, suppliers, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in Progress Schedule.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 013233

PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Construction photographs.

1.2 PHOTOGRAPHY

A. Take construction record photographs during construction.

B. Provide photographs taken each month just prior to date for each scheduled Application for Payment.

C. Provide one aerial photograph of site at beginning and completion of work at site.

D. Provide photographs illustrating conditions prior to commencement of work.

E. Photograph project from ten different views at each specified time; views as directed by Architect.

F. After interior finish work is commenced, take ten additional photographs of interior; views as directed by Architect.

G. At successive periods of photography, take photographs from same overall view as previously taken.

H. Utilize digital technology at minimum 1216 x 912 capture resolution.

I. Provide factual presentation.

J. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

1.3 DIGITAL FILES

A. Index digital files in chronological sequence.

B. Identify each view by listing:
1. Name of Project.
2. Orientation of view.
3. Date taken.
4. Sequential photograph number.

1.4 SUBMITTAL

A. Submit each month’s digital files along with each Application for Payment.

B. Submit full set of digital files along with Project Record Documents.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Submittal procedures.
2. Proposed Products list.
3. Submittal schedule.
4. Shop Drawings.
5. Product Data.
6. Samples.
7. Quality control submittals.

B. Related Sections:
1. Section 014000 - Quality Requirements.

1.2 SUBMITTAL PROCEDURES

A. Number each submittal with Project Manual section number and a sequential number within each section. Number resubmittals with original number and an alphabetic suffix.

B. Identify Project, Contractor, Subcontractor or supplier, pertinent Drawing sheet and detail numbers, and specification Section number, as appropriate.

C. Submit all submittals listed under “Submittals for Review” simultaneously for each Product or Specification Section.

D. Where multiple Products function as an assembly, group submittals for all related Products into single submittal.

E. Architect will not review incomplete submittals.

F. Apply Contractor’s stamp, signed or initialed certifying that:
1. Submittal was reviewed.
2. Products, field dimensions, and adjacent construction have been verified.
3. Information has been coordinated with requirements of Work and Contract Documents.

G. Schedule submittals to expedite the Project, and deliver to Architect. Coordinate submittal of related items.

H. For each submittal, allow 14 days for Architect’s review, excluding delivery time to and from Contractor.

I. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of completed Work.

J. Revise and resubmit submittals when required; identify all changes made since previous submittal.

K. Distribute copies of reviewed submittals to concerned parties and to Project Record Documents file. Instruct parties to promptly report any inability to comply with provisions.

1.3 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Notice to Proceed, submit a complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

C. Submit electronically in Adobe PDF format. Architect will review Submittal Schedule for conformance to requirements of Contract Documents and will return one copy to Contractor with comments as applicable.

1.4 SUBMITTAL SCHEDULE

A. Within 15 days after date of Notice to Proceed, submit a submittal schedule showing all submittals proposed for project, including submittals listed as:
   1. Submittals for Review.
   2. Quality Control Submittals.
   3. Closeout Submittals.

B. Include for each submittal:
   1. Specification section number.
   2. Description of submittal.
   3. Type of submittal.
   4. Anticipated submittal date.
   5. For submittals requiring Architect’s review, date reviewed submittal will be required from Architect.

C. Submit electronically in Adobe PDF format.

D. Architect will review Submittal Schedule for conformance to requirements of Contract Documents and will return one copy to Contractor with comments as applicable.

1.5 SHOP DRAWINGS

A. Present information in clear and thorough manner.

B. Identify details by reference to sheet and detail numbers or room number shown on Drawings.

C. Reproductions of details contained in Contract Documents are not acceptable.

D. Submit electronically in Adobe PDF format. Architect will return one electronic copy to Contractor for printing and distribution.

1.6 PRODUCT DATA

A. Mark each copy to identify applicable products, models, options, and other data.

B. Supplement manufacturers' standard data to provide information unique to this Project.

C. Submit electronically in Adobe PDF format. Architect will return one electronic copy to Contractor for printing and distribution.

1.7 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Where so indicated, submit samples of finishes from the full range of manufacturers' standard colo textures, and patterns for Architect's selection.

C. Include identification on each sample, with full Project information.

D. Unless otherwise specified in individual specifications, submit two of each sample.

E. Architect will notify Contractor of approval or rejection of samples, or of selection of color, texture, or pattern if full range is submitted.

1.8 QUALITY CONTROL SUBMITTALS

A. Quality control submittals specified in Section 014000 are for information and do not require Architect's responsive action except to require resubmission of incomplete or incorrect information.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 013516

ALTERATION PROJECT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Definitions.
2. Historic significance.
3. Patching and extending existing work.
4. Transitions and adjustments.
5. Repair of damaged surfaces.
6. Hazardous material procedures.

B. Related Sections:
1. Section 078400 - Firestopping.

1.2 REFERENCES

A. Secretary of the Interior’s Standards for Rehabilitation. (www.nps.gov/tbs/standards/rehabilitation.htm)

B. Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings. (www.nps.gov/tps/standards.htm)

1.3 DEFINITIONS

A. Match Existing: Provide new materials to match the existing, in place material in all aspects as closely as possible. Existing materials are those which are visible in whole or in part in the building.

B. Match Original: Provide new materials to match the original material in all aspects as closely as possible. Original materials are those which were originally installed in the building at the time of its completion, prior to previous alterations, and which may predate existing materials.

C. Preservation: The act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property.

D. Reconstruction: The act or process of reproducing, by means of new construction, the form, features, and detailing of a non-surviving building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

E. Restoration: The act or process of accurately depicting the form, features, and character as it appeared at a particular time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.

1.4 QUALITY ASSURANCE

A. Historic Significance:
1. Due to the unique historical significance of the existing building, special procedures and precautions must be used in selective demolition and renovation.

B. Renovation Procedures:
1. Follow the Secretary of the Interior's Standards for Rehabilitation and the Secretary of the Interior's Standards for the Treatment of Historic Properties at a minimum.
2. Preserve existing materials, finishes, and profiles.
3. Blend new and existing work to provide smooth transitions and uniform appearance.

4. Cease work, notify Architect, and await instructions if materials or conditions encountered at the site are not as indicated by the Contract Documents or if structure is in danger of movement or collapse.

C. Historic Artifacts: If artifacts of a historic nature are encountered during the Work:
1. Cease work in the affected area immediately.
2. Protect artifacts from damage.
3. Notify Owner and Architect and await instructions.
4. Salvage or dispose of artifacts as directed by the Owner.

PART 2 PRODUCTS

2.1 MATERIALS

A. New Materials:
1. Provide new materials to match existing adjacent materials for closing of openings, repairs, and reconstructions where suitable salvaged materials do not exist, are insufficient in quantity, or where reuse is not permitted.
2. Match existing materials in material, type, size, quality, color, finish, and other attributes.

B. Reused Materials:
1. Clean and prepare salvaged materials for reuse.
2. Do not use materials with objectionable chips, cracks, splits, dents, scratches, or other defects.
3. Repair operable items to function properly.

PART 3 EXECUTION

3.1 PREPARATION

A. Test materials to be used in repairs for compatibility with existing materials; do not use incompatible materials.

B. Cut, move, or remove items as necessary for access to alterations and renovation work. Replace and restore upon completion.

C. Remove, cut, and patch work in manner to minimize damage and to provide means for restoring products and finishes to their original or specified new condition.

D. Remove unsuitable materials not marked for salvage.

E. Remove debris and abandoned items from areas of work and from concealed spaces.

3.2 ALTERATIONS

A. Coordinate alterations and renovations to expedite completion.

B. Install products and finish surfaces as specified in individual sections, or where no specification section exists to match existing.

C. Refinish visible surfaces to specified condition, with neat transition to adjacent surfaces.

D. Finish patches to provide uniform color and texture over entire surface, with repairs not discernible from normal viewing distance. If finish cannot be matched, refinish entire surface to nearest intersections.

E. Where removal of partitions or walls results in adjacent spaces becoming one, rework finished surfaces to smooth plane, without breaks, steps, or bulkheads.

F. Where new work abuts or aligns with existing, provide smooth and even transition. Where a change in plane of 1/4 inch or more occurs, submit recommendation to Architect for transition.

G. Where alterations expose mechanical and electrical components that were previously concealed, renovate to be concealed in completed work.

H. In addition to specified replacement of equipment and fixtures, restore mechanical and electrical systems to full operational condition.

I. Patch holes in exposed surfaces left by removal of mechanical and electrical components.

3.3 HAZARDOUS MATERIAL PROCEDURES

A. A survey of hazardous materials was performed by the Owner; a copy of the report is available for review at the office of the Owner. Review report prior to commencement of work under this Contract.

END OF SECTION

SECTION 014000

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. References.
2. Quality assurance and control of installation.
3. Mockups.
4. Manufacturer's field services and reports.
5. Design data and calculations.
6. Test reports and certifications.
7. Manufacturer's installation instructions.

1.2 REFERENCES

A. Comply with City of Dripping Springs code of ordinances with local amendments to codes.

B. For products or workmanship specified by reference to association, trade, or industry standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

C. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

D. Conform to edition of reference standard in effect as of date of Project Manual.

E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.3 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 MOCKUPS

A. Definition:
1. Mockups are field samples constructed, applied, or assembled at the project site for review by the Owner and Architect that illustrate materials, equipment, or workmanship.
2. Approved mockups establish the standard of quality by which the Work will be judged.

B. Construct, apply, or assemble specified items, with related attachment and anchorage devices, flashings, seals, and finishes.

C. Perform work in accordance with applicable specifications sections.

D. Mockups will be free-standing or part of the building. Refer to individual specifications. Erect at project site at location acceptable to Architect. Protect from damage.

E. Removal:
   1. Mockups may remain as part of the Work only when so designated in individual specification sections.
   2. Do not remove mockups until removal is approved by Architect or upon Final Completion.
   3. Where mockup is not permitted to remain as part of the Work, clear area after removal of mockup has been approved by Architect.

1.5 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, or startup of equipment, as applicable, and to initiate instructions when necessary.

B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

C. Submit electronically in Adobe PDF format within 10 days after each observation.

1.6 DESIGN DATA AND CALCULATIONS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide design data and calculations.

B. Accuracy of design data and calculations is the responsibility of the Contractor.

C. When so specified, prepare design data and calculations under the direction of a professional engineer licensed in the state in which the Project is located. Affix engineer’s seal to submittals.

D. Submit electronically in Adobe PDF format.

1.7 TEST REPORTS AND CERTIFICATIONS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide test reports and manufacturers’ certifications.

B. Indicate that material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Submittals may be recent or previous test results on material or Product, but must be acceptable to Architect.

D. Submit electronically in Adobe PDF format.

1.8 MANUFACTURER'S INSTALLATION INSTRUCTIONS

A. When Contract Documents require that Products be installed in accordance with manufacturer's instructions:
   1. Submit manufacturer's most recent printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, as applicable.
      a. Submit in quantities specified for Product Data.
      b. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
      c. Identify conflicts between manufacturers' instructions and requirements of Contract Documents.
   2. Perform installation of Products to comply with requirements of manufacturer's instructions.
   3. If installation cannot be performed in accordance with manufacturer's instructions, notify Architect and await instructions.
   4. Submit electronically in Adobe PDF format.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 014213

ABBREVIATIONS AND ACRONYMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Abbreviations and acronyms of industry organizations.

1.2 ACRONYMS

A. Abbreviations and acronyms used in Contract Documents refer to recognized names of organizations according to following list.

B. Contract Documents may not contain all abbreviations and acronyms.

ACRONYM OR ABBREVIATION	ENTITY	WEBSITE
AA	Aluminum Association	www.aluminum.org
AAMA	American Architectural Manufacturers Association	www.aamanet.org
AAADM	American Association of Automatic Door Manufacturers	www.aaadm.com
AASHTO	American Association of State Highway and Transportation Officials	www.transportation.org
ABAA	Air Barrier Association of America	www.airbarrier.org
ACI	American Concrete Institute	www.aci-int.org
AI	Asphalt Institute	www.asphaltinstitute.org
AISC	American Institute of Steel Construction	www.aisc.org
AITC	American Institute of Timber Construction	www.aitc-glulam.org
AMCA	Air Movement and Control Association International, Inc.	www.amca.org
AISI	American Iron and Steel Institute	www.steel.org
ANSI	American National Standards Institute	www.ansi.org
APA	Engineered Wood Association	www.apawood.org
ASCC	American Society of Concrete Contractors	www.ascconline.org
ASCE	American Society of Civil Engineers	www.asce.org
ASHRAE	American Society of Heating, Refrigeration, and Air-Conditioning Engineers	www.ashrae.org
ASME	American Society of Mechanical Engineers	www.asme.org
ASTM	ASTM International	www.astm.org
AWI	Architectural Woodwork Institute	www.awinet.org
AWMAC	Architectural Woodwork Manufacturers of Canada	www.awmac.com
AWS	American Welding Society	www.aws.org
ASTM	ASTM International	www.astm.org
BHMA	Builders Hardware Manufacturers Association	www.buildershardware.com
CDA	Copper Development Association	www.copper.org

ACRONYM OR ABBREVIATION	ENTITY	WEBSITE
CISCA	Ceiling and Interior Systems Construction Association	www.cisca.org
CLFMI	Chain Link Fence Manufacturers Institute	www.chainlinkinfo.org
CRI	Carpet and Rug Institute	www.carpet-rug.com
CRRC	Cool Roof Rating Council	www.coolroofs.com
CRSI	Concrete Reinforcing Steel Institute	www.crsi.org
CSA	Canadian Standards Association	www.aamanet.org
CSI	Cast Stone Institute	www.caststone.org
CSSB	Cedar Shingle and Shake Bureau	www.cedarbureau.org
CSPC	United States Consumer Product Safety Commission	www.cpsc.gov
DASMA	Door and Access Systems Manufacturers Association	www.dasma.com
EIMA	EIFS Industry Manufacturers Association	www.eima.com
FGIA	Fenestration and Glazing Industry Alliance	www.fgiaonline.org
FM	Factory Mutual Insurance Co.	www.fmglobal.com
FSC	Forest Stewardship Council	www.fscus.org
GA	Gypsum Association	www.gypsum.org
GS	Green Seal, Inc.	www.greenseal.org
IGMA	Insulating Glass Manufacturers Alliance	www.igmaonline.org
ISO	International Organization for Standardization	www.iso.org
MFMA	Maple Flooring Manufacturer's Association	www.maplefloor.org
MPI	Master Painters Institute	www.mpi.net
MVMA	Masonry Veneer Manufacturers Association	www.ncma.org
NAAMM	National Association of Architectural Metal Manufacturers	www.naamm.org
NEMA	Association of Electrical and Medical Imaging Equipment	www.nema.org
NELMA	Northeastern Lumber Manufacturers Association	www.nelma.org
NGA	National Glass Association	www.glass.org
NFPA	National Fire Protection Association	www.nfpa.org
NFRC	National Fenestration Rating Council	www.nfrc.org
NFSI	National Floor Safety Institute	www.nfsi.org
NHLA	National Hardwood Lumber Association	www.nhla.org
NIST	National Institute of Standards and Technology	www.nist.gov
NLGA	National Lumber Grades Authority	www.nlga.org
NRCA	National Roofing Contractors Association	www.nrca.net
NTMA	National Terrazzo and Mosaic Association	www.ntma.com
NWFA	National Wood Flooring Association	www.nwfa.org
PCI	Precast/Prestressed Concrete Institute	www.pci.org
PEI	Porcelain Enamel Institute	www.porcelainenamel.com
PTI	Post-Tensioning Institute	www.post-tensioning.org

ACRONYM OR ABBREVIATION	ENTITY	WEBSITE
RCSC	Research Council on Structural Connections	www.boltcouncil.org
RFCI	Resilient Floor Covering Institute	www.rfci.com
RIS	Redwood Inspection Service	www.redwoodinspection.com
SCAQMD	South Coast Air Quality Management District	www.aqmd.gov
SDI	Steel Deck Institute	www.sdi.org
SDI	Steel Door Institute	www.steeldoor.org
SFIA	Steel Framing Industry Association	www.sfia.memberclicks.net
SIPA	Structural Insulated Panel Association	www.sips.org
SJI	Steel Joist Institute	www.steeljoist.org
SMACNA	Sheet Metal and Air Conditioning Manufacturer's Association	www.smacna.org
SPIB	Southern Pine Inspection Bureau	www.spib.org
SPRI	Single Ply Roofing Institute	www.spri.org
SSMA	Steel Stud Manufacturer's Association	www.ssma.com
SSPC	Society for Protective Coatings	www.sspc.org
SWI	Steel Window Institute	www.steelwindows.com
TCNA	Tile Council of North America	www.tileusa.com
TMS	The Masonry Society	www.masonrysociety.org
TPI	Truss Plate Institute	www.tpinst.org
TPI	Turfgrass Producers International	www.turfgrasssod.org
USDOJ	United States Department of Justice	www.ada.gov
USEPA	United States Environmental Protection Agency	www.epa.gov
USEPA	United States Environmental Protection Agency	www.energystar.gov
USGBC	U.S. Green Building Council	www.usgbc.org
USPS	United States Postal Service	www.usps.com
WCLIB	West Coast Lumber Inspection Bureau	www.wclib.org
WDMA	Window and Door Manufacturers Association	www.wdma.com
WI	Woodwork Institute	www.woodworkinstitute.com
WRCLA	Western Red Cedar Lumber Association	www.realcedar.com
WWPA	Western Wood Products Association	www.wwpa.org

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 014523

TESTING AND INSPECTION SERVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Laboratory selection and payment.
2. Laboratory duties.
3. Contractor's responsibilities.

B. Related Sections: Individual specifications sections contain specific tests and inspections to be performed.

1.2 QUALITY ASSURANCE

A. Owner will employ and pay for services of an independent testing laboratory to perform specified testing and inspection.

B. Contractor shall cooperate with the Testing Laboratory to facilitate performance of its work.

C. Employment of Testing Laboratory shall in no way relieve Contractor of his obligations to perform work in accordance with Contract Documents.

D. Refer to the Conditions of the Contract for provisions related to special inspections and testing.

E. Qualifications of Laboratory:
1. Meet requirements of ASTM C1077, D3666, D3740, E329, and E543.
2. Authorized to operate in State in which project is located.

1.3 LABORATORY DUTIES

A. Cooperate with Architect and Contractor; provide qualified personnel after due notice.

B. Perform specified inspections, sampling, and testing of materials and methods of construction:
1. Comply with specified standards.
2. Ascertain compliance or noncompliance of materials with requirements of Contract Documents.

C. Promptly notify Architect and Contractor of observed irregularities or deficiencies of Work or products.

D. Promptly submit report of each test and inspection; submit one copy electronically in Adobe PDF format to Architect, Owner, and Contractor.

E. Each report shall include:
1. Date issued.
2. Project title and number.
3. Testing Laboratory name, address, and telephone number.
4. Name of Inspector and signature of individual in charge.
5. Date and time of sampling or inspection.
6. Record of temperature and weather conditions.
7. Date of test.
8. Identification of product and specification section.
9. Location of sample or test in project.
10. Type of inspection or test.
11. Results of tests and compliance or noncompliance with Contract Documents.
12. Interpretation of test results when requested by Architect or Contractor.

F. Perform additional tests when required by Architect or Contractor.

G. Laboratory is not authorized to:
   1. Release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Approve or accept any portion of work.
   3. Perform any duties of Contractor.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with Laboratory personnel, provide access to Work, and to manufacturer's operations.

B. When materials require testing prior to being incorporated into Work, secure and deliver to Laboratory adequate quantities of representative samples of materials proposed to be used.

C. Furnish copies of product test reports as required.

D. Furnish incidental labor and facilities:
   1. To provide access to work to be tested.
   2. To obtain and handle samples at site or at source of product to be tested.
   3. To facilitate inspections and tests.
   4. For safe storage and curing of test samples.

E. Notify Laboratory sufficiently in advance of operations to allow for Laboratory assignment of personnel and scheduling of tests.

F. When tests or inspections cannot be performed after such notice, reimburse Owner for Laboratory personnel and travel expenses incurred due to Contractor's negligence.

G. Make arrangements with Laboratory and pay for additional samples and tests required for Contractor's convenience.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Temporary utilities.
2. Field offices and sheds.
3. Temporary controls.
4. Protection of installed Work.
5. Progress cleaning.
6. Water, erosion, sediment, dust, and mold and mildew control.
7. Access roads and parking areas.
8. Removal.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 TEMPORARY ELECTRICITY

A. Provide temporary electrical service of capacity and characteristics required for construction.

B. Where possible, connect to existing electrical system for electricity required during construction.
1. Cost of electricity used will be paid for by Owner. Exercise measures to conserve electricity.
2. Regulate system to prevent interference with Owner's normal usage.
3. Maintain continuous power operation of Owner's facilities during changeover of electrical services.
4. Notify Owner when unusually heavy loads will be connected, including welding and other equipment with special power requirements.
5. Provide and pay for required service of capacity or characteristics other than that currently available.

C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

D. Maintain distribution system and provide routine repairs.

3.2 TEMPORARY LIGHTING

A. Provide temporary lighting for construction and security purposes.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lamps and provide routine repairs.

D. Provide portable lights when required to provide minimum lighting levels necessary for specific work.

3.3 TEMPORARY HEAT

A. Provide temporary heating devices required to maintain specified ambient temperatures for construction.

B. Where possible, utilize existing facilities for heat required during construction.
   1. Extend and supplement with temporary heat devices required to maintain specified ambient temperatures for construction.
   2. Costs of fuel used from existing facilities will be paid for by Owner. Exercise measures to conserve fuel.

C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless otherwise indicated in individual specification sections.

3.4 TEMPORARY VENTILATION

A. Ventilate enclosed areas to facilitate curing of materials, disperse humidity, and prevent accumulations of dust, fumes, vapors, or gases.

B. Where possible, utilize existing ventilation equipment. Extend and supplement with temporary fan units as required to maintain clean air for construction.

3.5 TEMPORARY TELEPHONE AND COMPUTER SERVICES

A. Contractor shall be accessible during normal business hours via mobile telephone with voice mail or an answering service.

B. Provide computer in Contractor’s field office with printer, Internet access, scanner, and email service.

3.6 TEMPORARY WATER

A. Provide temporary water required for construction.

B. Connect to existing water source for water required for construction.
   1. Regulate system to prevent interference with Owner's usage.
   2. Costs of water used will be paid for by Owner. Exercise measures to conserve water.

C. Extend branch piping and provide temporary hoses so that water is available at locations needed for work.

D. Protect from freezing.

E. Maintain distribution system and provide routine repairs.

3.7 TEMPORARY SANITARY FACILITIES

A. Provide chemical toilets for use during construction.

B. Existing and permanent toilets may not be used during construction.

C. Maintain facilities in clean and sanitary condition.

3.8 FIELD OFFICES AND SHEDS

A. Provide temporary field offices and storage sheds required for construction.

B. Areas on site designated by Owner may be used for field office and storage of materials subject to damage by weather. Store large materials and those not subject to damage by weather outside building.

C. Do not unreasonably encumber site or premises with excess materials or equipment.

D. Temporary Structures:
   1. Portable or mobile buildings, structurally sound, weathertight, with floors raised above ground.

2. Thermal transmission resistance: Compatible with occupancy and storage requirements.
3. Provide connections for utility services when required.
4. Provide steps and landings at entrances.

E. Field Office:
1. Size required for Contractor's use and to provide space for project meetings.
2. Adequate electrical power, lighting, heating, and cooling to maintain human comfort.
3. Provide facilities for storage of Project Record Documents.
4. Provide thermometer mounted at convenient outside location, not in direct sunlight.

3.9 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas , to allow Owner's use of site and premises, and to protect adjacent properties from construction operations.

B. Provide barricades required by governing authorities for public right-of-ways.

C. Fencing:
1. Provide temporary fencing for construction operations.
2. Construction: Contractor's option.
3. Height: 6 feet.
4. Locate to protect construction operations, materials, and equipment.
5. Provide vehicular and pedestrian gates.

D. Tree and Plant Protection:
1. Protect existing trees and plants at site that are designated to remain.
2. Remove roots and branches that interfere with construction. Employ qualified arborist/ tree surgeon to remove and to treat cuts.
3. Provide temporary barriers to height of 6 feet around individual or groups of trees and plants.
4. Do not permit vehicular traffic, parking, storage of materials, dumping of harmful chemicals or liquids, or standing or continuously running water within root zones.
5. Supervise earthwork operations to prevent damage to root zones.
6. Replace trees and plants that are damaged or destroyed due to construction operations.

3.10 EXTERIOR CLOSURES

A. Provide temporary weathertight closures for exterior openings to provide acceptable interior working conditions, to allow for temporary heating and maintenance of ambient temperatures required in individual specification sections, to protect the Work, and to prevent entry of unauthorized persons.

B. Provide access doors with locking hardware.

3.11 PROTECTION OF INSTALLED WORK

A. Protect installed work from construction operations; provide special protection when required in individual specification sections.

B. Minimize traffic, storage, and construction activities on roof surfaces. If traffic, storage, or activity is necessary, obtain recommendations for protection from roofing manufacturer.

C. Prohibit traffic from landscaped areas.

3.12 PROGRESS CLEANING

A. Maintain areas free from waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

B. Provide containers for collection of waste materials, debris, and rubbish; remove and dispose of off site as required by construction activities.

C. Periodically clean interior areas to provide suitable conditions for finish work.

3.13 TEMPORARY CONTROLS

A. Water Control:
   1. Grade site to drain. Prevent puddling water.
   2. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
   3. Provide water barriers to protect site from soil erosion.

B. Erosion and Sediment Control:
   1. Plan and execute methods to control surface drainage from cuts, fills, borrow areas, and waste disposal areas. Prevent erosion and sedimentation.
   2. Minimize amount of bare soil exposed at any one time.
   3. Provide temporary measures such as silt fences, dikes, berms, settlement basins, and drainage systems to prevent water flow and sedimentation.
   4. Periodically inspect earthwork to detect erosion and sedimentation; promptly employ corrective measures.

C. Dust Control:
   1. Provide dust control materials and methods to minimize dust from construction operations.
   2. Prevent dust from dispersing into atmosphere.

D. Mold and Mildew Control:
   1. Provide continuous measures to prevent formation of mold and mildew in construction.
   2. Do not install materials sensitive to mold and mildew growth until protection can be provided.
   3. Promptly remove and replace materials exhibiting mold and mildew growth.

3.14 ACCESS ROADS AND PARKING AREAS

A. Existing roads designated by Owner may be used for construction purposes. Do not allow heavy vehicles or construction equipment in parking areas.

B. Provide for access by emergency vehicles.

C. Keep fire hydrants and water control valves free from obstruction and accessible for use.

D. Provide parking facilities for construction personnel. When parking needs exceed on site capacity, provide additional off site facilities.

E. Maintain existing construction, and restore to original or specified condition at completion of Work.

3.15 REMOVAL

A. Remove temporary utilities, equipment, facilities, and services when construction needs can be met by use of permanent construction or upon completion of Project.

B. Remove foundations and underground installations; grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore permanent facilities used during construction to original or to specified condition.

END OF SECTION

SECTION 015800

PROJECT IDENTIFICATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Project identification sign.
2. Maintenance and removal.

1.2 QUALITY ASSURANCE

A. Project Sign:
1. Design sign and structure to withstand 50 MPH wind velocity.
2. Sign Painter: Experienced as a professional sign painter for minimum 3 years.
3. Finishes and painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

B. Do not erect other signs at site without Owner's approval, except those required by governing authorities.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show content, layout, lettering, colors, structure, sizes, and grades of members.
2. Samples: 3 x 3 inch samples of each paint color.

PART 2 PRODUCTS

2.1 MATERIALS

A. Structure and Framing: New lumber, structurally adequate.

B. Sign Surfaces: Exterior grade plywood with medium density overlay, nominally 3/4 inch thick, standard large sizes to minimize joints.

C. Rough Hardware: Galvanized steel or aluminum.

D. Paints: Latex type, exterior quality, gloss sheen.

2.2 FABRICATION

A. Provide one sign of following design:
1. Area: 32 square feet.
2. Bottom edge of sign: 6 feet above ground.
3. Content:
   a. Project title and logo.
   b. Owner's name.
   c. Names and titles of Architect and Consultants.
   d. Name of Contractor and major Subcontractors.
4. Graphic design, colors, and lettering style: As designated by Architect.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install project identification sign within 30 days after date of Notice to Proceed.

B. Erect at designated location.

C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.

D. Install sign surface plumb and level, with butt joints. Anchor securely.

E. Paint exposed surfaces of sign, supports, and framing.

3.2 MAINTENANCE

A. Maintain signs and supports clean. Repair deterioration and damage.

3.3 REMOVAL

A. Remove signs, framing, supports, and foundations at completion of Project and restore the area.

END OF SECTION

SECTION 016000

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Products.
2. Transportation and handling.
3. Storage and protection.
4. Reuse of existing materials.
5. Product options.

B. Related Sections:
1. Section 012500 - Substitution Procedures.

1.2 PRODUCTS

A. Provide interchangeable components by the same manufacturer for identical items.

B. Do not use products containing asbestos or other known hazardous materials.

C. Do not reuse materials and equipment removed from existing construction in completed Work, except as specifically permitted by the Contract Documents.

1.3 TRANSPORTATION AND HANDLING

A. Coordinate delivery of Products to prevent conflict with Work and adverse conditions at site.

B. Transport and handle Products in accordance with manufacturer's instructions.

C. Promptly inspect shipments to ensure that Products comply with requirements of Contract Documents, are undamaged, and quantities are correct.

D. Provide equipment and personnel to handle products by methods to prevent damage.

1.4 STORAGE AND PROTECTION

A. Store and protect Products in accordance with manufacturer's instructions with manufacturer's seals and labels intact and legible.

B. Store Products on site unless prior written approval to store off site has been obtained from Owner.

C. Store Products subject to damage by elements in weathertight enclosures. Maintain temperature and humidity within ranges required by manufacturer's instructions.

D. Exterior Storage:
1. Store fabricated Products above ground; prevent soiling and staining.
2. Cover products subject to deterioration with impervious sheet coverings; provide ventilation to prevent condensation.
3. Store loose granular materials in well drained area on solid surfaces; prevent mixing with foreign matter.

E. Arrange storage areas to permit access for inspection. Periodically inspect stored products to verify that products are undamaged and in acceptable condition.

1.5 REUSE OF EXISTING MATERIALS

A. Carefully remove, handle, protect, and store Products.

B. Clean and refinish Products to original or specified condition.

C. Restore operable components to working condition.

D. Arrange and pay for transportation, storage, and handling of Products requiring off site storage, restoration, or renovation.

1.6 PRODUCT OPTIONS

A. Products specified by reference standard only:
   1. Select any Product meeting the specified standard.
   2. Submit Product Data to substantiate compliance of proposed Product with specified requirements.

B. Products specified by naming two or more acceptable Products: Select any named Product.

C. Products specified by stating that the Contract Documents are based on a Product by a single manufacturer followed by the statement "Equivalent products by the following manufacturers are acceptable":
   1. Select the specified Product or a Product by a named manufacturer having equivalent or superior characteristics to the specified Product and meeting the requirements of the Contract Documents.
   2. If the specified Product is not selected, submit Product Data to substantiate compliance of proposed Product with specified requirements.
   3. The specified Product establishes the required standard of quality.

D. Products specified by naming one or more Products followed by "or approved substitute" or similar statement:
   1. Submit a substitution request under provisions of Section 012500 for Products not listed.
   2. The specified Product establishes the required standard of quality.

E. Products specified by naming one or more Products or manufacturers followed by the statement "Substitutions: Under provisions of Division 01":
   1. Submit a substitution request under provisions of Section 012500 for Products not listed.
   2. The specified Product establishes the required standard of quality.

F. Products specified by naming one Product followed by the statement "Substitutions: Not permitted": Substitutions will not be allowed.

G. Products specified by required performance or attributes, without naming a manufacturer or Product:
   1. Select any Product meeting specified requirements.
   2. Submit Product Data to substantiate compliance of proposed Product with specified requirements.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 017123

FIELD ENGINEERING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Survey and field engineering.
2. Submittals.
3. Records.

B. Provide and pay for field engineering services required for Project:
1. Survey work required in execution of Work.
2. Other professional engineering services specified or required to execute Contractor's construction methods.

1.2 QUALIFICATIONS

A. Surveyor: Qualified land surveyor, licensed in State in which project is located.

1.3 SUBMITTALS

A. Submit documentation to verify accuracy of field engineering work upon Owner's or Architect's request.

B. Submit certification that elevations and locations of improvements are in conformance with Contract Documents.

1.4 SURVEY REFERENCE POINTS

A. Existing horizontal and vertical control points for project are those designated on Drawings.

B. Locate, verify, and protect control points prior to beginning Work; preserve permanent reference points during construction.

1.5 PROJECT SURVEY REQUIREMENTS

A. Establish minimum of two permanent bench marks on site, referenced to survey control points. Record locations on Project Record Documents.

B. Establish lines and levels, locate and lay out, by instrumentation:
1. Site improvements:
   a. Stakes for grading, fill, and topsoil placement.
   b. Utility slopes and invert elevations.
2. Building foundation and column locations, floor elevations, and other controlling dimensions.
3. Controlling lines and levels required for mechanical and electrical trades.

C. Verify property corners, easements, building setbacks, and horizontal control dimensions with information contained in Contract Documents.

D. Promptly notify Architect of any errors or discrepancies noted; await instructions prior to proceeding with Work.

1.6 RECORDS

A. Maintain accurate log of control and survey work.

B. Provide final as-built survey.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 017329

CUTTING AND PATCHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Requirements and limitations for cutting and patching of work.

B. Related sections:
1. Section 012500 - Substitution Procedures.

1.2 SUBMITTALS

A. Submit written request in advance of executing cutting or alteration that affects:
1. Work of Owner or separate contractor.
2. Structural integrity of project.
3. Integrity or effectiveness of weather exposed or moisture resistant elements or systems.
4. Efficiency, operational life, maintenance, or safety of operational elements.
5. Visual qualities of sight exposed elements.

B. Include in Request:
1. Identification of project.
2. Description of work affected.
3. Necessity for cutting or patching.
4. Effect of cutting or patching on work of Owner or separate contractor, or on structural, weatherproof, or visual integrity of project.
5. Description of proposed work:
   a. Scope of cutting and patching.
   b. Subcontractor and trades to execute work.
   c. Products proposed to be used.
   d. Extent of refinishing.
6. Alternate to cutting and patching.
7. Cost proposal, if applicable.
8. Written permission of any separate contractor whose work will be affected.

C. If conditions of work or schedule necessitate a change of material from that originally installed, submit substitution request in accordance with Section 012500.

D. Submit written notice to Architect designating time work will be uncovered, to allow for observation.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 PREPARATION

A. Examine existing conditions of work, including elements subject to movement or damage during cutting and patching.

B. After uncovering work, examine conditions affecting installation of new products or performance of work.

C. Provide protection for other portions of project.

D. Provide protection from elements.

3.2 CUTTING AND PATCHING

A. Execute cutting to include excavating, fitting, and patching of Work required to:
   1. Make several parts fit properly.
   2. Uncover work to provide for installation of ill timed work.
   3. Remove and replace defective work.
   4. Remove and replace work not conforming to requirements of Contract Documents.
   5. Provide routine penetrations of nonstructural surfaces for installation of piping and electrical conduit.
   6. Interface new and existing work.

B. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances, and finishes.

C. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

D. Execute excavating and backfilling by methods that will prevent damage to other Work, and will prevent settlement.

E. Employ original installer or fabricator to perform cutting and patching for:
   1. Weather exposed or moisture resistant elements.
   2. Sight exposed finished surfaces.

F. Restore work that has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.

G. Refinish entire surfaces as necessary to provide an even finish:
   1. Continuous surfaces: To nearest intersections.
   2. Assembly: Refinish entirely.

END OF SECTION

SECTION 017700

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Closeout procedures.
2. Final cleaning.
3. Adjusting.
4. Project record documents.
5. Operation and maintenance data.
6. Warranties.
7. Spare parts and maintenance materials.
8. Starting of systems.
9. Demonstration and instructions.

1.2 CLOSEOUT PROCEDURES

A. Final Inspection:
1. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with the Contract Documents and ready for Architect's inspection.
2. If Architect performs re-inspection due to failure of Work to comply with claims of status of completion made by Contractor, Owner will compensate Architect for such additional services and will deduct the amount of such compensation from final payment to the Contractor.

B. Submit final Application for Payment showing original Contract Sum, adjustments, previous payments, retainage withheld from previous payments, and sum remaining due.

C. Closeout Submittals:
1. Evidence of compliance with requirements of governing authorities.
2. Certificate of Occupancy.
3. Project Record Documents.
4. Operation and Maintenance Data.
5. Warranties.
6. Keys and keying schedule.
7. Spare parts and maintenance materials.
8. Evidence of payment of Subcontractors and suppliers.
9. Final lien waiver.
10. Certificate of insurance for products and completed operations.
11. Consent of Surety to final payment.
12. List of subcontractors and suppliers, indicating firm name, area of responsibility or specialty, address, and telephone number.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean surfaces exposed to view:
1. Remove grease, dirt, fingerprints, stains, labels, dust and other foreign materials from interior and exterior finished surfaces
2. Wash windows, polish glass and bright metal surfaces, and clean plumbing fixtures, appliances, etc. to make ready for occupancy
3. Repair, patch, and touch-up marred surfaces to finish matching adjacent surfaces
4. Broom clean paved surfaces, and rake clean other surfaces of ground Replace air-conditioning filters if units were operated during construction (to be avoided if possible)

5. Clean ducts, blowers and coil if air-conditioning units were operated without filters during construction
6. Maintain cleaning until project or portion thereof is accepted by Owner
7. Final site clean at end of construction to include removal of construction debris and mulch and combing with magnet.

C. Clean equipment and fixtures to a sanitary condition.

D. Clean or replace filters of operating equipment.

E. Clean debris from roofs and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.4 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.5 PROJECT RECORD DOCUMENTS

A. Maintain following record documents on site; record actual revisions to the Work:
1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other Modifications to the Contract.
5. Reviewed Shop Drawings, Product Data, and Samples.
6. Material Safety Data Sheets.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Make entries neatly and accurately.

E. Label each set or volume with "PROJECT RECORD DOCUMENTS", project title, and description of contents.
1. Organize contents according to Project Manual table of Contents.
2. Provide table of contents for each volume.

F. Drawings: Mark each item to record actual construction including:
1. Measured depths of foundations in relation to finish floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Drawings.

G. Specifications: Mark each Product section description of actual Products installed, including the following:
1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and Modifications.

H. Shop Drawings: Mark each item to record actual construction including:
1. Field changes of dimension and detail.
2. Details not on original Shop Drawings.

I. Submit electronically in Adobe PDF format along with final Application for Payment.

1.6 OPERATION AND MAINTENANCE DATA

A. Identify as "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.

B. Contents:
1. Directory: List names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
2. Operation and maintenance instructions: Arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
   a. Significant design criteria.
   b. List of equipment.
   c. Parts list for each component.
   d. Operating instructions.
   e. Maintenance instructions for equipment and systems.
   f. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
3. Project documents and certificates including:
   a. Shop drawings and product data.
   b. HVAC balance reports.
   c. Certificates.
   d. Copies of warranties and bonds.

C. Submittal:
1. Submit electronically in Adobe PDF format at least 15 days prior to final inspection.
2. Architect will notify Contractor of any required revisions after final inspection.
3. Revise content of documents as required prior to final submittal.
4. Submit revised documents electronically in Adobe PDF format within 10 days after final inspection.

1.7 WARRANTIES

A. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

B. Include Table of Contents.

C. Submit electronically in Adobe PDF format along with final Application for Payment.

D. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.8 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

B. Deliver to Project site in location as directed; obtain receipt prior to final payment.

1.9 STARTING OF SYSTEMS

A. Notify Owner and Architect at least seven days prior to startup of each system or piece of equipment.

B. Prior to beginning startup verify that:
1. Lubrication has been performed.
2. Drive rotation, belt tension, control sequences, tests, meter readings, and electrical characteristics are within manufacturer's requirements.
3. Utility connections and support components are complete and tested.

C. Execute start-up under supervision of applicable manufacturer's representative or Contractor's personnel in accordance with manufacturers' instructions.

D. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to startup, and to supervise placing equipment or system in operation.

E. Submit written report that equipment or system has been properly installed and is functioning correctly.

1.10 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Utilize Operation and Maintenance Manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.

D. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed upon times, at equipment location.

E. Prepare and insert additional data in Operation and Maintenance Manuals when need for additional data becomes apparent during instruction.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

SECTION 019100

BUILDING SYSTEM COMMISSIONING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Owner's Project Requirements and Basis-of-Design documentation are included by reference for information only.

1.2 SUMMARY

A. Section Includes:
1. General requirements for coordinating and scheduling commissioning.
2. Commissioning meetings.
3. Commissioning reports.
4. Use of test equipment, instrumentation, and tools for commissioning.
5. Construction checklists, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
6. Commissioning tests and commissioning test demonstration.
7. Adjusting, verifying, and documenting identified systems and assemblies.

B. Related Requirements
1. Section Special Procedures - LEED Certification, if applicable
2. Section Closeout Procedures
3. Section Operation and Maintenance Data
4. Section Electrical Systems Commissioning

1.3 DEFINITIONS AND ABBREVIATIONS

A. Definitions set forth in the General Conditions, AIA Document A201, are applicable to this Section. In addition, the following definitions shall apply to the terms used in this section.
1. **"Acceptance Phase"** – Phase of construction after start-up and initial checkout when functional performance tests, O&M documentation review, and training occurs.
2. **"Approval"** – Acceptance that a piece of equipment or system has been properly installed and is functioning in the tested modes according to the Contract Documents.
3. **"Architect / Engineer (A/E)"** – The prime consultant (architect) and sub-consultants who comprise the design team, generally the HVAC mechanical designer / engineer, plumbing designer / engineer, and the electrical designer / engineer.
4. **"Basis of Design"** – The basis of design is the documentation of the primary thought processes and assumptions behind design decisions that were made to meet the design intent. The basis of design describes the systems, components, conditions, and methods chosen to meet the design intent.
5. **"Commissioning Authority (CxA)"** – An independent agent, not otherwise associated with the A/E team members or the Contractor/Construction Manager, though he / she may be hired as a subcontractor to them. The CxA directs and coordinates the day-to-day commissioning activities. The CxA does not take an oversight role.
6. **"Commissioning Plan"** – An overall plan, developed before or after bidding, that provides the structure, schedule, and coordination planning for the commissioning process.
7. **"Contract Documents"** – The documents binding on parties involved in the construction of this project (drawings, specifications, change orders, amendments, contracts, Cx Plan, etc.).
8. **"Contractor"** – The prime contractor for this project.

9. **"Control System"** – The central building energy management control system.
10. **"Construction Manager (CM)"** – Primary contractor for the project if defined as such in the Owner/Contractor Agreement.
11. **"Data-logging"** – Monitoring flows, currents, status, pressures, etc. of equipment using stand-alone data-loggers separate from the control system.
12. **"Deferred Functional Tests"** – FPT's that are performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design, or other site conditions that disallow the test from being performed.
13. **"Deficiency"** – A condition in the installation or function of a component, piece of equipment, or system that is not in compliance with the Contract Documents (that is, does not perform properly or is not complying with the design intent).
14. **"Design Intent"** – A dynamic document that provides the explanation of the ideas, concepts, and criteria are considered to be very important to the owner. It is initially the outcome of the programming and conceptual design phases.
15. **"Design Narrative"** or "Design Documentation" – Sections of either the Design Intent or Basis of Design.
16. **"Factory Testing"** – Testing of equipment on-site or at the factory by factory personnel with an Owner's representative present.
17. **"Field Installation Verification (FIV)"** – Verification of all installed systems for compliance to plans and specification. These inspections are to be described in detail in the commissioning plan. Primarily static inspections and procedures to prepare the equipment or system for initial operation (e.g., belt tension, oil levels, gages in place, balancing devices in place, etc.).
18. **"Functional Performance Test (FPT)"** – Test of the dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is the dynamic testing of systems (rather than just components) under full operation. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through all the control system's sequences of operation and components are verified to be responding as the sequences state. Traditional air or water test and balancing (TAB) must be completed prior to commencing the FPT. TAB's primary work is setting up the system flows and pressures as specified, while functional testing is verifying that which has already been set up. The commissioning authority develops the functional test procedures in a sequential written form, coordinates, oversees, and documents the actual testing, which is usually performed by the installing contractor or vendor. FPT's are performed after Field Installation Verification (FIV) and Operational Performance Tests (OPT) are complete.
19. **"Indirect Indicators"** – Indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100% closed.
20. **"Manual Test"** – Using hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the "observation").
21. **"Monitoring"** – The recording of parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of control systems.
22. **"Non-Compliance"** – see Deficiency.
23. **"Non-Conformance" –** see Deficiency.
24. **"Operational Performance Test (OPT)"** – Verification of proper start-up of all equipment and systems to be commissioned. These tests are to be described in detail in the commissioning plan.
25. **"Over-written Value"** – Writing over a sensor value in the control system to see the response of a system (e.g. changing the outside air temperature value from 50 F to 75 F to verify economizer operation). See also "Simulated Signal."
26. **"Owner-Contracted Test"** – Tests paid for by the Owner outside the Contractor/Construction Manager's contract and for which the CxA does not oversee. These tests will not be repeated during the functional performance testing.
27. **"Phased Commissioning"** – Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues, in order to minimize the total construction time.
28. **"Project Manager (PM)"** – The contracting and managing authority for the owner over the

design and construction of the project.

29. **"Sampling"** – Operational or functional testing only a fraction of the total number of identical or near identical pieces of equipment. Refer to Part 3 Execution for details.
30. **"Seasonal Performance Tests"** – FPT that are deferred until the system(s) will experience conditions closer to their design conditions.
31. **"Simulated Condition"** – Condition that is created for the purpose of testing the response of a system (e.g. applying a hair blower to a space sensor to see the response in a VAV box.
32. **"Simulated Signal"** – Disconnecting a sensor and using a signal generator to send an amperage, resistance, or pressure to the transducer and DDC system to simulate a sensor value.
33. **"Specifications"** – The construction specifications of the Contract Documents.
34. **"Startup"** – The initial starting or activating of dynamic equipment, including executing OPT's.
35. **"Subs"** – The subcontractors to the Contractor/Construction Manager who provide and install building components and systems.
36. **"Test Procedures"** – the step-by-step process which must be executed to fulfill the test requirements. The test procedures are developed by the CxA.
37. **"Trending"** – Monitoring using the building control system.
38. **"Vendor"** – Supplier of equipment.
39. **"Warranty Period"** – Warranty period for entire project, including equipment components. Warranty begins at Substantial Completion and extends for at least one year, unless specifically noted otherwise in the Contract Documents and accepted submittals.

B. Abbreviations. The following are common abbreviations used in the Specifications and in the Commissioning Plan.

1. A/E: Architect and design engineers.
2. CxA: Commissioning Authority
3. CC: Controls Contractor
4. CM: Construction Manager. Primary contractor for the project if defined as such in the Owner/Contractor Agreement.
5. Cx: Commissioning
6. Cx Plan: Commissioning Plan document
7. DB: Design Build Contractor
8. EC: Electrical Contractor
9. FIV: Field Installation Verification
10. FPT: Functional Performance Test
11. O & M: Operation and Maintenance
12. MC: Mechanical Contractor
13. OPT: Operational Performance Test
14. PM: Project Manager (of the Owner)
15. Subs: Subcontractors to the General
16. TAB: Test and Balance Contractor

1.4 QUALITY ASSURANCE

A. Commissioning Agent Qualifications: The Firm and/or the designated Commissioning Agent shall have a minimum of (5) years' experience in providing Total Building Commissioning Services and shall be regularly employed as a Commissioning Provider. The Firm and/or designated Commissioning Agent shall have been the principal Commissioning Agent on a least three (3) comparable projects that have been successfully completed within the previous five (5) years.

B. The Commissioning Agent shall have current engineering knowledge and extensive hands-on field experience regarding building systems; the physical principles of building systems performance; building systems start-ups, test and balance, functional performance testing, and troubleshooting; operation and maintenance procedures; and the building design and construction process.

C. The Commissioning Firm and/or the designated Commissioning Agent shall have certifications from one of the following industry organizations or a recognized and established approved equal.
   1. CBCP – Certified Building Commissioning Professional – Association of Energy Engineers (AEE)
   2. CCP – Certified Commissioning Professional – Building Commissioning Association (BCxA)
   3. CPMP – Certified Process Management Professional – ASHRAE
   4. CxA – Certified Commissioning Authority – AABC Commissioning Group (ACG)
   5. NEBB CP – Building Certified Professional Certification – National Environmental Balancing Bureau (NEBB)
   6. QCxP – University of Wisconsin-Madison Certification
   7. Or an approved Commissioning Firm directed by the Owner.

1.5 SYSTEM DESCRIPTION

A. Commissioning:
   1. Commissioning is a systematic process of ensuring that all building systems perform interactively according to the design intent and the owner's operational needs. This is achieved by beginning in the design phase and documenting design intent and continuing through construction, acceptance, and the warranty period with actual verification of performance. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment start-up, control system calibration, point-to-point check out, testing and balancing, performance testing, and owner/operator training.
   2. Commissioning during the construction phase is intended to achieve the following specific objectives according to the Contract Documents:
      a. Perform commissioning in accordance with the criteria and requirements set forth in the USGBC LEED v4 rating system.
      b. Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and to industry accepted minimum standards and that they receive adequate operational checkout by the installing contractors.
      c. Verify and document proper performance of equipment and systems.
      d. Verify that O&M documentation left on site is complete.
      e. Verify that the owner's operating personnel are adequately trained.

B. The commissioning process does not take away from or reduce the responsibility of the system designers or installing contractors to provide a finished and fully functioning product.

C. Systems to be commissioned: The following systems shall be commissioned in this project.
   1. Division 26 Electrical Systems
      a. Interior and exterior lighting systems
      b. Lighting systems controls
      c. Emergency Lighting system
   2. Flush Plan for EQ 3.2 (Applicable for LEED projects only)

1.6 COORDINATION

A. Commissioning Team:
   1. Commissioning Authority (CxA)
   2. Owner's Project Manager (PM)
   3. Designated representative of the Owner's (Owner's Rep) Project Management Services Provider
   4. Design Build Contractor (DB or Contractor)
   5. Architect
   6. Design Engineers (particularly the mechanical engineer)
   7. Mechanical Contractor (MC)
   8. Electrical Contractor (EC)

9. TAB representative (TAB)
10. Controls Contractor (CC)
11. Other installing contractors or suppliers of equipment
12. Owner's building or plant operator/engineer

B. Management. The CxA is hired by the Design Build Contractor. The CxA directs and coordinates the commissioning activities and the reports to the owner. All members work together to fulfill their contracted responsibilities and meet the objectives of the Contract Documents.

C. Scheduling.
1. The CxA will work with the PM according to established protocols to schedule the commissioning activities. The CxA will provide sufficient notice to the PM for scheduling commissioning activities. The Contractor/Construction Manager will integrate all commissioning activities into the master schedule. All parties will address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.
2. The CxA will provide the initial schedule of primary commissioning events at the commissioning scoping meeting. As construction progresses more detailed schedules are developed by the CxA.

1.7 COMMISSIONING PROCESS

A. Commissioning Plan. A draft Commissioning Plan shall be developed by the CxA and will be provided at the scoping meeting. The commissioning plan provides guidance in the execution of the commissioning process. Just after the initial commissioning scoping meeting the CxA will update the plan which is then considered the "final" plan, though it will continue to evolve and expand as the project progresses. The final commissioning plan is binding on the Contractor. The Specifications will take precedence over the Commissioning Plan.

B. Commissioning Process. The following narrative provides a brief overview of the typical commissioning tasks during design and construction and the general order in which they occur.
1. Commissioning tasks during design include: evaluating scope and contract, develop specifications and commissioning plans, perform design reviews, assist with preparation of design documents through construction documents as dictated by scope.
2. Commissioning during construction begins with a scoping meeting conducted by the CxA where the commissioning process is reviewed with the commissioning team members.
3. Additional meetings will be required throughout construction, scheduled by the CxA with necessary parties attending to plan, scope, coordinate, schedule future activities, and resolve problems.
4. Equipment documentation is submitted to the CxA during normal submittals, including detailed startup procedures.
5. The CxA works with the subs in developing startup plans and startup documentation formats, including providing the subs with FIV and OPT checklists as a reference of items to be verified by the CxA.
6. In general, the checkout and performance verifications proceeds from simple to complex; from component level to equipment to systems and intersystem levels with FIV and OPT checklists being completed before functional performance testing. The CxA shall provide field installation inspection for each system and subsystem covered in the scope of work for this project and provide an installation observation report weekly to the Contractor / Construction Manager. The report shall cover any installation deficiencies from plans and specifications.
7. The Subs perform startup and initial checkout. The CxA documents that the startup was completed according to the approved plans. This shall include the CxA witnessing startup of selected equipment.
8. The CxA develops specific equipment and system functional performance test procedures. The Subs review the procedures.
9. The procedures are executed by the Subs under the direction of and documented by the CxA.
10. Items of non-compliance in material, installation, or setup are corrected at the Sub's expense

and the system retested.

11. The CxA reviews the O&M documentation for completeness.
12. Commissioning is completed before Substantial Completion.
13. The CxA reviews, pre-approves, and coordinates the training provided by the Subs and verifies that it was completed.

1.8 RESPONSIBILITIES

A. The responsibilities of various parties in the commissioning process are provided in this section. The responsibilities of the plumbing contractor reside in Division 22, the mechanical contractor, TAB, and controls contractor are in Division 23 and those of the electrical contractor in Division 26.

B. All Parties
   1. Assist in the development of the Final Commissioning Plan
   2. Follow the Final Commissioning Plan
   3. Attend commissioning scoping meeting and additional meetings as necessary.

C. Architect (of A/E)
   1. Construction and Acceptance Phase
      a. Attend the commissioning scoping meeting and selected commissioning team meetings.
      b. Perform normal submittal review, construction observation, as-built drawing preparation, O&M manual preparation, etc., as contracted.
      c. Provide any design narrative documentation requested by the CxA.
      d. Coordinate resolution of system deficiencies identified during commissioning, according to the contract documents.
      e. Prepare and submit final as-built design intent documentation for inclusion in the O&M manuals. Review and approve the O&M manuals.
   2. Warranty Period: coordinate resolution of design non-conformance and design deficiencies identified during warranty period commissioning.

D. Mechanical and Electrical Designers/Engineers (of the A/E)
   1. Construction and Acceptance Phase
      a. Perform normal submittal review, construction observation, as-built drawing preparation, etc., as contracted. One site observation should be completed just prior to system startup.
      b. Provide any design narrative and sequences documentation requested by the CxA. The designers shall assist (along with the contractors) in clarifying the operation and control of commissioned equipment in areas where the specifications, control drawings, or equipment documentation is not sufficient for writing detailed testing procedures.
      c. Attend commissioning scoping meetings and other selected commissioning team meetings.
      d. Participate in the resolution of system deficiencies identified during commissioning according to the contract documents.
      e. Prepare and submit the final as-built design intent and operating parameters documentation for inclusion in the O&M manuals. Review and approve the O&M manuals.
      f. From the Contractors red line drawings, edit and update one-line diagrams developed as part of the design narrative documentation and those provided by the vendor as shop drawings for the chilled and hot water, condenser water, domestic water, steam, and condensate systems, supply, return, and exhaust air systems, and emergency power system.
      g. Review the FIV and OPT checklists for major pieces of equipment for sufficiency prior to their use.
      h. Review the FPT procedure forms for major pieces of equipment for sufficiency prior to their use.
   2. Warranty Period: Participate in the resolution of non-compliance, non-conformance, and design deficiencies identified during the warranty period commissioning.

E. Commissioning Authority (CxA): The CxA is not responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating, or construction management. The CxA may assist with problem-solving, non-conformance, or deficiencies, but ultimately that responsibility resides with the Contractor/Construction Manager and the A/E. The primary role of the CxA is to develop and coordinate the execution of a testing plan, observe and document the performance – that systems are functioning in accordance with the documented design intent and in accordance with the Contract Documents. The Contractors will provide all tools or the use of tools to start, check-out, and functionally test equipment and systems, except for specific testing with portable data loggers, which shall be supplied and installed by the CxA.

F. Owner's Representative or Project Management Services Provider
   1. Construction and Acceptance Phase
      a. Facilitate the coordination of the commissioning work by the CxA, and, with the Contractor/Construction Manager and CxA, ensure that commissioning activities are being scheduled into the master schedule.
      b. Review the final Commissioning Plan – Construction Phase.
      c. Attend commissioning scoping meetings and other selected commissioning team meetings.
      d. Perform the normal review of Contractor submittals.
      e. Furnish a copy of all construction documents, addenda, change orders, and approved submittals and shop drawings related to commissioned equipment to the CxA.
      f. Review and approve the functional performance test procedures submitted by the CxA prior to testing
      g. When necessary, observe and witness FIV, OPT, FPT of selected equipment.
      h. Review commissioning progress and deficiency reports.
      i. Coordinate the resolution of non-compliance and design deficiencies identified in all phases of commissioning.
      j. Assist the CxA in coordinating the training of owner personnel.

   2. Warranty Period: Assist the CxA as necessary in the seasonal or deferred testing and deficiency corrections required by the specifications.

G. Owner's Project Manager (PM)
   1. Construction and Acceptance Phase
      a. Manage the contract of the A/E and of the Contractor/Construction Manager
      b. Arrange for facility operating and maintenance personnel to attend various field commissioning activities and field training sessions according to the Commissioning Plan
      c. Provide final approval for the completion of the commissioning work.
   2. Warranty Period: Ensure that any seasonal or deferred testing and deficiency issues are addressed.

H. Design Build / Contractor (DB/Contractor)
   1. Construction and Acceptance Phase
      a. Facilitate the coordination of the commissioning work by the CxA, and with the Contractor/Construction Manager and CxA ensure that commissioning activities are being scheduled into the master schedule.
      b. Ensure that all Subs execute their commissioning responsibilities according to the Contract Documents and schedule.
      c. A representative shall attend the commissioning scoping meeting and other necessary meetings scheduled by the CxA to facilitate the Cx process
      d. Coordinate the training of owner personnel.
      e. Prepare the O&M manuals, according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions.
   2. Warranty Period
      a. Ensure that Subs execute seasonal or deferred functional performance testing.
      b. Ensure that Subs correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.
   3. Plumbing, Mechanical, TAB, Controls, Electrical Contractor/s

a. Attend a commissioning scoping meeting and other necessary meetings scheduled by the CxA to facilitate the Cx process.
b. Contractors shall provide normal cut sheets and shop drawing submittals to the CxA of commissioned equipment.
c. Provide additional requested documentation, prior to normal O&M manual submittals, to the CxA for development of start-up and functional testing procedures.
    1. Typically, this will include detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures and full warranty information, including all responsibilities of the Owner to keep the warranty in force clearly identified. In addition, the installation and checkout materials that are shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the CxA.
    2. The Commissioning Agent may request further documentation necessary for the commissioning process.
    3. This data request may be made prior to normal submittals.
d. Provide a copy of the O&M manuals submittals of commissioned equipment, through normal channels, to the CxA for review and approval.
e. Provide limited assistance to the CxA in preparing a full start-up and initial checkout plan using manufacturer's start-up procedures. Submit manufacturer's detailed start-up procedures and the full start-up plan and procedures and other requested equipment documentation to CxA for review.
f. Perform all completed start-up and system operational checkout procedures in the presence of the CxA.
g. Address current A/E punch list items before functional testing.
h. Provide skilled technicians to execute starting of equipment and to execute the functional performance tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments, and problem-solving.
i. Perform functional performance testing under the direction of the CxA for specified equipment in this section. Assist the CxA in interpreting the monitoring data, as necessary.
j. Correct deficiencies (difference between specified and observed performance) as interpreted by the CxA, PM and A/E and retest the equipment.
k. Prepare O&M manuals according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions.
l. Provide training of the Owner's operating personnel as specified.
m. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.

4. Warranty Period
    1. Correct deficiencies and make necessary adjustments to O&M manual and as-built drawings for applicable issues identified in any seasonal testing.

I. Equipment Supplier
1. Provide all requested submittal data, including detailed start-up procedures and specific responsibilities of the Owner to keep warranties in force.
2. Assist in equipment testing per agreements with Subs.
3. Include all special tools, instruments, and software required for testing equipment according to these Contract Documents in the base bid pricing, except for stand-alone data-logging provided by the CxA.
4. Review test procedures for equipment installed by factory representatives.
5. Ensure that any seasonal or deferred testing and deficiency issues are addressed during the warranty period.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Division contractor for the equipment being tested. For example, the mechanical contractor of Division 23 shall ultimately be responsible for all standard testing equipment for the HVAC system and DDC system in Division 23, except for equipment specific to and used by TAB in their contractor responsibilities.

B. Special equipment, tools, instruments, software, (only available from vendor specific to a piece of equipment) required for testing equipment, according to these Contract Documents shall be included in the base bid price to the Contractor and left on site, except for stand-alone data-logging equipment that may be used by the CxA.

C. Data-logging equipment and software required to test equipment will be provided by the CxA, but shall not become the property of the Owner.

D. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. If not otherwise noted, the following minimum requirements apply temperature sensors and digital thermometers shall have an accuracy of ± 0.7° F with a resolution of 0.1° F. Water Pressure sensors shall have an accuracy of ± 2% of reading. All instruments shall be calibrated annually.

PART 3 - EXECUTION

3.1 MEETINGS

A. Scoping Meeting. Within 60 days of commencement of construction, the CxA will schedule, plan, and conduct a commissioning scoping meeting with the entire commissioning team in attendance. Meeting minutes will be distributed to all parties by the CxA. Information gathered from this meeting will allow the CxA to revise the Draft Commission Plan to its “final” version, which will also be distributed to all parties.

B. Miscellaneous Meetings. Other meetings will be planned and conducted by the CxA as construction progresses. These meetings will cover coordination, deficiency resolution and planning issues with the particular Subs.

3.2 REPORTING

A. The CxA will provide regular reports to the PM, depending on the management structure, with increasing frequency as construction and commissioning progresses. Standard forms are provided and referenced in the Commissioning Plan.

B. The CxA will regularly communicate with all members of the commissioning team, keeping them apprised of commissioning progress and scheduling changes through memos, progress reports, etc.

C. Testing or review approvals and non-conformance and deficiency reports are made regularly with the review and testing as described in later sections.

3.3 SUBMITTALS

A. The CxA will provide appropriate contractors with a specific request for the type of submittal documentation that the CxA requires to facilitate the commissioning work. These requests will be integrated into the normal submittal process and protocol of the construction team. At minimum, the request will include the manufacturer and model number, the manufacturer’s printed installation and

detailed start-up procedures, full sequence of operation, O&M data, performance data, any performance test procedures, control drawings, user interface graphics for each system, and details of owner contracted tests. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the CxA. All documentation requested by the CxA will be included by the Subs in their O&M manual contributions.

B. The CxA will review submittals related to the commissioned equipment for conformance to the Contract Documents as it relates to the commissioning process, to the functional performance of the equipment and adequacy for developing test procedures. This review in intended primarily to aid in the development of functional testing procedures and only secondarily to verify compliance with equipment specifications. The CxA will notify the PM or A/E as requested of items missing or areas that are not in conformance with Contract Documents and which require resubmission.

C. The CxA may request additional design narrative from the A/E and Controls Contractor depending on the completeness of the design intent documentation and sequences provided with the specifications.

D. These submittals to the CxA do not constitute compliance for O&M manual documentation. The O&M manuals are the responsibility of the Contractor, though the CxA will review them.

3.4 FIELD INSTALLATION VERIFICATION AND OPERATIONAL PERFORMANCE TESTS

A. The following procedures apply to all equipment to be commissioned, according to Section 1.3, Systems to be commissioned.

B. General. FIV's and OPT's are important to ensure that the equipment and systems are hooked-up and operational. It ensures that functional performance testing (in-depth system checkout) may proceed without unnecessary delays. Each piece of equipment receives full FIV checkout. No sampling strategies are used. FIV's and OPT's for a given system must be successfully completed prior to formal functional performance testing of equipment or subsystems of the given system.

C. Start-up and Initial Checkout Plan. The CxA shall assist the commissioning team members responsible for start-up of any equipment in developing detailed start-up plans for all equipment. The primary role of the CxA in this process is to ensure that there is written documentation that each of the manufacturer-recommended procedures have been completed. The contractor is responsible to perform the start-up procedures of selected equipment in the presence of the CxA.
   1. The CxA develops the FIV and OPT checklists and procedures. These checklists indicate required procedures to be executed as part of start-up and initial checkout of the systems and the party responsible for their execution.
   2. These checklists and tests are provided by the CxA to the Contractor for reference during the construction process.
   3. The subcontractor responsible for the purchase of the equipment assists in the development of the full start-up plan by combining (or adding to) the CxA's checklists with the manufacturer's detailed start-up and checkout procedures from the O&M manual and the normally used field checkout sheets. The full start-up plan (at a minimum) shall consist of the following:
      a. The CxA's OPT checklist
      b. The manufacturer's standard written start-up procedures copied from the installation manuals.
      c. The manufacturer's normally used filed checkout sheets.
   4. The CxA reviews and approves the procedures and the format for documenting them, noting any procedures that need to be added.
   5. The full start-up procedures and the approval form may be provided to the PM for review and approval, depending on management protocol.

D. Controls System Verification
   1. The operation of all control system components shall be verified in the presence of the CxA.
   2. All procedures used shall be fully documented on the OPT checklists clearly referencing the

procedures followed and written documentation of initial, intermediate, and final results.
3. All control point OPT tests shall be verified through the graphic front end software.
4. All sensors and analog inputs shall be calibrated by manufacturer's standard procedures and to project calibration tolerances.
5. All analog outputs, actuators, and valves shall be ranged for correct action to the control signal.

E. Execution of FIV and OPT Procedures.
1. The CxA shall perform regular FIV's throughout the construction period.
2. Four weeks prior to start-up, the Subs and vendors schedule start-up and checkout with the PM, Contractor/Construction Manager, and CxA. The performance of start-up and checkout are directed and executed by the Sub or vendor in the presence of the CxA.
3. The CxA shall observe the start-up procedures for each piece of primary equipment.

F. Deficiency issue log.
1. The CxA shall provide a periodic commissioning issue log clearly listing any deficiencies or areas of concern from any FIV or OPT.
2. The issue log shall be provided to the PM for distribution to the appropriate parties for review, response, and action. All actions and results will be listed on the issue log for future reference (i.e. nothing is ever deleted).
3. Items left incomplete, which later cause deficiencies or delays during functional testing may result in back charges to the responsible party.

3.5 PHASED COMMISSIONING

A. The project may require start-up and initial checkout to be executed in phases. This phasing will be planned and scheduled in a coordination meeting of the CxA, PM, mechanical, TAB, controls, and the Contractor/Construction Manager. Results will be added to the master and commissioning schedules.

3.6 FUNCTIONAL PERFORMANCE TESTING

A. This sub-section applies to all commissioning functional testing for all divisions.

B. The general list of equipment to be commissioned is as specified herein.
Objective and Scope
1. The objective of functional performance testing is to demonstrate that each system is operating according to the documented design intent and Contract Documents. Functional tests will identify areas of deficient performance so they can be corrected, improving the operation, and functioning of the systems.
2. In general, each system should be operated through all modes of operation (seasonal, occupied, un-occupied, warm-up, cool-down, part and full load,) where there is a specified system response. Verifying each sequence in the sequences of operation is required. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. shall also be tested.

C. Development of Test Procedures
1. Before test procedures are written, the CxA shall obtain all requested documentation and a current list of change orders affecting equipment or systems, including an updated points list, program code, control sequences and parameters. The CxA shall develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Each Sub or vendor responsible to execute a test, shall provide limited assistance to the CxA in developing the procedures review (answer questions about equipment, operation, sequences, etc.). Prior to execution, the CxA shall provide a copy of the test procedures to the Sub(s) who shall review the tests for feasibility, safety, equipment, and warranty protection. The CxA may submit the tests to the A/E for review, if requested.
2. The CxA shall review owner-contracted, factory testing or required owner acceptance tests

which the CxA is not responsible to oversee, including documentation format, and shall determine what further testing or format changes may be required to comply with the Specifications. Redundancy of testing shall be minimized.

3. The purpose of any given specific test is to verify and document compliance with the stated criteria of acceptance given on the test form.

D. Test Methods

1. Functional performance testing and verification may be achieved by manual testing (persons manipulate the equipment and observe performance) or by monitoring the performance and analyzing the results using the control system's trend log capabilities, or by stand-alone data loggers. The CxA may substitute specified methods or require an additional method to be executed, other than what was specified, with the approval of the PM. This may require a change order and adjustment in charge to the owner. The CxA will determine which method is most appropriate for tests that do not have a method specified.
2. Sampling Multiple identical pieces of non-life-safety or otherwise non-critical equipment with identical factory configured control sequences may be functionally tested using sampling strategy. Significant application differences and significant sequence of operation differences in otherwise identical equipment invalidates their common identity. A small size or capacity difference, alone, does not constitute a difference.

E. Coordination and Scheduling

1. The Subs shall provide sufficient notice to the CxA regarding their completion schedule for the start-up of all equipment and systems. The CxA will schedule functional tests through the Contractor/Construction Manager and affected Subs. The CxA shall direct, witness, and document the functional testing of all equipment and systems. The Subs shall execute the tests.
2. In general, functional testing is conducted after FIV's and OPT's have been satisfactorily completed. The control system is sufficiently tested and approved by the CxA before it is used for TAB or to verify performance of other components or systems. The air balancing and water balancing is completed and de-bugged before functional testing of air related or water related equipment or systems. Testing proceeds from components to subsystems to systems. When the proper performance of all interacting, individual systems has been achieved, the interface or coordinated responses between systems is checked.

F. Test Equipment. Refer to Part 2 – Products for test equipment requirements.

G. Problem Solving. The CxA will recommend solutions to problems found, however, the burden of responsibility to solve, correct, and re-test problems is with the Contractor/Construction Manager, Subs, and A/E.

H. Deferred Testing. If any check or test cannot be completed due to the building structure, required occupancy condition, or other deficiency, execution of checklists and functional testing may be delayed upon approval of the PM. These tests will be conducted in the same manner as the seasonal tests as soon as possible. Services of necessary parties will be negotiated.

3.7 DOCUMENTATION, NON-CONFORMANCE, AND APPROVAL OF TESTS

A. Documentation. The CxA shall witness and document the results of all functional performance tests using the specific procedural forms developed for that purpose. Prior to testing, these forms are provided to the PM for review and approval and to the Subs for review. The CxA will include the filled out forms in the O&M manuals.

B. Non-Conformance

1. The CxA will record the results of the functional test on the procedure or test form. All deficiencies or non-conformance issues shall be noted and reported to the PM on the standard commissioning issues log.
2. Corrections of minor deficiencies identified may be made during the tests at the discretion of

the CxA. In such cases the deficiency and resolution will be documented on the procedure form.

3. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. However, the CxA will not be pressured into overlooking deficient work or loosening acceptance criteria to satisfy scheduling or cost issues, unless there is an overriding reason to do so at the request of the PM.
4. As tests progress and a deficiency is identified, the CxA discusses the issue with the executing contractor.
    a. When there is no dispute on the deficiency and the Sub accepts responsibility to correct it:
        1. If the deficiency can be easily corrected it shall be corrected and the commissioning shall proceed.
        2. The CxA reschedules the test and the test is repeated.
    b. If there is a dispute about a deficiency, regarding whether it is a deficiency or who is responsible or the repair will take more than one hour:
        1. The deficiency shall be documented on the issue log or the test check sheet with the Sub's response and a copy given to the Contractor/Construction Manager and to the Sub representative assumed to be responsible.
        2. Resolutions are made at the lowest management level possible.
        3. The CxA documents the resolution process.
        4. Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency, signs the statement of correction on the non-compliance form and provides it to the CxA. The CxA reschedules the test and the test is repeated until satisfactory performance is achieved.
5. Cost of re-testing.
    a. The cost for the Sub to re-test a OPT or FPT, if they are responsible for the deficiency, shall be theirs. If they are not responsible, any cost recovery for re-testing costs shall be negotiated with the Contractor/Construction Manager.
    b. For a deficiency identified, not related to any pre-functional checklist or start-up fault, the following shall apply: The CxA will direct the re-testing of the equipment once at no charge to the Contractor/Construction Manager for their time. However, the CxA's time for a second re-test will be charged to the Contractor/Construction Manager, who may choose to recover costs from the responsible Sub.
    c. The time for the CxA to direct any re-testing required because a specific FIV or OPT item, reported to have been successfully completed, but determined during functional testing to be faulty, will be back charged to the Contractor/Construction Manager, who may choose to recover costs from the party responsible.
6. The contractor shall respond in writing to the CxA at least as often as commissioning meetings are being scheduled concerning the status of each apparent outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreements and proposals for their resolution.
7. The CxA retains the original non-conformance forms until the end of the project.
8. Any required re-testing by any contractor shall not be considered a justified reason for a claim of delay or for a time extension by the prime contractor.

C. Failure Due to Manufacturer Defect. If 10%, or three, whichever is greater, of identical pieces (size alone does not constitute a difference) of equipment fail to perform to the contract Documents (mechanically or substantively) due to manufacturing defect, not allowing it to meet its submitted performance spec, all identical units may be considered unacceptable by the PM.

D. Approval. The CxA notes each satisfactorily demonstrated function on the test form. Formal approval of the functional test is made later after review by the CxA and by the PM, if necessary. The CxA recommends acceptance of each test to the PM using a standard form. The PM gives final approval on each test using the same form, providing a signed copy to the CxA and the contractor.

3.8 OPERATION AND MAINTENANCE MANUALS

A. Standard O&M Manuals
   1. The specific content and format requirements for the standard O&M manuals are detailed in Section 01 78 00. Special requirements for the controls contractor and TAB contractor shall be as specified in Div 23.
   2. CxA Review. Prior to substantial completion, the CxA shall review the O&M manuals, documentation, and final as-built drawings for systems that were commissioned to verify compliance with the Specifications. The CxA will communicate deficiencies in the manuals to the PM, A/E, as requested. Upon a successful review of the corrections, the CxA recommends approval and acceptance of these sections of the O&M manuals to the PM, or A/E. The CxA also reviews each equipment warranty and verifies that all requirements to keep the warranty valid are clearly stated. This work does not supersede the A/E's review of the O&M manuals according to the A/E's contract.

B. Commissioning Final Report
   1. Final Report Details. The final commissioning report shall include an executive summary, LEED commissioning statement sheet, list of participants, and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods. For each piece of commissioned equipment, the report should contain the FIV, OPT, and FPT completed check sheets. The report shall also include all issue logs and commissioning communication.
   2. Other documentation will be retained by the CxA.

3.9 TRAINING OF OWNER PERSONNEL

A. The Contractor/Construction Manager shall be responsible for training coordination and scheduling and ultimately for ensuring that training is completed.

B. The CxA shall be responsible for overseeing and reviewing the content and adequacy of the training of Owner personnel for commissioned equipment and systems.
   1. Each Sub and vendor responsible for training will submit a written training plan to the CxA for review and approval prior to training. All training methods shall include a classroom lecture and an actual operational demonstration of start-up, tear down, and maintenance procedures, as applicable and appropriate. A sample of elements contained in the plan is as follows:
      a. Equipment covered
      b. Intended audience
      c. Location of training
      d. Objectives
      e. Subjects covered
      f. Duration of training on each subject
      g. Instructor name, company, and qualifications
   2. For the primary HVAC equipment, the Controls Contractor shall provide a short discussion of the control of the equipment during the mechanical or electrical training conducted by others.
   3. The CxA develops an overall training plan and coordinates and schedules, with the Contractor/Construction Manager, the overall training for the commissioned systems. The CxA develops criteria for determining that the training was satisfactorily completed, including attending some of the training, etc. The CxA recommends approval of the training to the PM using standard form. The PM also signs the approval form.

END OF SECTION 019100

DOCUMENT 023200

GEOTECHNICAL INVESTIGATIONS

1.1 INVESTIGATION

A. Geotechnical investigations were conducted at the site, the results of which can be found in the report issued by Geotechnical Solutions, project No. 23-257, issued July 24, 2023.

B. A copy of the report is bound into the Project Manual as an Appendix.

1.2 INTERPRETATION

A. The report is provided only for bidder's information and convenience and is not part of the Contract Documents. Owner and Architect do not warrant the accuracy or extent of the report or locations of the test borings.

B. Opinions expressed in the report are those of the Geotechnical Engineer and represent the Geotechnical Engineer’s interpretation of subsoil conditions, tests, and results of analyses that the Geotechnical Engineer has conducted.

C. The report is based upon the assumption that uniform variation exists in soil properties between borings. Interpretation of the report is bidder's responsibility. Owner and Architect will not be responsible for interpretation of report by bidders.

D. Bidders are urged to examine the report and the site.

E. Additional soil borings or other exploratory operations may be made by bidders at no additional cost to Owner, provided such operations are approved by Owner in advance.

F. Refer to Conditions of the Contract for additional information.

END OF DOCUMENT

SECTION 024120

SELECTIVE BUILDING DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Removal, relocation and protection of existing items marked salvage for reuse or salvage for Owner.
2. Removal and disposal of existing items as indicated on the drawings.
3. Removal and disposal of debris.
4. Identification of utilities.
5. Abatement: The Contractor shall abate asbestos-containing materials and abate/remediate lead containing materials under this contract. Refer to Drawings and Specifications prepared by the Environmental Consultant contained in the Appendix of the project manual for scope of work.

B. Related Sections:
1. Division 01 - Administrative, procedural, and temporary work requirements.
2. Section 013516 - Alteration Project Procedures.
3. Appendix: Hazardous material testing reports and abatement specification.

1.2 REFERENCES

A. Secretary of the Interior’s Standards for Rehabilitation. (www.nps.gov/tbs/standards/rehabilitation.htm)

B. Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings. (www.nps.gov/tps/standards.htm)

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Indicate areas for demolition, removal sequence and location of salvageable items, and location and construction of temporary work.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:
1. Follow the Secretary of the Interior's Standards for Rehabilitation and the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings at a minimum.
2. Conform to applicable code for demolition work, safety of structure, and dust control.
3. Obtain required permits from authorities.
4. Notify affected utility companies before starting work and comply with their requirements.
5. Conform to applicable codes when hazardous or contaminated materials are discovered.

B. Pre-Demolition Conference:
1. Convene at site 2 weeks prior to beginning work of this Section.
2. Attendance: Contractor, demolition subcontractor, Architect, and Owner.
3. Conduct conference at Project site.
2. Review and Discuss:
   a. Condition of construction to be demolished.
   b. Structural load limitations of existing structures.
   c. Building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   d. Protection requirements.
   e. Procedures for noise control and dust control.
   f. Procedures for protection of adjacent buildings.

1.5 PROJECT CONDITIONS

A. Minimize interference with streets, walks, public right-of-ways, and adjacent facilities.

B. If hazardous materials are discovered beyond that indicated in the Asbestos Abatement Project Design contained in the appendix of the project manual, notify Owner and Architect and await instructions.

C. If any of the following conditions are encountered, cease work immediately, notify Owner and Architect, and await instructions:
   1. Structure is in danger of movement or collapse.
   2. Materials or conditions encountered differ from those designated in the Contract Documents.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 PREPARATION

A. Erect temporary partitions, barricades, warning devices, and controls.

B. Provide protective coverings, shoring, bracing, and supports for construction designated to remain.

C. Temporarily or permanently disconnect utilities as required.

3.2 DEMOLITION

A. The existing building is historic and precautions must be made to protect existing materials, refer to Sections 013516 for requirements.

B. Remove existing construction to extent indicated and as necessary to join new work to existing. Do not remove more than is necessary to allow for new construction.

C. Do not damage work designated to remain.

D. Minimize noise and spread of dirt and dust.

E. Assign work to trades skilled in procedures involved.

F. Plug ends of disconnected utilities with threaded or welded caps.

G. Protect and support active utilities designated to remain. Post warning signs showing location and type of utility and type of hazard.

H. Store items designated to remain property of Owner where directed by Owner.

I. Remove and dispose of waste materials off site.

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 033300 "Architectural Concrete" for general building applications of specially finished formed concrete.
2. Section 035300 "Concrete Topping" for emery- and iron-aggregate concrete floor toppings.
3. Section 312000 "Earth Moving" for drainage fill under slabs-on-grade.
4. Section 321313 "Concrete Paving" for concrete pavement and walks.
5. Section 321316 "Decorative Concrete Paving" for decorative concrete pavement and walks.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site or via online conferencing platform.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

a. Contractor's superintendent.
b. Independent testing agency responsible for concrete design mixtures.
c. Ready-mix concrete manufacturer.
d. Concrete Subcontractor.

e. Special concrete finish Subcontractor.

2. Review special inspection and testing and inspecting agency procedures for field quality control, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, forms and form removal limitations, vapor-retarder installation, steel reinforcement installation, floor and slab flatness and levelness measurement, and concrete protection.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture prepared in accordance with ACI 301, chapter 3.9. Each proposed mix design shall be accompanied by a complete standard deviation analysis based on at least 30 consecutive strength tests, or by three laboratory trial mixtures with confirmation tests. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the Architect.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, testing agency.

B. Welding certificates.

C. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Fiber reinforcement.
6. Waterstops.
7. Curing compounds.
8. Floor and slab treatments.
9. Bonding agents.
10. Adhesives.
11. Vapor retarders.
12. Semirigid joint filler.
13. Joint-filler strips.
14. Repair materials.

15. Void forms.
16. Soil retainers

D. Material Test Reports: For the following, from a qualified testing agency:

1. Aggregates: Include sieve analysis.

E. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.

F. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

G. Construction Joints: Submit drawings identifying proposed construction joints for other than those indicated on the Contract Drawings.

H. Field quality-control reports.

I. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance. The qualified installer shall employ personnel qualified as ACI-certified Flatwork Technicians and Finishers.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

1.10 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301
2. ACI 117
3. ACI 347R.
4. ACI 318.
5. ACI 302.1R

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.
2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

a. High-density overlay, Class 1 or better.
b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
c. Structural 1, B-B or better; mill oiled and edge sealed.
d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

3. Overlaid Finnish birch plywood.

4. Modular steel forming system such as “Max-a-Form” system by Symons or equal.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

D. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.

E. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
1. Protective board over forms used for slabs-on-voids shall be 1/4" thick hardboard or plywood.

F. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 inch minimum.

G. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

H. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

I. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.

3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 deformed.

B. Plain-Steel Wire: ASTM A 1064/A 1064M, galvanized

C. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

D. Galvanized-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from galvanized-steel wire into flat sheets.

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars, cut true to length with ends square and free of burrs.

B. Zinc Repair Material: ASTM A 780/A 780M.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

2.5 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I, Type II.
2. Fly Ash: ASTM C 618, Class F. Carbon content of fly ash (LOI) shall not exceed 3 percent by volume.
3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
4. Silica Fume: ASTM C 1240, amorphous silica.

C. Normal-Weight Aggregates: ASTM C 33/C 33M,[Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10

years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: **1 inch** nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Lightweight Aggregate: ASTM C 330/C 330M, **1/2-inch** nominal maximum aggregate size.

E. Air-Entraining Admixture: ASTM C 260/C 260M.

F. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

G. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.

H. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

I. Water: ASTM C 94/C 94M and potable.

2.6 WATERSTOPS

A. Flexible Rubber Waterstops: CE CRD-C 513,[with factory-installed metal eyelets,] for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
1. Dimensions: 4 inches by 3/16 inch thick nontapered.

B. Flexible PVC Waterstops: CE CRD-C 572,[with factory-installed metal eyelets,] for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
1. Dimensions: 4 inches by 3/16 inch thick nontapered.

2.7 VAPOR RETARDERS

A. Sheet Vapor Barrier: ASTM E 1745, Class A, except with maximum water-vapor permeance of 0.01 perms per ASTM S 154. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Raven Industries, Inc.
    b. Reef Industries, Inc.
    c. Stego Industries, LLC.

2. Available Products for integrally bonded membrane (to be used for slabs-on-voids):
    a. Florprufe 120 by Grace Construction Products

B. Sheet Vapor Retarder: ASTM E 1745, Class A, except with maximum water-vapor permeance of 0.03 perms per ASTM E 154. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Fortifiber Building Systems Group.
    b. Reef Industries, Inc.
    c. Stego Industries.

C. Bituminous Vapor Retarder: 110-mil-thick, semiflexible, seven-ply sheet membrane consisting of reinforced core and carrier sheet with fortified asphalt layers, protective weathercoating, and removable plastic release liner. Furnish manufacturer's accessories, including bonding asphalt, pointing mastics, and self-adhering joint tape.
1. Water-Vapor Permeance: 0.0011 grains/h x sq. ft. x inches Hg; ASTM E 154.
2. Tensile Strength: 140 lbf/inch; ASTM E 154.
3. Puncture Resistance: 90 lbf; ASTM E 154.

2.8 FLOOR AND SLAB TREATMENTS

A. Slip-Resistive Aluminum Granule Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of not less than 95 percent fused aluminum-oxide granules.

B. Metallic Dry-Shake Floor Hardener: Unpigmented, factory-packaged, dry combination of portland cement, graded metallic aggregate, rust inhibitors, and plasticizing admixture; with metallic aggregate consisting of no less than 65 percent of total aggregate content.

2.9 LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.

2.10 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.Retain "Clear, Waterborne, Membrane-Forming Curing and Sealing Compound" Paragraph below if a clear, nonyellowing, waterborne, membrane-forming curing and sealing compound is required. Although the EPA mandates maximum VOC emissions of 700 g/L for curing and sealing compounds, verify VOC emission limits of authorities having jurisdiction.

G. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.11 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber

B. Joint Sealant: For control joints and construction joints in parking decks.

1. Available products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following, or approved equal:
   a. Eucolastic I & II (gun grade or selg level) by Euclid Chemical
   b. THC 900/901 (Horizontal) or Dymeric 240FC (Vertical) by Tremco, Inc.
2. Provide primers, cleaners and other materials required by the manufacturer for installation.

C. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types I and II, nonload bearing for bonding hardened or freshly mixed concrete to hardened concrete.

E. Reglets: Fabricate reglets of not less than 0.022-inch-thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

F. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

G. Adjustable wedge inserts for anchoring masonry shelf angles to concrete shall be Dayton/Richmond ("F" type) wedge inserts, by Dayton/Richmond Concrete Accessories or equal. Refer to the Contract Drawings for size, and capacity.

H. Non-Shrink Grout: Premixed cementitious compound containing non-metallic aggregate. Grout shall conform to ASTM C1107, Grade B or C when tested at fluid consistency equal to 20 to 30 seconds. Grout shall be bleed free and attain 7,000 psi compressive strength in 28 days at fluid consistency. Available grout manufacturers products are " Euco NS" by the Euclid Chemical Company or "Masterflow 713" by Master Builders.

I. High Flow Grout: Where high fluidity and/or increased placing time is required, use high flow grout. The factory pre-mixed grout shall conform to ASTM C1107, “Standard Specification for Packages Dry, Hydraulic-Cement Grout (Non-Shrink).” In addition, the grout manufacturer shall furnish test data from an independent laboratory indicating that the grout when placed at a fluid consistency shall achieve 95% bearing under a 18” x 36” base plate. Provide “Hi-Flow Grout” by The Euclid Chemical Co. or “Masterflow 928” by Master Builders.

J. Soil Retainers: SureRetainer by Motzblock or approved equal. Size as indicated or as required for void sizes indicated.

2.12 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.13 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials:[Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

D. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.14 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings, Foundation Walls, Slabs-on-Grade: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum W/C Ratio: 0.45
3. Slump Limit: 5 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch
4. Air Content: **6** percent, plus or minus 1.5 percent at point of delivery for **1-inch** nominal maximum aggregate size.

2.15 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.16 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.

2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M).

C. Construct forms tight enough to prevent loss of concrete mortar.

D. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

E. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

F. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

G. Do not chamfer exterior corners and edges of permanently exposed concrete.

H. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for **24** hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 75 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORING AND RESHORING INSTALLATION

A. Comply with ACI 318 (ACI 318M) and ACI 301 (ACI 301M) for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 VAPOR-RETARDER INSTALLATION

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder according to manufacturer's written instructions.

3.6 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Securely fasten steel reinforcement and wire ties against shifting during concrete placement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.

G. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material according to ASTM A 780/A 780M. Use galvanized-steel wire ties to fasten zinc-coated steel reinforcement.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls 20’-0” o.c. max. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: The Soff-Cut Early Entry Dry-Cut Saw shall be used immediately after final finishing and to a depth of 1-1/4". Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 WATERSTOP INSTALLATION

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.9 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 (ACI 301M).

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301 (ACI 301M).
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate. Do not permit vibrators to contact forms.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.10 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

C. Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix 1 part portland cement to 1-1/2 parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix 1 part portland cement and 1 part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.11 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

3.12 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.

2. Minimum Compressive Strength: 4000 psi at 28 days.
3. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
4. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
5. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
6. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.13 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

    a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
    b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.

c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer[**unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project**].

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.14 LIQUID FLOOR TREATMENT APPLICATION

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than seven days' old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.15 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.16 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.17 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs, embedded plates, and deformed bar anchors.
4. Reinforcing steel welding.
5. Verification of use of required design mixture.
6. Continuous inspection of concrete placement, including conveying and depositing, for proper application techniques.
7. Maintenance of specified curing procedures and temperature.
8. Verification of concrete strength before removal of shores and forms from beams and slabs.
9. Formwork for shape, location, and dimensions of the concrete member being formed.
10. Floor and slab flatness and levelness.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for:
   a. Each day's pour of each concrete mixture, but not less than
   b. Once for each 150 cu.yd.
   c. Once for each 5000 sq. ft. of slab or wall surface area.

   d. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below or 80 deg F (27 deg C) and above, and one test for each composite sample.
5. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
6. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
    c. Additional tests at ages other than those specified above can be made by the Contractor, at the Contractor’s expense, to determine early strengths.

8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

E. Measure floor and slab flatness and levelness according to ASTM E 1155 (ASTM E 1155M) within 48 hours of finishing.

3.18 PROTECTION OF LIQUID FLOOR TREATMENTS

A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION 033000

SECTION 033500

CONCRETE FINISHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Finishing existing interior concrete slab at existing Entry Vestibule.
2. Finishing exterior concrete landings, stairs, and ramps.
3. Finishing exterior concrete pathways
4. Floor sealer/hardener.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 033000 - Cast-in-Place Concrete.
3. Section 033536 - Polished Concrete Finishing.
4. Section 040344 - Cleaning of Masonry.
5. Civil Drawings and Specifications.
6. Structural Drawings and Specifications.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Descriptive data for sealer/hardener.

1.3 QUALITY ASSURANCE

A. Mockup:
1. Construct mockup of each finish on previously placed concrete.
2. Size: 4 x 4 feet.
3. Show steel trowel finish and sealer. Final selection of sheen will be made from mockup.
4. Locate where directed.
5. Approved mockup may remain as part of the Work.

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete Materials: Refer to Structural Drawings and Specifications.

B. Floor Sealer:
1. Type: Colorless, penetrating sealer produced specifically for sealing and hardening concrete surfaces.
2. Product: Lapidolith by Degussa Building Systems or approved substitute.

2.2 CONCRETE MIX

A. Mix concrete in accordance with Structural Drawings and Specifications.

PART 3 EXECUTION

3.1 FINISHING INTERIOR FLOOR SURFACES

A. Place, finish, and cure concrete under provisions of Structural Drawings and Specifications.

B. Place concrete continuously between predetermined expansion and control joints. Do not interrupt successive placement such that cold joints occur.

C. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.

D. Steel trowel and fine broom finish surfaces to receive tile.

E. Polish exposed concrete where scheduled per Section 033536.

F. Seal all interior concrete floor surfaces that do not receive polished finish.

G. Steel trowel surfaces to be exposed where scheduled. Apply sealer/hardener in accordance with manufacturer's instructions. Burnish to smooth, even finish.

H. Tolerances:
   1. Maximum variation of surface flatness: 1/4 inch in 10 feet.
   2. Correct defects by grinding or removal and replacement of defective work. Re-measure corrected areas by same process.

I. Maintain concrete with minimal moisture loss at relatively constant temperature for a period necessary for hydration of cement and concrete hardening.

3.2 FINISHING EXISTING INTERIOR FLOOR SURFACES

A. Clean existing concrete per Section 040344.

B. Finish existing interior concrete porch with muriatic acid wash.

C. Seal concrete.

3.3 EXTERIOR SURFACES

A. Finish concrete surfaces in accordance with ACI 301.

B. Steel trowel and sandblast surfaces where scheduled:
   1. Finish exterior slabs, landings, stairs, and ramps with heavy sand blast finish.
   2. Finish exterior concrete pathways with light sandblast finish.

C. Sand Blast Finish:
   1. Blasting Operations and Requirements:
      a. Apply sandblasted finish to exposed concrete surfaces where indicated.
      b. Perform sand blasting at least 72 hours after placement of concrete. Coordinate with formwork construction, concrete placement schedule, and formwork removal to ensure that surfaces to be blast finished are blasted at the same age for uniform results.
      c. Determine type of nozzle, nozzle pressure, and blasting techniques required to match the Engineer's control samples.
      d. Abrasive blast corners and edge of patterns carefully, using back-up boards, to maintain uniform corner or edge line.
   2. Depths of Cut: Use an abrasive grit of proper type and gradation to expose aggregate and surrounding matrix surface to match the Engineer's control samples as follows:
      a. Brush Sand Blast Finish: Remove cement matrix to expose face of fine aggregate; no reveal.
      b. Light Sand Blast Finish: Expose fine aggregate with occasional exposure of coarse aggregate; maximum 1/16-inch reveal.

c. Medium Sand Blast Finish: Generally expose coarse aggregate; 3/16-inch to 1/4inch reveal.

3. Surface Continuity: Perform sand blast finishing in as continuous an operation as possible, utilizing the same work crew to maintain continuity of finish on each surface or area of work. Maintain patterns of variances in depths of cuts as indicated.
4. Construction Joints: Use technique acceptable to the Engineer to achieve uniform treatment of construction joints.
5. Protection and Repair:
   a. Protect adjacent materials and finishes from dust, dirt, and other surface or physical damage during abrasive blast finishing operations. Provide protection as required and remove from site at completion of the work.
   b. Repair or replace other work damaged by finishing operations.
6. Clean-up: Maintain control of concrete chips, dust, and debris in each area of the work. Clean up and remove such material at the completion of each day of operation. Prevent migration of airborne materials by use of tarpaulins, wind breaks, and similar containing devices.

D. Tolerances:
1. Maximum variation of surface flatness: 1/4 inch in 10 feet.
2. Correct defects by grinding or removal and replacement of defective work. Re-measure corrected areas by same process.

END OF SECTION

SECTION 033543

POLISHED CONCRETE FINISHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Polished concrete finishing.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 033500 - Concrete Finishing.
   3. Structural Drawings and Specifications.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Manufacturer’s descriptive data and application instructions for concrete treatment products.

B. Quality Control Submittals:
   1. Applicator qualifications, including list of previous projects and certification issued by flooring system manufacturer.

1.3 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Minimum 2 years documented experience in work of this Section.
   2. Certified by concrete treatment manufacturer.
   3. Certified by Concrete Polishing Council of ASCC.

B. Concrete:
   1. Mix Design: Free from admixtures and additives not specifically approved by concrete surface treatment manufacturer.
   2. Curing compound acceptable to concrete treatment manufacturer.

C. Mockup:
   1. Size: Minimum 25 square feet.
   2. Show polished finish.
   3. Locate where directed.
   4. Approved mockup may remain as part of the Work.

D. Pre-Installation Conference:
   1. Convene 2 weeks prior to beginning work of this section.
   2. Attendance: Owner, Architect, Contractor, and Subcontractor.
   3. Review and discuss:
      a. Staging and sequencing.
      b. Protection of completed work.

E. Coefficient of Friction: Minimum 0.43, tested to ANSI/NFSI B101.3 after polishing.

1.4 PROJECT CONDITIONS

A. Protect concrete surfaces scheduled to receive polished finish prior to finishing; prevent damage and staining:
   1. Prohibit vehicular traffic on surfaces to be polished.
   2. Prohibit pipe cutting operations on surfaces to be polished.
   3. Prohibit storage on surfaces to be polished for minimum 28 days after concrete placement.

4. Prohibit ferrous metals storage on surfaces to be polished.
5. Prevent liquid drippings from equipment on surfaces to be polished.
6. Prevent acids and acidic detergents from contacting surfaces to be polished.
7. Prevent painting over surfaces to be polished.

B. Apply concrete treatment when ambient and surface temperatures are between 35 and 90 degrees F.

C. Close areas to traffic during finishing and for minimum time period after finishing as recommended by concrete treatment manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Advanced Floor Products. (www.retroplatesystem.com)
2. Ameripolish. (www.ameripolish.com)
3. Sika. (www.sika.com)
4. Floor Seal Technology, Inc. (www.floorseal.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Dye: Translucent, water based, color to be selected by Architect from mockups.

B. Densifier: Odorless, non-hazardous, silicate that penetrates concrete to react with free lime and calcium hydroxide to produce permanent chemical reaction that hardens and densifies concrete surface.

C. Sealer: Non-film forming, stain resistant, food resistant, chemical stain resistant, impregnating sealant designed for use on concrete surfaces previously dyed and densified.

2.3 ACCESSORIES

A. Cleaning Products: Non-corrosive, neutral pH, of type recommended by concrete treatment manufacturer.

B. Patching Compound: 40 percent Portland cement, 45 percent limestone, and 15 percent vinyl acetate copolymer, mixed with dust salvaged from grinding process to form paste.

C. Grout: Clear modified silicate sealant, free from latexes, mixed with dust salvaged from grinding process to form paste that reacts with calcium hydroxide in concrete.

2.4 EQUIPMENT

A. Field Grinding and Polishing Equipment:
1. Variable speed, multiple head, counter-rotating, walk-behind machine with minimum 600 pounds of down pressure on grinding or diamond polishing pads.
2. If dry grinding, honing, or polishing, use dust extraction equipment with flow rate suitable for dust generated, with squeegee attachments.

B. Edge Grinding and Polishing Equipment: Hand-held or walk-behind machines producing same results as field grinding and polishing equipment without noticeable differences.

C. Burnishing Equipment: High speed walk-behind or ride-on machines capable of generating 1000 to 2000 revolutions per minute and with minimum head pressure of 20 pounds.

D. Metal Bonded Pads: Grinding pads with embedded industrial grade diamonds of varying grits.

E. Resin Bonded Pads: Polishing pads with embedded industrial grade diamonds of varying grits.

F. Burnishing Pads: Maintenance pads for use with high speed burnishing equipment.

PART 3 EXECUTION

3.1 PREPARATION

A. Testing Concrete Floors:
   1. Alkalinity:
      a. Test method: Measure pH according to ASTM F710.
      b. Acceptable results: pH between 8 and 10.
   2. Moisture Vapor Transmission:
      a. Test method: Perform anhydrous calcium chloride test to ASTM F1869.
      b. Acceptable results: Maximum 5 pounds per 1000 square feet in 24 hours.
   3. Relative humidity:
      a. Test method: Perform relative humidity test using in situ probes to ASTM F2170.
      b. Acceptable results: Maximum 75 percent.

3.2 POLISHING

A. Initial Grinding:
   1. Use grinding equipment with metal bonded grinding pads.
   2. Begin grinding in one direction using sufficient size grit pad.
   3. Make sequential passes with each pass perpendicular to previous pass using finer grit pad with each pass, up to 150 grit.
   4. Achieve maximum refinement with each pass before proceeding to finer grit pads.
   5. Vacuum floor using squeegee vacuum attachment after each pass.
   6. Continue grinding until aggregate exposure matches approved mockup.

B. Treating Surface Imperfections:
   1. Mix patching compound and grout material with dust created by grinding operations to match color of adjacent concrete surface.
   2. Fill surface imperfections. Work compound and treatment until color differences between concrete surface and filled surface imperfections are not noticeable when viewed from 10 feet away under lighting conditions that will be present after construction.
   3. Honing:
      a. Use grinding equipment with resin bonded grinding pads.
      b. Grind concrete in one direction starting with 50 grit pad; make as many sequential passes as required to remove scratches, each pass perpendicular to previous pass, up to 200 grit pad reaching maximum refinement with each pass before proceeding to finer grit pads.
      c. Auto scrub or vacuum floor using squeegee vacuum attachment after each pass.

C. Dye Application: Apply dye per manufacturer’s instructions and as required to match mockup.

D. Liquid Densifier Application: Apply undiluted solution to point of rejection, remove excess liquid, and allow to cure according to manufacturers instructions.

E. Grout Grinding:
   1. Use grinding equipment and appropriate grit grinding pads.
   2. While applying fresh grout material prior to surface, grind concrete in direction perpendicular to initial grinding to remove scratches.
   3. Vacuum floor using squeegee vacuum attachment after each pass.

F. Honing:
   1. Use grinding equipment with resin bonded grinding pads.
   2. Grind concrete in one direction starting with 50 grit pad; make as many sequential passes as required to remove scratches, each pass perpendicular to previous pass, up to 400 grit pad reaching maximum refinement with each pass before proceeding to finer grit pads.

3. Auto scrub or vacuum floor using squeegee vacuum attachment after each pass.

G. Polishing:
1. Use polishing equipment with resin bonded polishing and burnishing pads.
2. Begin polishing in one direction starting with 800 grit pad.
3. Make sequential passes with each pass perpendicular to previous pass using finer grit pad with each pass.
4. Achieve maximum refinement with each pass before proceeding to finer grit pads.
5. Auto scrub or vacuum floor using squeegee vacuum attachment after each pass.
6. Continue polishing until gloss appearance, as measured according to ASTM E430, matches approved mockup.

H. Final Polished Concrete Floor Finish: Class B - Fine Aggregate Finish: Remove maximum 1/16 inch of concrete surface by grinding and polishing resulting in majority of exposure displaying 85 – 95 % Fine Aggregate and 5 – 15 % Blend of Cement Fines and Coarse Aggregate; salt and pepper finish.

I. Final Concrete Floor Gloss: Level 2 - Satin (Honed) Gloss Appearance:
1. Procedure: Minimum five step process with full refinement of each diamond pad up to 400 grit resin bonded pad with one application of densifier.
2. Gloss reading: Distinctness-of-Image (DOI) Gloss Image Clarity Value 10 – 39 percent tested to ASTM D5767 and Haze Index less than 10 tested to ASTM D4039.

3.3 SEALING

A. Apply sealer to manufacturer’s recommend coverage.

B. Remove excessive sealer.

C. Using burnishing equipment and finest grit burnishing pads, burnish to uniform sheen matching approved mockup.

3.4 FIELD QUALITY CONTROL

A. Measure slip resistance using BOT-3000 slip-tester; ensure compliance with specified slip resistance rating.

3.5 PROTECTION

A. Close areas to traffic until concrete treatment has cured.

B. Protect completed work with nonstaining sheet coverings.

END OF SECTION

SECTION 040341

RESTORATION MORTAR

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Analysis of existing mortar.
2. Mortar materials.
3. Mortar mixes.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 040342 - Masonry Restoration.

1.2 SUBMITTALS

A. Submittals for Review:
1. Samples: Samples: 1/2 x 1/2 x 3 inch samples of proposed mortar. Two (2) samples for each color required. Samples will be compared to original unweathered samples to determine acceptability of match.
2. Submit proposed means and methods for review.

B. Quality Control Submittals:
1. Test Reports: Existing mortar analysis.

1.3 QUALITY ASSURANCE

A. Restorer Qualifications:
1. Minimum 3 years documented experience in work of this Section.
2. Successful completion of at least 3 projects of similar scope and complexity within past 5 years.

B. Preconstruction Testing Laboratory Services:
1. Remove minimum of 4 unweathered, undisturbed, full depth mortar samples from each original masonry system.
a. Select samples from different locations representative of various existing conditions.
b. Size: 6 inches wide, full depth.
c. Include all types of mortar present in each location.
2. Retain one sample from each original mortar system for later comparison with proposed mortar mixes.
3. Test mortar in accordance with ASTM C1324; report the following:
a. Volumetric proportions of aggregate, cement, lime, and other ingredients.
b. Type, composition, color, and gradation of aggregate.
c. Presence of pigments or additives.
4. Based on test results, provide recommended mortar mix for each masonry system in accordance with ASTM C270, compatible with physical and mechanical properties of original masonry materials.

C. Mockup:
1. Size: 4 feet high x 4 feet wide.
2. Show: Mortar joint profile and color, based on approved sample.
3. Locate where directed.
4. Approved mockup may remain as part of the Work.

1.4 DELIVERY, STORAGE AND HANDLING

A. Protect materials from moisture absorption and damage; reject damaged containers.

B. Store sand to prevent inclusion of foreign matter.

1.5 PROJECT CONDITIONS

A. Do not apply materials during inclement or freezing weather, or if such conditions are anticipated within material curing period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Premixed Mortar:
1. Cathedral Stone Products. (www.cathedralstone.com)
2. U.S. Heritage Group, Inc. (www.usheritage.com)

B. Acceptable Manufacturers - Colorants:
1. Davis Colors. (www.daviscolors.com)
2. Solomon Colors. (www.solomoncolors.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Portland Cement:
1. Type: ASTM C150, Type I, containing maximum 0.60 percent alkali (sodium oxide) and maximum 0.15 percent water soluble alkali by weight.
2. Color: Use gray, nonstaining white, or combination thereof as required to match existing mortar.

B. Lime: ASTM C207, Type S, hydrated masonry type.

C. Sand: ASTM C144; color, size, and type to match existing mortar.

D. Water: Potable, clean, and free from deleterious amounts of acids, alkalis, and organic matter.

E. Colorant: Chemically pure mineral oxides, alkali proof and light fast.

F. Other Components: As determined by existing mortar analysis to produce visual and performance characteristics to match existing mortar.

G. Air Entraining, Antifreeze, Bonding, and Other Additives: Not permitted.

H. Premixed Mortar:
1. Premixed restoration mortar may be used in lieu of site mixed restoration mortar if requirements of Contract Document are met.
2. Provide custom engineered factory-blended pointing and bedding mortar designed to match the performance and visual characteristics of the original mortar.

2.3 MIXES

A. Proportions: As determined by existing mortar analysis.

B. Ultimate Compressive Strength: Not to exceed that of existing mortar or masonry.

C. Portland cement may be substituted for up to 20 percent of lime in mix.

2.4 MIXING

A. Thoroughly mix ingredients in quantities needed for immediate use.

B. Mix dry ingredients mechanically until uniformly distributed; add water to achieve workable consistency.

C. Discard lumpy, caked, frozen, and hardened mixes, and mixes not used within 2 hours after initial mixing.

D. Use mortar within 2-1/2 hours after initial mixing at ambient temperatures below 80 degrees F and within 1-1/2 hours after initial mixing at ambient temperatures over 80 degrees F.

E. Do not add antifreeze compounds to lower freezing temperature of mortar.

F. Provide consistent color for exposed mortar.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Follow requirements specified in referenced sections.

END OF SECTION

SECTION 040342

MASONRY RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Masonry repair and reconstruction at new or modified masonry openings.
2. Infilling existing masonry openings.
3. Selective repointing of mortar joints.
4. Repairs to and replacement of cement parging at window sills, door openings, and crawlspace vent sills.
5. Limited exterior repairs to stone masonry at removal elements:
   a. Stone Dutchman repair.
   b. Patching holes or minor damage in stone masonry at removed conduit, equipment, signage, and downspouts.
   c. Removal of fasteners including embedded anchors

B. Related Sections:

1. Division 1: Administrative, procedural, and temporary work requirements.
2. Section 03 30 00 – Cast-In-Place Concrete for concrete patching and repairs
3. Section 04 03 44 – Cleaning of Masonry
4. Section 04 03 41 – Restoration Mortar
5. Allowances
6. Unit Prices

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. C 97 - Absorption and Bulk Specific Gravity of Dimension Stone.
2. C 170 - Compressive Strength of Natural Building Stone.
3. C 295 - Petrographic Examination of Aggregates for Concrete.
4. ASTM C91-01: Standard ASTM C144-03: Standard Specification for Aggregate for Masonry.
5. ASTM C150-02ae1: Standard Specification for Portland Cement.
6. ASTM C207-97: Standard Specification for Hydrated Lime for Masonry Purposes.
7. ASTM C270-03: Standard Specification for Mortar for Unit Masonry.

B. IMIAC (International Masonry Industry All-Weather Council) - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

1.3 DEFINITIONS AND GOALS

A. Defective/Deteriorated Joint: Joints in which mortar is missing, loose, eroded, cracked, powdered, unsound, or weathered more than 1/8 inch from original plane.

B. Dutchman: The removal of areas of unsound stone from a single unit and the installation of a piece of the same stone, cut, carved and tooled to match.

C. Patching: The goal of patching is to remove areas of deteriorated stone from individual units and recreate missing lines, forms and shapes with a compatible material that has the color and texture of the original stone.

D. Re-pointing: The process of raking out (removing) mortar and replacing it with new mortar.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each product indicated including recommendations for their application and use. Include test reports and certifications substantiating that products comply with specified requirements. Submit Material Safety Data Sheets for each product proposed for use.

B. Samples: Submit, for verification purposes, prior to mock-up erection, three samples each of the following:

1. Each type of cementitious patching material, applied to a 12 inch by 12 inch plywood panel,
2. Samples of each stone type showing full color and texture range.
3. Remove two samples of existing mortar from different unweathered locations; submit for comparison to new mortar samples..

C. Qualification Statement: Restorer qualifications, including previous projects.

1.5 QUALITY ASSURANCE

A. Restoration Specialist:

1. Work of this Section must be performed by an experienced stone restoration firm that has completed work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance, having not less than 5 years comparable experience.
2. Field Supervision: Restoration specialist firm shall maintain an experienced full-time supervisor on the Project site during times that masonry restoration work is in progress.

B. Field-Constructed Mock-ups: Contractor shall prepare the following sample panels on the building where directed by the Architect. Obtain Architect's acceptance of visual qualities before proceeding with the work. Retain accepted panels in undisturbed condition as a standard for judging completed work.

1. Stone patching demonstrating removal of damaged limestone and installation and curing of specified patching mortar.
2. Re-pointing: Prepare two separate samples in-situ of two repair areas for each type of re-pointing required. One for demonstrating methods and quality of workmanship expected in removal of mortar from joints and the other for demonstrating visual qualities of pointing mortar and workmanship expected in pointing mortar joints.

1.6 PROJECT CONDITIONS

A. Environmental Requirements:

1. Hot weather requirements: If ambient temperature is over 95 degrees F or relative humidity is less than 50 percent, protect from direct sun and wind exposure for minimum 48 hours after installation.

B. Cold weather requirements:

1. In accordance with IMIAC requirements.
2. Do not use frozen materials or build upon frozen work.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver masonry restoration materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturer's.

B. Protect masonry restoration materials during storage and construction from wetting by rain, snow ground water, and from staining or intermixture with earth or other types of materials.

C. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Patching Compound, Bonding Agents, and Epoxies:

1. Cathedral Stone Products.
2. Edison Coatings, Inc.

2.2 REPLACEMENT STONE AND STONE FOR DUTCHMAN REPAIR

A. General: Limestone Building Stone Standard: ASTM C568, Classification: III (High-Density).

B. Description: Provide natural Texas limestone from a single quarry with low clay content and with minimum average compressive strength parallel when load is applied to bedding plane: 2500 psi when tested in accordance with ASTM C110.

1. Type: Cordova Cream Limestone to match original in color and texture, as distributed by Texas Quarries, Cedar Park, TX, 512-258-1474.
2. Type: Texas Nicotine Limestone, sawn and chopped, random polygonal/ mosaic pattern. Final stone type to be determined with sample matching.

C. Grout for Dutchman Seams: Jahn M-40 Crack and Void Injection Grout, as manufactured by Cathedral Stone Products, Inc., Hanover MD, (800) 684-0901.

D. Anchor Setting Mortar: Single component, cementitious, non-shrink mortar for securing anchors in new or existing masonry structures.

1. Product: Jahn M-80 Anchor Setting Mortar, as manufactured by Cathedral Stone Products Inc., Hanover, MD, (800) 684-0901.

2.3 STONE PATCHING MATERIALS

A. Cementitious Patching Materials: Premixed cementitious patching material formulated to match the color and texture of the existing masonry. One-component, non-sag, mineral-based mortar, containing no synthetic polymers or additives for repair and reconstruction of natural stone surfaces. The mortar must be vapor permeable, frost and salt resistant, shrink resistant, and be physically compatible with the substrate, including, but not limited to porosity, tensile and compressive strength.

1. Product: Jahn M70 Stone Patching Mortar, as manufactured by Cathedral Stone Products, Inc., Jessup, Maryland, or approved substitute.
   a. Provide custom color as required to match the existing limestone.

B. Stain for patching mortar (if necessary):

1. General: Inorganic, breathable, color fast, mineral stain compatible with cementitious patching material specified.
   a. Silin Lasur Mineral Stain for Masonry, as manufactured by Cathedral Stone Products, Inc., Hanover, MD, (800) 684-0901.
   b. Epochrome S water-borne chemical toners for tinting unmatched mortar repairs, as manufactured by Cathedral Stone Products, Inc., Hanover, MD, (800) 684-0901.

2.4 CEMENT PARGING MATERIALS

A. Portland cement: ASTM C 150, Type I or II white or gray cement, containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

B. Sand: Clean, sharp sand, ASTM C 144, free of excessive organic or deleterious matter.

C. Water: Clean, free of oils, acids, alkalis, salts and organic matter.

D. Mix shall be two-parts Portland Cement to three-parts sand.

2.5 MASONRY ACCESSORIES

A. Anchors:

1. Stainless Steel Threaded Rod, ASTM A 666, AISI Type 304, minimum 3/8-inch diameter.
2. Stainless Steel L-Anchor with Two Holes, ASTM A 666, AISI Type 304, minimum 1/8-inch thick, no. 341, as manufactured by Heckmann Building Products Inc., 800-621-4140.
3. Stainless Steel Spring Loaded Dowel, ASTM A 666, AISI Type 304, minimum 3/8-inch diameter, no. 355, as manufactured by Heckmann Building Products Inc., 800-621-4140.
4. Stainless Steel Screw on Split Bend Anchor, 666, AISI Type 304, minimum 1/8-inch thick, no. 274, as manufactured by Heckmann Building Products Inc., 800-621-4140.

B. Anchor Setting Mortar: Single component, cementitious, non-shrink mortar for securing anchors in new or existing masonry structures.

1. Product: Jahn M80 Anchor Setting Mortar, as manufactures by Cathedral Stone Products, Inc., Jessup, Maryland.

C. Retrofit Veneer Anchors: Helical retrofit anchor, 22-GA minimum Type 304 stainless steel.

D. Wall Ties: Corrugated stainless steel, 16 gauge by 1” wide, as manufactured by Hohmann & Barnard or approved substitute.

E. Bonding Agent: Two component modified epoxy resin.

F. Adhesive Anchoring System for anchoring through masonry construction with the quality of stone and mortar is inconsistent, use HIT HY20.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection

1. Prior to work of this Section, carefully inspect the work of all other trades and verify that all such work is completed to the point where this installation may properly commence.
2. Verify that masonry may be completed in accordance with all pertinent codes and regulations, the referenced standards, and the original design.
3. Do not start work until mock-ups are accepted by the Architect.

B. In the event of discrepancy, immediately notify the Architect. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 STONE REMOVAL AND REPLACEMENT

A. At locations indicated, remove veneer stone. Carefully demolish or remove entire unit from joint to joint, without damaging surrounding stone, in a manner that permits replacement with full-size unit.

B. Support and protect remaining stonework that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose masonry units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

D. Remove in an undamaged condition as many whole stone units as possible.

1. Remove mortar, loose particles, and soil from stone by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to stone with utility knife and cleaning with solvents.
3. Store stone for reuse, as indicated.

E. Clean stone surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.

F. Replace removed stone with new stone matching existing stone, including size. Butter vertical joints for full width before setting and set units in full bed of mortar, unless otherwise indicated. Replace existing anchors with new anchors of size and type indicated.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing stonework.
2. Rake out mortar used for laying stone before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing stone, and at same time as repointing of surrounding area where deteriorated.

G. Contractor is responsible for repair or replacement of stone that is damaged during removal where the stone is indicated to be salvaged for re-use.

3.3 STONE PATCHING

A. Surface Preparation for Installation of Repair Mortar:

1. Using methods approved via submittals, remove loose mortar, patches, and damaged unsound masonry to sound and solid substrate. Remove sealant residue.
2. Anchors that are free of rust, solidly embedded, and do not project beyond the surface of the masonry unit may remain. All others should be removed.
3. Cut the edges of the repair area to provide a minimum depth of ¼". The edges of the repair should be square cut. Do not allow any feathered edged in the repair area.

B. Mixing, Application, and Curing of Repair Mortar:

1. Mixing:
   a. General: Mix patching mortar in accordance with manufacturer's printed instructions.
   b. Do not mix more material than can be used within 30 minutes. Discard any material that has been mixed for 30 minutes or more.
   c. Mixing ratios:
      (1) Limestone: Jahn M70; Approximately 5 parts dry material to 1 part water.
   d. Add water to dry ingredients and mix well. Adjust amount of water according to the weather and the porosity of the substrate.
2. Application:
   a. Apply the mortar mix using a trowel in a series of 1-inch lifts allowing mortar to dry approximately 10-20 minutes between lifts. If applied in layers, scrape off any cement skin that has formed and continue application. Dampen the surface before applying the next layer. Work mortar firmly into the surface of the masonry, including the corners, and under and around all mechanical anchors.
   b. Build up patching material so that it is slightly above adjacent masonry surface. Allow 15 to 30 minutes to set slightly (Wait time will vary with temperature and humidity-longer in cool weather), then scrape off excess material using a brush until the desired profile is

reached. Do not press down or “float” the repair. Where patches occur at panel edges corners, form mortar to match the profile of the surrounding masonry. In all cases, finish so that it is as indistinguishable as possible from the adjacent masonry.

3. Curing:
   a. Lightly mist patch with water to wet the entire surface of the finished patch approximately 30 minutes to 1 hour after completion on hot sunny days and approximately 2 hours or longer, on cool or cloudy days. Time will vary with temperature and humidity. Mist several times a day on the three days following the repair installation.

C. Finishing:

1. Upon initial cure, and in accordance with the manufacturer’s printed instructions, patch shall be finished to match the existing adjacent masonry.
2. Clean any mortar residue form area surrounding the patch by sponging as many times as necessary with clean water. This should be done before patching material sets.
3. After the repair has been cured and allowed to dry for at least one week, if the appearance of a repair does not meet the specifications of the job, the surface color of the repair is to be enhanced by applying a vapor permeable, mineral based pigmented stain.
   a. Remove dust and loose particulate matter from surfaces to receive coatings immediately prior to coating application.
   b. Protect all non-masonry surfaces such as glass, wood, metal, etc….
   c. Cracks and spalls must be repaired and cured prior to coating application.
   d. Apply specified coating to vertical surfaces only.
   e. Substrate must be completely dry before coating. Do not work when precipitation is expected within 48 hours of installation. The coating needs adequate time to bond to the substrate; Moisture disrupts the curing process.

D. Mixing Coating System:

1. It is recommended that proper eye protection be worn during mixing in case of accidental splashing. Mix component A (colored paint) with component B (Silin AZ Fixative) in the desired proportions (see chart below) before installation.
2. Mixing ratios will depend on the desired coating effect and the substrate surface.
   a. Transparent finish:
      (1) Parts of colored coating: 1
      (2) Parts of Silin AZ Fixative: 3-100+
   b. Refer to manufacturers data sheets for more detail on transparent finishes.

E. Adjustment and Cleaning:

1. Remove and replace all unsatisfactory patches, at no additional cost to the Owner. Conditions deemed unacceptable include, but are not limited to:
   a. Separation or shrinkage at the edge of a patch,
   b. Separation of the patch from the substrate,
   c. Surface crazing or cracking,
   d. “Burned” surfaces (from overly quick drying),
   e. Discoloration, or mis-matched color (compared to existing adjacent stone), and
   f. Mis-matched surface quality and finish (compared to existing adjacent stone).
2. Repair adjacent surfaces or other elements that have been marred or otherwise damaged during the work of this Section.
3. Remove uncured mortar from the perimeter of the repair before it dries using clean water and a rubber sponge. Repeat several times with clean water to prevent a halo effect. Cured mortar may only be removed chemically or mechanically.
   a. Should removal of cured mortar be necessary, Contractor shall submit proposed method of removal and obtain Architect’s approval prior to removal.

4. Once masonry patching work is complete, remove all unused materials, containers and equipment from the site, and dispose of all related debris.

3.4 STONE DUTCHMAN INSTALLATION

A. Inspection: Prior to cutting out for the installation of new stone dutchman, the Contractor shall verify all locations and dimensions of stone to be removed by inspecting those areas indicated on the Contract Documents as requiring dutchmen. The Contractor shall submit shop drawings indicating the location, sizes, and anchoring detail of each dutchman unit. Obtain Architect's approval for locations, sizes and anchor details prior to cutting out stone. The Contractor shall notify the Architect in writing if conditions in the field differ from those indicated on the Contract Documents or stone shop drawings.

B. Carefully cut out by hand, for installation of dutchman stone scheduled for removal. Cutting out of stone shall be in the locations indicated on the approved shop drawings. Cut out without damaging surrounding masonry to remain. Where anchors are encounter at cut outs for dutchman, provide new anchor in same side of existing stone. Where rectangular dutchman are specified, cut sides of stone reveals flat with 90 degree corners. Where dutchman is specified to fit area of missing stone cut sides flat and angled to tightly and consistently fit with angle of missing stone.

C. Remove mortar, loose particles, old patches and debris from existing surrounding masonry in preparation for replacement. Clean with stiff brushes or by flushing with water.

D. Stone Installation:

1. General: Dutchmen shall be installed level, plumb, square and true within the allowable tolerances. The units are to be positioned in such a manner that no dimensional error is allowed to occur. Horizontal and vertical seams shall be correctly aligned and of uniform width. Complete joint tooling after stone dutchman units have been installed.
2. Set dutchman with specified adhesive in the position to which it is assigned in accordance with the approved setting drawings.
3. Drill new holes into the new stone and into the existing masonry. The drilled holes shall be cleaned with stiff nylon or natural bristle brushes or by flushing with water.
4. The stainless steel threaded rod shall be cleaned and degreased as necessary to remove all contaminants, which may hinder the adhesive bond.
5. All surfaces that are in contact with adhesive must be free of dirt, dust, paint, glaze, grease, oil, rust, or other contaminant. Surface may be dry or damp (no free water). The adhesive shall come in contact with clean sound surfaces.
6. Grout face of dutchman seams with specified grout colored to match the adjacent stone.

3.5 ROUTING AND REPOINTING MORTAR JOINTS

A. Rake out and repoint mortar joints to the following extent:

1. All joints in areas indicated.
2. Joints where mortar is missing or where they contain holes.
3. Cracked joints, where mortar has separated from unit masonry.
4. Joints where they are worn back ¼-inch or more from surface of unit masonry.
5. Joints where they sound hollow when tapped by metal object.
6. Joints where they are deteriorated to point that mortar can be easily removed by hand.
7. Joints, other than those indicated as sealant-filled joints, where they have been filled with substances other than mortar

B. Do not rake out and repoint joints where not required.

C. Rake out joints as follows:

1. Remove mortar from joints to depth equal to 2-1/2 times joint width, but not less than 1/2 inch depth at which sound mortar is reached.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to exposed masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.
    a. Cut out mortar by hand with chisel and mallet. Do not use power-operated grinders without Architect's written approval based on submission by Contractor of a satisfactory quality-control program and demonstrated ability of operators to use tools without damaging masonry units. Quality-control program shall include provisions for supervising performance and preventing damage due to worker fatigue.
    b. Cut out center of mortar joints using angle grinders with diamond-impregnated metal blades. Do not use grinder on vertical head joints. Remove remaining mortar by hand with chisel and mallet. Strictly adhere to written quality-control program. Quality-control program shall include provisions for demonstrating ability of operators to use tools without damaging masonry, supervising performance, and preventing damage due to worker fatigue.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Allow for one mortar colors at limestone material.

F. Point joints as follows:

1. Rinse masonry-joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen masonry-joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry has worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar over edges onto exposed masonry surfaces or to featheredge mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints. Remove excess mortar from edge of joint by brushing.
    a. Original stone mortar joints: "V" profile.
    b. Below grade masonry or masonry not exposed to view: Flush joint.

G. Cure mortar by maintaining in thoroughly damp condition for at least 72 hours, including weekends and holidays.

1. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
2. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
3. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.6 ADJUST AND CLEAN

A. After mortar has hardened but before it has fully cured, thoroughly clean masonry surfaces of exc mortar using stiff nylon or natural bristle brushes and clean water; do not use metal brushes or scrapers.

B. Any masonry work that does not result in a consistent appearance with adjacent stonework shall be considered defective and shall be corrected by the Contractor at no additional cost to the Owner.

3.7 FIELD QUALITY CONTROL

A. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of scaffolding, as needed, to observe progress and quality of portion of the Work completed.

B. Notify Architect's Project representatives two weeks in advance of times when lift devices and scaffolding are scheduled to be relocated. Do not relocate lift devices and scaffolding until Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location and only when the completed work is accepted in writing by the Architect.

END OF SECTION

SECTION 040344

CLEANING OF MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Chemical cleaning of existing exterior stone masonry at the following locations:
   a. All limestone
   b. East concrete porch

B. Related Sections:

1. Division 1: Administrative, procedural, and temporary work requirements.
2. Section 04 03 41 – Restoration Mortar.
3. Section 04 03 42 - Masonry Restoration.
4. Section 07 92 00 – Joint Sealants.

1.2 DESCRIPTION OF WORK

A. Masonry cleaning shall be completed prior to masonry restoration and sealant work. After the masonry has been cleaned, it shall be protected from dirt and staining for the remainder of the project.

B. The goal of the work of this Section is to remove all stains, atmospheric dirt, biological staining, and other residue from all exposed masonry surfaces of the building scheduled for cleaning and to give the facade a clean, uniform appearance without blotches, streaks, runs or other kinds of spotty appearance. Any work that does not achieve this goal will be considered unsuccessful and will have to be re-cleaned until this goal is achieved, at no additional cost to the Owner.

1.3 REFERENCES

A. Preservation Brief 1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings, Robert C. Mack, FAIA, and Anne E. Grimmer. National Park Service, revised November, 2000.

1.4 DEFINITIONS

A. Pressure Spray:

1. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
2. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.
3. High-Pressure Spray: 800 to 1200 psi; 4 to 6 gpm.

B. Restoration: Process of bringing material back to its original appearance.

C. Etch: Action or effect of an acid-based compound on a surface.

1.5 SUBMITTALS

A. Product Data: Include product description, application procedures, precautions, and limitations in use of products.

B. Environmental Regulations:

1. Contractor is responsible for proper disposal of all waste and cleaning materials.

2. Submit, for Owner review, a letter of acceptance from local regulatory entities (such as Storm Sanitary Sewer Departments) indicating that procedure for disposal of cleaning effluent is compliant with relevant rules and regulations.

1.6 QUALITY ASSURANCE

A. Applicator:

1. Minimum 3 years documented experience in work of this Section.
2. Successful completion of at least 3 projects of similar scope and complexity within past 5 years.

B. Mockups:

1. Control Test Sample: Upon approval of product data and methods, prepare cleaning sample(s) approximately 10 square feet for each type of masonry and surface condition and for each type of cleaning product or water mist method proposed for use in locations approved by the Architect.
   a. Allow cleaning solutions to remain on surface for varying time periods in several locations to determine optimum time required.
   b. Perform multiple applications of varying concentrations of cleaning solutions to determine optimum concentration.
   c. Ensure that materials and procedures will not discolor or damage existing surfaces.
2. Allow a waiting period of not less than 7 days after completion of sample cleaning to permit a study of sample panels for negative reactions.

C. Miscellaneous

1. Methods of Application: Submit a written description of the full range of methods and procedures proposed for cleaning and stain removal including but not limited to: method of application, dilution of application, temperature of application, length of time of surface contact, method of rinsing surface (temperature, pressure, and duration), repetition of procedure, etc.
2. Methods of Protection: Submit a written description of proposed materials and methods of protection for preventing damage to any non-masonry surfaces in proximity to this work, including glass and metals. These methods and materials may include, but are not limited to, spray-on, peel-off type liquid materials and masking tape. Outline methods proposed to keep water from reaching the interior of the building.
3. If materials and methods other than those indicated are proposed for cleaning work, provide a written description, including evidence of successful use on other comparable projects, and a testing program to demonstrate their effectiveness for this Project.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer’s original sealed and labeled containers.

B. Store all materials in accordance with manufacturer’s recommendations and free from extremes of temperature.

1.8 PROJECT CONDITIONS

A. Clean stone surfaces only when air temperature is 50 deg F (10 deg C) and above and will remain so for at least 7 days after completion of cleaning.

B. Do not perform work when wind could carry materials to adjacent or underlying materials, or to adjacent property.

C. Perform all work of this Section in accordance with all Federal, State and local regulations regarding the transportation, storing, handling, application, removal and disposal of the products involved.

D. Protect workers and public from injury during this work. Provide all required temporary partitions, closures, guards, notices, and the like.

E. Protect the site and adjoining property, including vehicles, from damage that may result from this work. Trees and plants around the building shall be protected from contamination.

F. Take all measures required to ensure that the building remains completely watertight throughout the course of this work.

G. Repair damage to the building caused by penetration of water, or other factors resulting from failure to properly protect the building during work of this Section. Repairs shall be completed at no additional cost to the Owner, in a manner that fully restores all affected elements to their condition prior to damage.

PART 2 - PRODUCTS

2.1 GENERAL

A. Masonry cleaning materials used in this work shall be part of a system of products produced by one manufacturer, where possible, to ensure compatibility.

B. All materials shall be manufactured for the purpose in which they are proposed for use unless otherwise recommended by cleaning product manufacturer in writing, tested as indicated under Section 1.6.B Mock-ups, and approved by the Architect.

C. All chemical materials, compounds, liquids, etc. shall be safe and shall not violate state or federal environmental or safety regulations.

D. Injurious substances or any ingredients that independently or in combination with other compounds, fluids or solutions will damage masonry shall not be used. Methods or products causing abrasion or similar damage to the surface finish of the masonry shall not be used.

E. No sand, silica flour, or any other grit shall be used either singly or in combination with pressurized air, water or any other liquid.

2.2 CHEMICAL CLEANING SYSTEM FOR EXTERIOR LIMESTONE

A. Description: Begin with option 1 and progress to other options as required to achieve successful cleaning.

1. Liquid Cleaner, Option 1: Envio Klean ReVive biological soiling remover, as manufactured by PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Phone: (800) 255-4255; Fax: (785) 830-9797.

2. Liquid Cleaner, Option 2: D/2 Biological Solutions as manufactured by D/2 Biological Solutions, Inc., Westport, MA 02790. Phone (917) 693-7441.

3. Liquid Cleaner, Option 3: Cleaning System
   a. Cleaning Product: EnviroKlean Reclaim Cleaner and Reclaim Activator, as manufactured by PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Phone: (800) 255-4255.
   b. Neutralizer Product: SureKlean Limestone and Masonry Afterwash, as manufactured by PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Phone: (800) 255-4255.

2.3 CLEAN MATERIALS AND EQUIPMENT

A. Water for Cleaning: Clean, potable, free of oils, acids, alkalis, salts, and organic matter.

1. Warm Water: Heat water to a temperature of 140 to 160 deg. F (60 to 71 deg. C).

B. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass and metal surfaces from damaging effects of acidic and alkaline masonry cleaners.

1. Products: Sure Klean Strippable Masking, as manufactured by PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Phone: (800) 255-4255; Fax: (785) 830-9797.

C. Spray Equipment:

1. Provide equipment for controlled spray application of water and chemical cleaners, at rates indicated for pressure, measured at spray tip, and for volume. Adjust pressure and volume, as required, to ensure that damage to masonry does not result from cleaning methods.
   a. Pressure not to exceed 400 psi for limestone.
   b. For water spray application, provide a fan-shaped spray tip that disperses water at an angle of not less than 15 degrees.
   c. For heated water spray application, provide equipment capable of maintaining a temperature at flow rates indicated between 140 and 160 deg F (60 and 71 deg. C)
   d. For chemical cleaner spray application, provide low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with a con-shaped spray tip.

D. Brushes: Natural fiber bristle brushes (Nonmetallic).

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Comply with chemical cleaner manufacturer's written instructions for protecting building surfaces against damage from exposure to their products.

B. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from injury from masonry cleaning work.

1. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
2. Neutralize and collect alkaline and acid wastes. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

3.2 SEQUENCING OF WORK

A. Clean existing masonry surfaces using specified chemical cleaners to remove biological and atmospheric dirt.

B. Re-Clean difficult areas using specified chemical cleaners to remove staining if goal of cleaning work is not considered successful as determine by the Architect.

C. Selectively re-point deteriorated, cracked, and failing brick and stone masonry joints.

D. Replace and repair stone masonry.

E. Remove and replace existing sealant as specified in Section 07 92 00.

3.3 CLEANING MASONRY, GENERAL

A. Proceed with cleaning in an orderly manner, work from bottom to top and from one end of each elevation to the other.

B. Use only those cleaning methods indicated for each masonry material and location.

1. Use natural-fiber brushes only.
2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
   a. Equip units with pressure gages.

C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.

D. Chemical Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical cleaner manufacturer's written instructions.

1. Reapplying Chemical Cleaners: Do not apply chemical cleaners to same stone surfaces more than twice.

E. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting.

3.4 CHEMICAL CLEANING MASONRY

A. Remove dirt, hydrocarbons, grease, oil, environmental pollutants, biological growth, applied coatings, rust stains, and residues.

B. Sandblasting and the use of non-proprietary acids are prohibited.

C. Follow manufacturer's instructions and procedures established during preparation of mockups.

D. Working from bottom to top, prewet the surface with clean water, as recommended by Chemical Cleaning Manufacturer

E. Apply cleaning solution using synthetic roller, soft-bristled brush or spray applicator. Work into surface voids and irregularities.

F. Allow solution to stand on surfaces as recommended by Chemical Cleaning Manufacturer and as established by approved mock-ups. Do not allow to dry; reapply as necessary.

G. Gently scrub heavily soiled surfaces with medium hard bristle brush.

H. Working from bottom to top, rinse surfaces with medium pressure water. Hold nozzle perpendicular to surface; work at uniform rate and uniform distance from surface.

I. Continue rinsing until pH of washed stone is the same as pH of unwashed stone.

J. Repeat process if required until masonry is clean.

K. Do not damage existing surfaces. Leave surfaces uniform in appearance.

3.5 EXTERIOR MASONRY CLEANING – WATER MIST METHOD (OPTIONAL)

A. Fabricate, using non-ferrous materials, an armature and piping system that will allow a continuous and low pressure spray of surfaces to be cleaned. Install spray tips at intervals that are calculated to provide an even flow of water throughout the system.

B. Ensure that the building is completely watertight in all areas scheduled for this treatment. Fill all cracks and open joints, and correct other conditions that may allow for water penetration to interior surfaces of the facade or interior spaces of the building.

C. Apply a light water mist, for a maximum duration of two (2) hours, followed by a minimum drying time of one (1) hour. At the Contractor's option, an integral timer may be incorporated into the system, to accomplish this interval automatically.

D. Upon completion of a 24-hour cycle of mist-dry intervals, wash treated surfaces, using the pressure washer with 20° tip, at pressures not exceeding 600 psi.

E. Repeat the process as required until all surfaces are satisfactorily cleaned.

3.6 FINAL CLEANING

A. Contractor shall repeat the processes of the work of this Section until the goal of a clean, uniform surface is achieved.

B. Do not use acidic or alkaline cleaners for final cleaning.

END OF SECTION

SECTION 040513

MASONRY MORTARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Mortar for new masonry construction.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 044000 - Stone Assemblies.

1.2 SUBMITTALS

A. Submittals for Review:
1. Samples: 1/2 x 1/2 inch x 3 inch long colored mortar samples.

B. Quality Control Submittals:
1. Test reports: Indicating mortar compliance with ASTM C270.
2. Delivery tickets: If mortar is delivered to site dry and pre-blended, furnish delivery tickets indicating quantity, mortar type, and date of manufacture.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with TMS 402/602.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver cement and lime in manufacturer's original, unopened packages or containers.

B. Protect materials from moisture absorption and damage; reject damaged containers.

C. Store aggregate to prevent inclusion of foreign matter.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Colorants:
1. Cathay Pigments. (www.cathaypigments.com)
2. Davis Colors. (www.daviscolors.com)
3. Solomon Colors. (www.solomoncolors.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Portland Cement:
1. ASTM C150/C150M, Type I.
2. For exposed surfaces, provide cement from one source throughout project.

B. Aggregate:
1. ASTM C144, standard masonry type.
2. For exposed surfaces, provide aggregate from one source throughout project.

C. Lime: ASTM C207, Type S.

D. Colorant: Pure mineral oxide type, color to be selected from manufacturer's full color range.

E. Water: Clean and free from oils, acids, alkalies, organic matter, and other substances in amounts deleterious to mortar or metals in masonry.

2.3 MIXES

A. Mortar Mixes: To ASTM C270 using the Proportion Method.
   1. Stone: Type N, color to be selected.

2.4 MIXING

A. Mix mortar in accordance with ASTM C270.

B. Incorporate waterproofing admixture in mortar for exterior concrete unit masonry walls per manufacturer's recommendations.

C. Jobsite Proportioning of Mortar:
   1. Mix using mechanical mixer. Hand mixing not permitted.
   2. Mix approximately three-quarters of required water, all of cement and lime, and one-half of aggregate for minimum of 2 minutes.
   3. Add remainder of water and aggregate; mix for minimum of 3 minutes.

D. Dry Preblended Mortar:
   1. Mix using continuous, self-cleaning mixer mounted at apex of silo cone.
   2. Set water flow valve to provide workable consistency.

E. Thoroughly mix ingredients in quantities needed for immediate use.

F. Discard lumpy, caked, frozen, and hardened mixes.

G. Mortar may be retempered by adding water as required. Use mortar within 2-1/2 hours after initial mixing at ambient temperatures below 80 degrees F and within 1-1/2 hours after initial mixing at ambient temperatures over 80 degrees F.

H. Do not add accelerators, retarders, water repellents, antifreeze compounds, or other additives without Architect's approval.

PART 3 EXECUTION

3.1 INSTALLATION

A. Follow requirements specified in referenced sections.

END OF SECTION

SECTION 044000

STONE ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Cut stone.
2. Integral flashings.
3. Ties and anchors.
4. Control joints in masonry, filled with joint fillers.
5. Miscellaneous masonry accessories.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 040513 - Masonry Mortaring.
3. Section 072500 - Weather Barriers.
4. Section 076500 - Flexible Flashings.
5. Section 079200 - Joint Sealants.
6. Structural Drawings and Specifications.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Provide information on anchors including sizes, profiles, materials, and finishes.
2. Samples:
   a. 12 x 12 inch stone samples showing color and finish.
   b. Weep hole/vent colors.
3. Shop Drawings: Show fabrication and installation details for the following:
   a. Cut Stone and Trim Units: Show sizes, profiles, and locations of each stone and trim unit required.
   b. Control joint locations and details.

B. Quality Control Submittals:
1. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
   a. Each type of stone unit required. Include test results, measurements, and calculations establishing net-area compressive strength of masonry units.

1.3 QUALITY ASSURANCE

A. Fabricator and Installer Qualifications: Minimum 2 years documented experience in work of this Section.

B. Obtain stone from a single quarry and from the same area within the quarry.

C. Perform Work in accordance with TMS 402/602.

D. Mockup Panels: Before installing unit masonry, build sample panels, using materials indicated for the completed Work, to verify selections made under sample Submittals and to demonstrate aesthetic effects. Build sample panels for each type of exposed unit masonry assembly in sizes approximately 48 inches long by 48 inches high by full thickness.
1. Locate panels in the locations indicated or, if not indicated, as directed by Architect.
2. Clean exposed faces of panels with masonry cleaner indicated.
3. Protect approved sample panels from the elements with weather-resistant membrane.
4. Maintain sample panels during construction in an undisturbed condition as a standard for judging the completed Work.

5. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Architect in writing.
6. Demolish and remove sample panels when directed.

E. Preinstallation Conference: Conduct conference at Project site

1.4 DELIVERY, STORAGE AND HANDLING

A. Store stone off ground; prevent contact with materials that could cause staining or damage.

B. Protect anchors from corrosion.

1.5 PROJECT CONDITIONS

A. Wall Protection:
1. During erection, cover tops of partially completed walls with strong waterproof membrane at end of each day or work stoppage.
2. Extend cover minimum of 24 inches down both sides; hold securely in place.

B. Environmental Requirements:
1. Hot weather requirements: If ambient temperature is over 95 degrees F or relative humidity is less than 50 percent, protect from direct sun and wind exposure for minimum 48 hours after installation.
2. Cold weather requirements: Do not use frozen materials or build upon frozen work.
3. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
1. Protect base of walls from rain-splashed mud and from mortar splatter by coverings spread on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Masonry Accessories:
1. Blok-Lok Ltd. (www.blok-lok.com)
2. Dur-O-Wal. (www.dur-o-wal.com)
3. Heckmann Building Products. (www.heckmannbuildingprods.com)
4. Hohmann and Barnard, Inc. (www.h-b.com)
5. Mortar Net USA Ltd. (www.mortarnet.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Exterior Stone:
1. General: Limestone Building Stone Standard: ASTM C568, Classification: III (High-Density).
2. Description: Provide natural Texas limestone from a single quarry with low clay content and with minimum average compressive strength parallel when load is applied to bedding plane: 2500 psi when tested in accordance with ASTM C110.

3. Type: Cordova Cream Limestone to match original window opening quoins in color and textu
4. Size: Refer to Drawings.
5. Thickness: Refer to Drawings.
6. Finish: To be selected by Architect.
7. Free from defects that could impair its structural integrity or function. Inherent variations characteristic to quarry from which it is obtained are acceptable.

2.3 ACCESSORIES

A. Mortar: Specified in Section 040513.

B. Anchors: Stainless steel, ASTM A666, Type 304 or 316; two piece with split tail type anchors.

C. Veneer Ties: Formed steel wire, 9 gage thickness, two piece adjustable type with backing plate, hot dip galvanized, ASTM A153/A153M, B2 finish, minimum 2 inch embedment into masonry.

D. Fasteners: Hot-dip galvanized or fluoropolymer coated steel minimum 3/4 inch penetration into framing.

E. Flashings: Stainless steel or flexible copper:
1. Stainless steel, ASTM A666, Type 304, minimum 0.018 inch thick.
2. 10 Oz Copper with Polymer Modified Rubberized Asphalt on both sides; No. DA1507 Copper Coated Thru-wall Flashing by Dur-O-Wal (www.dur-o-wal.com) or approved substitute.

F. Flexible Flashings: Specified in Section 076500.

G. Weeps: Recycled polyester mesh bonded with permanent adhesive, 90 percent open, 2.5 x 3.5 inches x 0.5 inch thick; Mortar Net Weep Vents by Mortar Net USA Ltd. or approved substitute, color to be selected from manufacturer's full color range.

H. Mortar Dropping Control: High density polyethylene or nylon, 90 percent open mesh, 10 inches high x thickness to suit cavity width; The Mortar Net by Mortar Net USA Ltd. or approved substitute.

I. Joint Sealant: Specified in Section 079200.

J. Cleaner: Type recommended by stone supplier.

PART 3 EXECUTION

3.1 PREPARATION

A. Establish lines, levels, and coursing. Protect from disturbance.

B. Clean stone prior to installation. Do not use wire brushes or implements that can mark or damage exposed surfaces.

C. Wet absorptive stone in preparation for placement to minimize moisture suction from mortar.

3.2 INSTALLATION

A. Arrange stone in coursed ashlar pattern indicated on Drawings, provide color uniformity.

B. Set stone plumb and level.

C. Isolate stone from structural members with compressible filler.

D. Completely fill beds and joints, then rake out for pointing.

E. Fill joints with pointing mortar; tool to profile approved by Architect.

F. Install anchors and place spacers to support stone and to establish joint dimensions.

G. Veneer Ties:
1. Space ties to provide one tie per 2.67 square feet at maximum spacing of 32 inches on center horizontally.
2. Locate ties within 12 inches of ends of masonry walls and openings.

H. Flashings:
1. Install flashing with outer edge flush with outside face of stone; extend up backup 8 inches minimum and seal to backup.
2. Lap end joints 4 inches minimum and seal.
3. Form end dams where flashing is stopped or interrupted.
4. Tie metal flashings into the weather barrier system using compatible self-adhering flashings, sealants, and mastics, per manufacturer recommendations.

I. Weeps:
1. Locate in head joints in first course above flashings at maximum 24 inches on center.
2. Set weeps flush with exterior face of masonry.

J. Control Joints:
1. Keep joints free from mortar and grout.
2. Install joint backing and joint sealant at control joints in accordance with Section 079200.

K. Install mortar dropping control continuously in cavities above flashings.

L. Installation Tolerances; Maximum variation from:
1. True plane of wall: Plus or minus 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
2. Plumb: Plus or minus 1/4 inch in 10 feet noncumulative; 1/2 inch in 20 feet or more.

3.3 CLEANING

A. Clean stone with detergent and water applied with fiber brush. No acid cleaners allowed.

B. If initial cleaning does not produce acceptable results, apply cleaner in accordance with manufacturer's instructions.
1. Protect adjacent surfaces.
2. Thoroughly rinse surfaces with clean water after completion of cleaning; remove all traces of cleaning solution.

3.4 PROTECTION

A. Protect stone subject to damage by use of nonstaining sheet coverings.

END OF SECTION

SECTION 055000

METAL FABRICATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Shop fabricated metal components.
2. Loose lintels and shelf angles, miscellaneous framing from steel shapes.
3. Bronze handrails.
4. Galvanized steel exterior handrails and guard rails.
5. Crawl space vents.
6. Steel handrails.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 099100 - Painting.

1.2 SYSTEM DESCRIPTION

A. Minimum Design Loads:
1. Pedestrian loading:
   a. Uniform load of 100 PSF.
   b. Concentrated load of 300 pounds.
   c. Maximum deflection under loading: L/180.
2. Guard rails and handrails:
   a. 50 pounds per linear foot applied in any direction at top, transferred via attachments and supports to building structure.
   b. Concentrated 200 pound load applied in any direction at any point along top, transferred via attachments and supports to building structure.
   c. Maximum deflection under loading: L/120.
3. Concentrated and uniform loads do not need to be applied simultaneously.
4. Infill of Guards:
   a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
   b. Infill load and other loads need not be assumed to act concurrently.
5. Perform design under direct supervision of Professional Structural Engineer licensed in State in which Project is located, with minimum 2 years documented experience in work of this Section.

B. Fabricate guard rails and handrails in accordance with ASTM E985.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Submit for all products proposed for use, include manufactured components; indicate dimensions, profiles, materials, finishes, and attachments.
2. Shop Drawings: Show dimensions, metal thicknesses, finishes, joints, attachments, and relationship of work to adjacent construction.
3. Samples for Verification: For each type of exposed finish required, prepared on components indicated below and of same thickness and metal indicated for the Work. If finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
   a. 6-inch long sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
   b. Fittings and brackets.
4. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum 3 years documented experience in work of this Section.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store steel above ground on platforms, skids, or other supports; separate with wooden separators.

B. Protect steel from corrosion.

C. Prevent damage to prime coat and galvanized coatings.

PART 2 PRODUCTS

2.1 MATERIALS

A. Steel:
1. Shapes: ASTM A36/A36M.
2. Plate: ASTM A283/A283M.
3. Sheet: ASTM A1008/A1008M.
4. Pipe: ASTM A501/A501M.
5. Tube: ASTM A500/A500M.
6. Bars: ASTM A108.

B. Grates: NAAMM MBG 531, Welded Steel.

C. Bronze:
1. Extrusions: C38500 (Architectural Bronze) meeting ASTM B455.
2. Drawn Tube: C27000.

2.2 ACCESSORIES

A. Exposed Screws: Same material as metal being fastened; Phillips flat head, countersunk, unless noted otherwise.

B. Bolts: ASTM A307, hexagonal head type.

C. Primer Paint: SSPC Paint 15, Type 1, red oxide.

D. Touch-up paint for galvanizing: ZRC Galvilite Galvanizing Repair.

E. Anchoring Cement: Non-shrink cementitious type.

2.3 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts, unobtrusively located, consistent with design of component except where specifically noted otherwise.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

F. Conceal fastenings where possible.

G. Welding:
1. Use welds for permanent connections where possible. Grind exposed welds smooth.
2. Tack welds prohibited on exposed surfaces.
3. Steel shapes, plate, pipe, and tube: Conform to AWS D1.1/D1.1M.
4. Steel sheet: Conform to AWS D1.3/D1.3M.

2.4 FINISHES

A. Exterior Ferrous Metal: Galvanized; ASTM A123/A123M, to 2.0 ounces per square foot. Shop clean and apply phosphate treatment in factory to surfaces to be painted in the field.

B. Exterior Ferrous Metal Guardrails and Handrails: Galvanized finish (final finish).

C. Other Interior Ferrous Metal:
1. Shop painted except steel to be encased in concrete and surfaces to be welded.
2. Surface preparation: SSPC SP2 - Hand Tool Cleaning or SP3 - Power Tool Cleaning.
3. Application: One coat; follow coating manufacturer's instructions.
4. Minimum dry film thickness: 2.0 mils.

D. Interior Bronze Components:
1. Unlacquered; Apply liquid patina.
a. Product: Brown Patina CB for Brass/Copper/Bronze, as manufactured by Sur-Fin Chemicals, (213) 264-7724.
2. Protective clear coating
a. Description: Semi-synthetic, chemically neutral, microcrysatalline wax free of damaging acids designed as a protective coating for bronze.
b. Product: Renaissance Microcrystalline Wax Polish as manufactured by Picreator Enterprises ltd.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install items in accordance with approved Shop Drawings.

B. Install components plumb, level, and rigid.

C. Welding:
1. Field weld components indicated on Shop Drawings.
2. Grind and fill exposed welds; finish smooth and flush.
3. Tack welds prohibited on exposed surfaces.
4. Steel shapes, plate, pipe, and tube: Conform to AWS D1.1/D1.1M.
5. Steel sheet: Conform to AWS D1.3/D1.3M.

D. Install sleeved components with anchoring cement.

E. Prevent contact of dissimilar metals by use of zinc rich paint, bituminous coating, or non-absorptive gaskets.

3.2 ADJUSTING

A. Clean and touch up damaged primer paint with same product as applied in shop.

B. Clean and touch up galvanized coatings at welded and abraded surfaces in accordance with ASTM A780, Annex A2.

3.3 SCHEDULE

A. This Schedule includes principal items only; refer to Drawings for additional items not listed.

B. Guard Rails and Handrails:
   1. Fabricate from steel pipe or tube stock of sizes and types indicated.
   2. Make bends uniform and free from buckles and other defects.
   3. Cut intersections square to within 2 degrees and to length within 1/8 inch. Remove burrs from cut ends.
   4. Miter and cope intersections within 2 degrees, fit to within 1/8 inch.
   5. Continuously weld connections.
   6. Where length exceeds that suitable for shipping and handling, fabricate in sections with concealed internal sleeves forming slip joints. Extend sleeves minimum 2 inches on both sides of joint; field weld and grind smooth.

C. Interior bronze handrails: Julius Blum 4535 railing, 304 bracket, 1 1/4” x 5/8” channel. Provide unlacquered components with bronze patina and wax finish.

D. Interior steel handrails:
   1. At Platform: Julius Blum 4435 railing, 385 bracket, 1 1/4" X 5/8" channel. Provide shop primed components.

E. Crawl space vents:
   1. Fabricate from steel angle sizes and types indicated and galvanized cloth wire insect screen.
   2. Install over treated wood blocking with flathead screws flush with angle frame.
   3. Install cementitious parge coat at exterior sill.

END OF SECTION

SECTION 060122

WOOD RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Wood Restoration:
   a. Replace missing and damaged fascia boards and restore existing.
   b. Restore / replace existing wood baseboards at existing building. Provide new to match existing where missing.
   c. Restore wood lathe ceiling, replace as necessary.
   d. Restore original wood beadboard at stage and replace missing trim and nosing.
   e. Restore exterior wood soffit boards, replace as necessary.
   f. Restore original beadboard ceiling and trim at entry vestibule.
   g. Restore exterior rafter tails, replace as necessary.
2. Consolidation.
3. Patching.
4. Replacement.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 012100 - Allowances.
3. Section 012200 - Unit Prices.
4. Section 090396 - Wood Flooring Restoration.
5. Section 099100 - Painting.

1.2 SUBMITTALS

A. Submittals for Review:
1. Samples:
   a. 12 inch long samples of each trim profile.
   b. Sample of each wood species proposed for repair work.

B. Quality Control Submittals:
1. Qualifications: Restorer qualifications, including previous projects.

1.3 QUALITY ASSURANCE

A. Restorer Qualifications:
1. Minimum 3 years experience in work of this Section.
2. Successful completion of at least 3 projects of similar scope and complexity within past 5 years.

B. Lumber Grading Agency: Certified to NIST PS 20.

C. Identify lumber and panel products by official grade mark.

D. Mockup:
1. Provide mockups of wood match with stained and painted finish.
2. Show: Each wood restoration process and finishing.
3. Include associated attachments, joints and junctions, and terminating items.
4. Locate where directed.
5. Approved mockups may remain as part of the Work.

E. Pre-Installation Conference:
1. Convene at site 2 weeks prior to beginning work of this Section.
2. Attendance: Architect, Owner, Contractor, and subcontractor performing the Work.
3. Review and discuss: Procedures and expected finished product for each type of repair.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials minimum 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation.

B. Do not store seasoned materials in damp location.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Consolidant and Patching Compound:
1. Abatron, Inc.
2. Advanced Repair Technology, Inc.

B. Epoxy Repair Material for Opaque Finish:
1. Consolidant: LiquidWood.
2. Patch: WoodEpox.

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Lumber:
1. Salvaged existing wood.
2. If salvaged existing materials are unsuitable for use or are not available in sufficient quantities, provide new materials or materials salvaged from an off-site source to match original wood in species, cut, appearance, and other characteristics.
3. Do not reuse rotten, split, termite damaged, or otherwise defective pieces.

2.3 ACCESSORIES

A. Consolidant: Low viscosity penetrating consolidant, 8 hour minimum cure time.

B. Patching Compound - For Painted Wood: Epoxy based, multiple component

C. Patching Compound - For Stained Wood: Latex based, single component, color matched to wood.

D. Fasteners: Type and size as required by conditions of use; plain steel for interior use; hot dip galvanized steel for exterior use.

2.4 FABRICATION

A. Quality: AWI Custom Quality Grade.

B. Fabricate new wood components with profiles and dimensions to match existing using salvaged materials as a template.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to installation, condition wood to average humidity that will prevail after installation.

B. Back prime exterior wood and wood in contact with masonry or cementitious materials prior to installation.

C. Prepare edges of existing wood to receive wood repair. Provide clean, square, and straight edges.

3.2 CONSOLIDATION OF EXISTING WOOD

A. Remove paint under provisions of Section 099100.

B. Apply consolidant in accordance with manufacturer's instructions.

C. Completely saturate damaged wood with consolidant; allow to cure 8 hours minimum.

D. Apply to end grain where exposed. Where end grain is not exposed, drill 1/8 inch holes staggered and at angles to side grain to expose as much end grain as possible.

E. Prevent leakage with wax or clay plugs. Clean leakage before it cures.

F. Apply second coat if first coat does not completely saturate and harden wood.

3.3 PATCHING EXISTING WOOD

A. Remove loose and deteriorated wood down to a point at which sound material is reached.

B. Apply consolidant as specified above.

C. After consolidant has cured, fill voids with patching compound. Mix and apply in accordance with manufacturer's instructions.

D. Embed wood in center of large patches to reduce amount of filler.

E. After filler has cured, sand, chisel, or plane off to smooth surface, flush with adjacent surfaces.

3.4 REPLACEMENT OF EXISTING WOOD

A. Remove existing damaged and deteriorated wood in manner to minimize damage to adjacent surfaces.

B. Fit new components to original profiles and lines.

C. Feather new materials into existing.

D. Secure at maximum 12 inches on center. Use concealed or exposed nailing to match existing.

E. Miter corners and end joints.

F. Scribe to adjacent construction with maximum 1/8 inch gaps.

G. Sand cut ends and edges smooth.

3.5 FINISHING WOOD

A. Paint per Section 099100.

END OF SECTION

SECTION 061000

ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Wood blocking, nailers, and furring.
2. Telephone and electrical panel backboards.
3. Door and window frame construction.
4. Interior stud walls (non-bearing walls).
5. Exterior plywood sheathing.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Structural Drawings and Specifications.

1.2 QUALITY ASSURANCE

A. Lumber Grading Agency: Certified to NIST PS 20.

B. Identify lumber and sheet products by official grade mark.

C. Fire Retardant Treated Products: Bear label of recognized independent testing laboratory indicating flame spread rating of 25 or less, tested to ASTM E84.

1.3 DELIVERY, STORAGE AND HANDLING

A. Store materials minimum 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation.

B. Do not store seasoned or treated materials in damp location.

C. Protect edges and corners of sheet materials from damage.

PART 2 PRODUCTS

2.1 MATERIALS

A. Structural Framing and Sheathing: Refer to Structural Drawings and Specifications.

B. Lumber:
1. Grading rules: SPIB.
2. Species: Southern Yellow Pine.
3. Grade: No. 2 or better.
4. Surfacing: Surfaced four sides (S4S) unless otherwise indicated.
5. Maximum moisture content: 19 percent.
6. Finger jointed, manufactured using low-emitting, urea formaldehyde-free binders.

C. Sheet Products:
1. Type: APA Plywood.
2. Panel grade: APA Rated Sheathing.
3. Exposure:
   a. Exterior applications: Exposure 1.
   b. Interior applications: Interior.

2.2 ACCESSORIES

A. Fasteners:
1. Type and size: As required by conditions of use.
2. Exterior locations and treated products: Hot-dip galvanized steel, ASTM A153/A153M, G90 coating class.
3. Other interior locations: Plain steel.

B. Adhesives: Compatible with panels and substrate; recommended by panel manufacturer.

2.3 FABRICATION

A. Preservative Treatment: Treat wood in contact with masonry or cementious materials:
1. Treat lumber and sheet products in accordance with AWPA U1:
a. Interior locations protected from moisture sources: Category UC1 - Interior/Dry.
b. Interior locations subject to sources of moisture: Category UC2 - Interior/Damp.
c. Exterior locations above ground: Category UC3A - Above Ground/Protected.
d. Exterior locations in contact with ground: Category UC4B - Ground Contact/Heavy Duty.
2. Treatment process: Type MCA - Micronized Copper Azole.

B. Fire Retardant Treatment; treat interior lumber and sheet products in accordance with AWPA U1:
1. Interior locations: Category UCFA - Fire Retardant/Interior.
2. Exterior locations: Category UCFB - Fire Retardant/Exterior.

PART 3 EXECUTION

3.1 INSTALLATION

A. Provide blocking, nailers, grounds, furring, and other similar items required to receive and support work.

B. Set members level, plumb, and rigid.

C. Make provisions for erection loads, and for temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

D. Stud Framing:
1. Provide single bottom plate and double top plates for load bearing partitions.
2. Provide single bottom and top plates for non load bearing partitions.
3. Anchor bottom plates to concrete structure with anchor bolts.
4. Triple studs at corners and partition intersections.
5. Anchor studs abutting masonry or concrete with toggle or expansion bolts.
6. Frame openings with double studs and headers. Space short studs over and under opening to stud spacing.

E. Wall Sheathing:
1. Refer to Structural Drawings and Specifications for wall sheathing for use as corner bracing.
2. Place wall sheathing panels at remainder of exterior walls with ends over firm bearing.
3. Leave 1/8 inch expansion space at panel ends and edges.
4. Secure to supports with nails spaced maximum 6 inches on center along edges and maximum 12 inches on center in field of panels.

F. Install telephone and electrical panel backboards where indicated. Oversize panel by 12 inches on all sides.

G. Treat field cuts and holes in members providing structural support in accordance with AWPA M4.

END OF SECTION

SECTION 061753

SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Wood roof trusses.
2. Wood floor trusses.
3. Wood girder trusses.

B. Related Requirements:

1. Section 313116 "Termite Control" for site application of borate treatment to wood trusses.

1.3 ALLOWANCES

A. Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Section 012100 "Allowances."

1.4 DEFINITIONS

A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For wood-preservative-treated lumber, metal-plate connectors, metal truss accessories, and fasteners.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification from treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification from treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to truss fabricator.

B. Shop Drawings: Show fabrication and installation details for trusses.

1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
2. Indicate sizes, stress grades, and species of lumber.
3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
6. Show splice details and bearing details.

C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For metal connector-plate manufacturer, professional engineer, and fabricator.

B. Material Certificates: For dimension lumber specified to comply with minimum specific gravity. Indicate species and grade selected for each use and specific gravity.

C. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss-fabricating firm.

D. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated lumber.
2. Fire-retardant-treated wood.
3. Metal-plate connectors.
4. Metal truss accessories.

1.7 QUALITY ASSURANCE

A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Fabricator Qualifications: Shop that [participates in a recognized quality-assurance program, complies with quality-control procedures in TPI 1, and involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

C. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
3. Provide for air circulation around stacks and under coverings.

B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal-plate-connected wood trusses.

B. Structural Performance: Metal-plate-connected wood trusses shall be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

1. Design Loads: As indicated.
2. Maximum Deflection under Design Loads:

a. Roof Trusses: Vertical deflection of 1/240 of span.

C. Comply with applicable requirements and recommendations of TPI 1, TPI DSB, and SBCA BCSI.

D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

2.2 DIMENSION LUMBER

A. Lumber: DOC PS 20 and applicable rules of any rules-writing agency certified by the American Lumber Standard Committee (ALSC) Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. Provide dressed lumber, S4S.
4. Provide dry lumber with [15] [19] percent maximum moisture content at time of dressing.

B. Minimum Chord Size for Roof Trusses: 2 by 4 inches nominal for both top and bottom chords].

C. Minimum Specific Gravity for Top Chords: 0.50

D. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 061000 "Rough Carpentry."

2.3 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2[for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground].

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
2. For exposed trusses indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat all trusses unless otherwise indicated.

2.4 FIRE-RETARDANT-TREATED WOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products according to test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.

3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use for interior locations where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841.

C. Kiln-dry lumber after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

1. For exposed trusses and bracing indicated to receive a stained or natural finish, omit marking and provide certificates of treatment compliance issued by inspection agency.

E. For exposed trusses indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.

F. Application: Treat items indicated on Drawings.

2.5 METAL CONNECTOR PLATES

A. General: Fabricate connector plates to comply with TPI 1.

B. Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 coating designation; and not less than 0.036 inch thick.

1. Use for interior locations unless otherwise indicated.

C. Hot-Dip Heavy-Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicated.

D. Stainless-Steel Sheet: ASTM A 666, [Type 304] [Type 316], and not less than 0.035 inch thick.

1. Use for exterior locations, wood-preservative-treated lumber, fire-retardant treated lumber, and where indicated.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
2. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

2.7 METAL FRAMING ANCHORS AND ACCESSORIES

A. Allowable design loads, as published by manufacturer, shall comply with or exceed those [indicated] [of basis-of-design products] [of products of manufacturers listed]. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Use for interior locations unless otherwise indicated.

C. Hot-Dip Heavy-Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicated.

D. Stainless-Steel Sheet: ASTM A 666, Type 304.

1. Use for exterior locations and where indicated.

E. Truss Tie-Downs: Bent strap tie for fastening roof trusses to wall studs below, 1-1/2 inches wide by 0.050 inch thick. Tie fastens to one side of truss, top plates, and side of stud below.

F. Roof Truss Clips: Angle clips for bracing bottom chord of roof trusses at non-load-bearing walls, 1-1/4 inches wide by 0.050 inch thick. Clip is fastened to truss through slotted holes to allow for truss deflection.

G. Roof Truss Bracing/Spacers: U-shaped channels, 1-1/2 inches wide by 1 inch deep by 0.040 inch thick, made to fit between two adjacent trusses and accurately space them apart, and with tabs having metal teeth for fastening to trusses.

H. Drag Strut Connectors: Angle clip with one leg extended for fastening to the side of girder truss.

1. Angle clip is 3 by 3 by 0.179 by 8 inches with extended leg 8 inches long. Connector has galvanized finish.

2.8 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 92 percent zinc dust by weight.

2.9 FABRICATION

A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

1. Fabricate wood trusses within manufacturing tolerances in TPI 1.

D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

2.10 SOURCE QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections.

1. Provide special inspector with access to fabricator's documentation of detailed fabrication and quality-control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards.
2. Provide special inspector with access to places where wood trusses are being fabricated to perform inspections.

B. Correct deficiencies in Work that special inspections indicate do not comply with the Contract Documents.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wood trusses only after supporting construction is in place and is braced and secured.

B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

D. Install and brace trusses according to TPI recommendations and as indicated.

E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.

F. Space trusses 24 inches o.c. as indicated; adjust and align trusses in location before permanently fastening.

G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.

H. Securely connect each truss ply required for forming built-up girder trusses.

1. Anchor trusses to girder trusses as indicated.

I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

1. Install bracing to comply with Section 061000 "Rough Carpentry."
2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.

J. Install wood trusses within installation tolerances in TPI 1.

K. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.

L. Replace wood trusses that are damaged or do not comply with requirements.

1. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

3.2 REPAIRS AND PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

C. Repair damaged galvanized coatings on exposed surfaces according to ASTM A 780/A 780M and manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections to verify that temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

END OF SECTION

SECTION 064000

ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Interior standing and running trim at addition.
2. Interior wood ceilings at addition.
3. Custom wood threshold.
4. Wood shiplap interior wall finish.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 099100 - Painting.

1.2 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings:
a. Include dimensioned plans, sections, elevations, and details, including interface with adjacent work.
b. Designate wood species and finishes.
2. Samples: 12 inch samples showing each wood species and finish.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications:
1. Minimum 3 years documented experience in work of this Section.
2. Certified under AWI Quality Certification Program.

1.4 DELIVERY, STORAGE AND HANDLING

A. Do not deliver materials until proper protection can be provided, and until needed for installation.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of paneling:
1. Temperature: 60 to 80 degrees F.
2. Humidity: 25 to 55 percent.

PART 2 PRODUCTS

2.1 MATERIALS

A. Architectural Woodwork:
1. Graded in accordance with AWI Architectural Woodwork Standards for quality grade specified.
2. Wood Species: Species and cut to be selected, of quality for opaque or transparent finish as scheduled.
3. Moisture Content: 10-12 percent kiln dried.
4. Profiles: Refer to Drawings.

B. Interior Trim at Addition:
1. Species: Pine, paint finish.

C. Wood Tongue & Groove Ceiling at Addition:
1. Species: Douglas Fir, stain finish

2. 1"x4" planks.

D. Custom Threshold: Match existing wood trim species.

E. Wood Shiplap Interior Wall Finish: 1" x 6" Pine, paint finish.

2.2 ACCESSORIES

A. Fasteners: Type and size as required by conditions of use.

2.3 FABRICATION

A. General:
1. Prior to fabrication, field verify dimensions to ensure correct fit.
2. Where field fitting is required, provide ample allowance for cutting.

B. Wood:
1. Quality: AWI Architectural Woodwork Standards:
a. Opaque Finish: Custom Grade.
b. Transparent Finish: Premium Grade.

2.4 FINISHES

A. Field Finishing: Paint or stain as scheduled, refer to Section 099100.

PART 3 EXECUTION

3.1 PREPARATION

A. Prior to installation, condition wood to average humidity that will prevail after installation.

B. Back prime wood installed against masonry or cementitious materials prior to installation.

3.2 INSTALLATION

A. Install in accordance with AWI Architectural Woodwork Standards.

B. Install in longest practical lengths.

C. Set plumb and level.

D. Miter ends, corners, and intersections.

E. Scribe to adjacent construction with maximum 1/16 inch gaps.

F. Fasten to supporting construction.

END OF SECTION

SECTION 064100

ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Manufactured Casework:
      a. Catering kitchen cabinets.
      b. Office kitchenette cabinets.
      c. Dressing room counter.
   2. Custom Casework:
      a. Under stage storage doors.
      b. Crawlspace floor hatches.
   3. Shop finishing.
   4. Cabinet hardware.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 123600 - Countertops.
   3. Section 079200 - Joint Sealants.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Product Data:
      a. Include product data for hardware accessories, finish materials and processes, hardwood veneer plywood and plastic laminate
   2. Shop Drawings:
      a. Include dimensioned plan, sections, elevations, and details, including interface with adjacent work.
      b. Designate wood species and finishes.
   3. Samples:
      a. 3 x 3 inch plastic laminate samples in each color and finish.
      b. 6 inch long lumber samples for transparent finish.
      c. 12 x 12 inch sheet product samples for transparent finish.
      d. Each hardware component.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum 5 years documented experience in work of this Section.

B. Fire-Retardant Treated Product Requirements:
   1. Class C: Bear label of recognized independent testing laboratory indicating flame spread rating of 200 or less and smoke developed index of 450 or less, tested to ASTM E84 or UL 723.

1.4 DELIVERY, STORAGE AND HANDLING

A. Do not deliver materials until proper protection can be provided, and until needed for installation.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of casework:
   1. Temperature: 60 to 80 degrees F.
   2. Humidity: 25 to 55 percent.

PART 2 PRODUCTS

2.1 MATERIALS

A. Manufactured Plastic-Laminate-Faced Architectural Cabinets:
1. Source: Wilsonart, or approved substitute.
2. Grade: Custom.
3. Type of Construction: Frameless.
4. Interface Style: Flush Overlay.
5. Reveal Dimension: 1/2 inch.
6. Edges: ABS/PVC extruded fabrication.
7. Pattern Direction: Vertically for doors and fixed panels, horizontally for drawer fronts.
8. High-Pressure Decorative Laminate: NEMA LD 3, to be seleted from manufacturers full range of Wilsonart Cabinet Door series, including Woodgrain options.
9. Drawer sides and backs: Solid-hardwood lumber.
10. Drawer bottoms: Hardwood plywood.
11. Style: Narrow Shaker 4482: Shaker Drawer and Shaker Door, butt joint stiles and rails.

B. Sheet Products:
1. Graded in accordance with AWI Architectural Woodwork Standards for quality grade specified.
2. Sheet core:
   a. Wet Areas: Marine Grade Plywood.
   b. Other Locations: Medium Density Fiberboard meeting ANSI208.2, grade MD.
3. Exposed veneers: Species and cut to be selected, of quality for opaque finish.

C. Lumber: Graded in accordance with AWI Architectural Woodwork Standards for quality grade specified, average moisture content of 6 percent.

D. Dressing Room counter:
1. Solid Butcher block countertop and backsplash.
2. Species: Walnut, edge grain.
3. Thickness: 1-1/2 inches.
4. Finish: Transparent.
5. Edge Treatment: 1/16" Radius Edge.
6. Backsplash: 4" x 3/4" finished to match counter.
7. AWI Custom Grade.

2.2 ACCESSORIES

A. Countertops: Specified in Section 123600.

B. Recessed brackets at dressing room counter:
1. BOD: Rakks EH-1212 concealed EH Countertop Support Bracket.
2. Finish: Black powder coat finish.
3. Provide concealed counter support face plates (2"x2" T).

C. Fasteners: Type and size as required by conditions of use. Exposed fasteners to be tamper proof.

D. Adhesives:
1. Waterproof, water based type, compatible with backing and veneer and laminate materials.
2. Maximum volatile organic compound (VOC) content: 70 grams per liter.

E. Finish Hardware: As scheduled at end of Section or approved substitute.

F. Joint Sealants: Specified in Section 079200.

2.3 FABRICATION

A. Plastic-Laminate-Faced Architectural Cabinets:
1. BOD: Wilsonart Narrow Shaker Style -4482.

2. Description: 2.25" Shaker Drawer and 2.25" Shaker Door.

B. Under Stage Storage Doors: Dimensional lumber frame with plywood face covered with salvaged beadboard and wood base to blend with surrounding stage front.

C. Crawlspace Floor Hatches: Dimensional lumber frame, salvaged or new longleaf pine boards to match existing floor.

D. Shop assemble for delivery to project site in units easily handled.

E. Prior to fabrication, field verify dimensions to ensure correct fit.

F. Apply plastic laminate in full uninterrupted sheets; fit corners and joints to hairline. Slightly bevel arises. Apply laminate backing sheet to reverse side of laminate faced surfaces.

G. Where field fitting is required, provide ample allowance for cutting. Provide trim for scribing and site conditions.

H. Provide cutouts and reinforcement for plumbing, electrical, appliances, and accessories. Prime paint surfaces of cut edges.

PART 3 EXECUTION

3.1 PREPARATION

A. Prior to installation, condition cabinets to average humidity that will prevail after installation.

3.2 INSTALLATION

A. Install in accordance with AWI Architectural Woodwork Standards.

B. Set plumb, rigid and level.

C. Scribe to adjacent construction with maximum 1/8 inch gaps.

D. Adhere countertops, splashes, and skirts with beads of adhesive.

E. Fill joints between cabinets, tops, splashes, and adjacent construction with joint sealant as specified in Section 079200; finish flush.

3.3 FINISH HARDWARE SCHEDULE

	DESCRIPTION	MANUFACTURER	MODEL
CATERING KITCHEN AND OFFICE KITCHENETTE	Door and drawer pull	Richelieu	Modern Metal Pull 5632, brushed nickel finish, 4 1/32" length with 3 25/32" center to center
	Drawer slide	Blum	Blumotion, under mount, soft-closing
	Door hinge	Blum	Blumotion, soft-closing European style
	Adjustable shelf standards and brackets	Knape and Vogt	255 and 256, recess track flush with plywood
	Cabinet Lock		Finish to match cabinet pulls
UNDER PLATFORM STORAGE DOORS	Concealed Hinges	SOSS	Hercules Hinge 216H
	Threshold	Zero	627
	Heavy Duty Magnetic Push Latch	Hafele	246.65.331
	Cam Lock		
CRAWL SPACE ACCESS HATCH	Access Hatch Hinge		Continuous piano hinge
	Access Hatch Pull	Sugatsune	Folding Ring Pull #26700, stainless steel

END OF SECTION

SECTION 066400

PLASTIC PANELING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Fiber-reinforced plastic paneling.
2. Trim.
3. Base.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 079200 - Joint Sealants.

1.2 SUBMITTALS

A. Submittals for Review:
1. Samples:
a. 6 x 6 inch panel samples in each color.
b. 6 inch long trim samples.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that panels meet fire hazard classification requirements.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 2 years experience in work of this Section.

B. Fire Hazard Classification: Tested to ASTM E84.
1. Flame spread: Maximum 25.
2. Smoke density: Maximum 450.

1.4 PROJECT CONDITIONS

A. Do not install products if temperature, humidity, and ventilation requirements are outside limits recommended by manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Crane Composites. (www.cranecomposites.com)

B. Other Acceptable Manufacturers:
1. Nudo Products, Inc. (www.nudo.com)
2. Panolam Industries International, Inc. (www.panolam.com)
3. Marlite. (www.marlite.com)

2.2 MATERIALS

A. Plastic Sheet Paneling:
1. Source: Crane Composites, or approved substitute.
2. Type: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319, USDA approved for incidental food contact.
3. Size: 0.075 inch thick x 48 inches wide x maximum practical length.
4. Scratch resistance: Minimum 35, tested to ASTM D2583.

5. Water absorption: Maximum 0.3 percent, tested to ASTM D570.
6. Impact resistance: Minimum 11.0 inch pounds, tested to ASTM D5420 without visible damage on finished side.
7. Color and surface texture: To be selected from manufacturer's standards.

2.3 ACCESSORIES

A. Trim:
   1. One piece extruded PVC, manufacturer's standard profile.
   2. Inside and outside corners, division bar, J-molding, and base.
   3. Color: To match panels.

B. Adhesive: Compatible with panels and substrate; recommended by panel manufacturer.

C. Joint Sealant: Specified in Section 079210.

D. Patching Compound: White latex type.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare substrate to receive panels:
   1. Remove high spots.
   2. Fill low spots with patching compound; sand smooth.
   3. Remove loose and foreign matter that could impair adhesion.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install trim:
   1. Panel-to-panel joints: Division bar.
   2. Internal and external corners.
   3. Exposed edges: J molding.
   4. Floor to wall: Base.
   5. Secure to substrate.

C. Cut panels to fit at perimeter and around penetrations. Ensure that trim will completely cover cut edges.

D. Maintain 1/8 to 3/16 inch expansion space at perimeter and around penetrations.

E. Adhere panels to substrate with continuous beads of adhesive.

F. Install continuous bead of joint sealant between panels and trim and between trim and adjacent construction.

END OF SECTION

SECTION 072113

BOARD INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Board insulation at exterior walls.
2. Board insulation at under side of roof, existing building.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Indicate product composition and performance characteristics.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that insulation meets fire hazard classification requirements.

1.3 QUALITY ASSURANCE

A. Fire Hazard Classification:
1. Noncombustible, tested to ASTM E136.
2. Maximum flame spread/smoke developed rating of 25/450, tested to ASTM E84.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store insulation in clean, dry, sheltered area, off ground or floor, until used. Protect against wetting and moisture absorption.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Owens Corning. (www.owenscorning.com)
2. Hunter Panels. (www.hpanels.com)
3. OX Engineered Products. (www.oxengineeredproducts.com)
4. Rmax, Inc. (www.rmaxinc.com)
5. Johns Manville. (www.jm.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Board Insulation - Polyisocyanurate:
1. ASTM C1289, rigid polyisocyanurate faced both sides with aluminum foil facings, reinforced core.
2. Thermal resistance: Minimum R value of 6.5 per inch of thickness.
3. Thickness: Refer to Drawings.

B. Board insulation at underside of existing building roof - Extruded Polystyrene:
1. Source: Owens Corning Foamular
2. Polystyrene Board Insulation (XPS), ASTM C578, Type X, closed cell extruded polystyrene foam.

3. Thermal resistance: Minimum R value of not less than 5 per inch.
4. Thickness: Refer to Drawings

2.3 ACCESSORIES

A. Tape: Minimum 2 inches wide, pressure sensitive, waterproof.

B. Liquid Flashing: Type recommended by manufacturer.

C. Facade Anchors: Type recommended by insulation manufacturer.

D. Adhesive: Type recommended by insulation manufacturer.

E. Fasteners: Type best suited to application, hot-dip galvanized or fluoropolymer coated steel.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Place facade anchors in spacing recommended by manufacturer.

C. Friction fit insulation between facade anchors and use dollops of compatible sealant to adhere to moisture barrier.

D. Stagger end joints.

E. Butt edges and ends tight to adjacent boards, at perimeter, and around penetrations with maximum 1/8 inch gaps.

F. Apply tape to joints and edges.

G. Apply liquid flashing to all penetrations through insulation.

END OF SECTION

SECTION 072115

BATT INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Batt insulation in exterior wall and ceiling assemblies.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 012300 - Alternates.

1.2 SUBMITTALS

A. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that insulation meets fire hazard classification requirements.

1.3 QUALITY ASSURANCE

A. Fire Hazard Classification:
1. Noncombustible, tested to ASTM E136.
2. Flame spread/smoke developed rating of 25/450 or less, tested to ASTM E84.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store insulation in clean, dry, sheltered area, off ground or floor, until used. Protect against wetting and moisture absorption.

1.5 PROJECT CONDITIONS

A. Do not install insulation until building is substantially water and weather tight.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Mineral Wool Insulation:
1. Roxul Inc. (www.roxul.com)
2. Johns Manville. (www.jm.com)
3. Knauf Insulation. (www.knaufinsulation.us)
4. Owens Corning. (www.owenscorning.com)

B. Acceptable Manufacturers - Glass Fiber Insulation:
1. Johns Manville. (www.jm.com)
2. Knauf Insulation. (www.knaufinsulation.us)
3. Owens Corning. (www.owenscorning.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Thermal Batt Insulation - Mineral Wool:
1. Type: Non-combustible, lightweight, mineral wool batt insulation to ASTM C665, Type 1, that provides fire resistance to ASTM E136 and a sound control to ASTM E90 and ASTM C423.
2. Size: Stud width x 48 inches.
3. Thermal resistance:

a. 5-1/2 inches thick: R-value of 23.00.
b. 7 inches thick: R-value of 30.00.

B. Thermal Batt Insulation - Glass Fiber:
1. Type: ASTM C665, glass fiber composition.
2. Size: Stud width.
3. Thickness: 5-1/2 inches.
4. Facing: Unfaced.
5. Stapling flanges: None.
6. Free from urea-formaldehyde resins.
7. Thermal resistance: Minimum R-value of 20.00.

PART 3 EXECUTION

3.1 INSTALLATION

A. Friction fit between framing members.

B. Butt insulation to adjacent construction. Butt ends and edges.

C. Carry insulation around pipes, wiring, boxes, and other components.

D. Ensure complete enclosure of spaces without voids.

E. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

SECTION 072129

SPRAYED INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Sprayed cellulose acoustical insulation.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Manufacturer's literature for products furnished, including application instructions. Include data that the product meets or exceeds the specified requirements.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that insulation meets fire hazard classification requirements.

1.3 QUALITY ASSURANCE

A. Manufacturer Requirements:
1. Have a current Underwriters Laboratories (UL) Code Evaluation Report.
2. Be in compliance with the 2009-2021 International Building Code.
3. ISO 9001:2015 Certified.
4. Forest Stewardship Council (FSC) Chain-of-Custody Certified.
5. Must subscribe to independent laboratory follow-up inspection services of Underwriters Laboratories and Factory Mutual. Each bag shall be labeled accordingly.
6. Minimum 10-year successful performance history of producing and installing spray-applied cellulose on similar projects

B. Applicator Qualifications: Approved by manufacturer of insulation material.

C. Fire Hazard Classification: Maximum flame spread/smoke developed rating of 25/450, tested to ASTM E84.

D. Mock-up: Apply a 100 square foot representative sample to be reviewed by the Architect and/or Owner prior to proceeding.

E. Material must be tested in accordance with ASTM E 1042 by a NVLAP accredited testing laboratory.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to site with labels designating fire hazard classifications.

B. Store materials off ground or floor in protected, dry area; discard materials that have been exposed to weather prior to use.

1.5 PROJECT CONDITIONS

A. Environmental Requirements:
1. Do not apply insulation when air or surface temperature is less than 40 degrees F, nor when such temperatures are anticipated within 24 hours after application.
2. Consult manufacturer for application procedures during excessively humid or other adverse weather conditions.

1.6 SEQUENCING

A. Do not position ducts, piping, conduit, and other suspended equipment that will interfere with uniform application until after application.

B. Place conduit, boxes, wiring, plumbing lines, and other components prior to application of insulation where these can be anticipated in advance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by International Cellulose Corp. (www.spray-on.com)

B. Other Acceptable Manufacturers:
1. Isolatek International. (www.cafco.com)
2. Monoglass, Inc. (www.monoglass.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Sprayed Cellulose Insulation:
1. Source: K-13 Insulation by International Cellulose Corp., or approved substitute.
2. Type: Treated cellulose fibers with integral binders, ASTM C1149.
3. Bond strength: Minimum 100 psf when tested in accordance with ASTM E736.
4. Bond Deflection: 6” Deflection in 10’ Span – No Spalling or Delamination per ASTM E 759.
5. Color: Black.
6. Each bag must be labeled with appropriate UL classification and FM markings
7. Each drum of adhesive must be labeled "SK-2000 adhesive to be used with K-13"
8. Thickness: As indicated on Drawings.

2.3 MIXES

A. Mix as recommended by insulation manufacturer.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces to remove oil, grease, dirt, and other materials that could impair bond.

B. Test painted steel surfaces to verify that paint will not impair bond.

3.2 APPLICATION

A. Apply in accordance with manufacturer's instructions.

B. Spray apply to depth required to meet thermal requirements, to uniform monolithic density without voids.

C. Discard partially set, frozen, and caked materials. Stop application and revise mix as required if material does not properly adhere.

3.3 ADJUSTING

A. Inspect areas for complete coverage; correct unacceptable work and patch.

B. Patch damaged and cut areas.

C. Replace areas where excessive shrinkage or cracking is evident.

END OF SECTION

SECTION 072500

WEATHER BARRIERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Fluid applied materials for controlling air and moisture movement at exterior wall assemblies.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 079200 - Joint Sealants.

1.2 QUALITY ASSURANCE

A. Provide continuous barrier to moisture infiltration, air infiltration and exfiltration, and water vapor transmission, flashed to discharge incidental condensation and water penetration.

B. Source limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.

C. Mockup:
   1. Construct mockup of typical exterior wall, minimum 8 feet wide x full height.
   2. Incorporate back-up construction, weather barrier, typical opening, flashings, and critical junctions.
   3. Locate where directed.
   4. Approved mockup may remain as part of the Work.

D. Pre-Installation Conference:
   1. Convene at site 2 weeks prior to beginning work of this Section.
   2. Attendance: Architect, Construction Manager, weather barrier installer, and related trades whose work follows or affects weather barrier.
   3. Review and discuss:
      a. Surface preparation, minimum substrate curing period, and installation procedures.
      b. Special details and flashings.
      c. Sequence of construction, responsibilities, and schedule for subsequent operations.
      d. Mock-up requirements.
      e. Inspection, protection, and repair procedures.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Manufacturer's descriptive data.
   2. Samples: 12 x 12 inch weather barrier samples.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Fluid Applied Weather Barriers:
   1. Carlisle Coatings and Waterproofing. (www.carlisle-ccw.com)
   2. Henry Company. (www.henry.com)
   3. Tremco Incorporated. (www.tremcosealants.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Fluid-Applied Weather Barrier:
1. Source: Tremco ExoAir 230, or approved substitute.
2. Type: Fluid applied, water based, roller or spray grade, monolithic, elastomeric membrane.
3. Elongation: Minimum 340 percent, tested to ASTM D412.
4. Air permeance: Maximum 0.0001 CFM per square foot, tested to ASTM E2178 using free film method, 75 Pa.
5. Assembly air permeance: Maximum 0.002 CFM per square foot at 1.56 lb per square foot, tested to ASTM E2357.
6. Water leakage: None, tested to ASTM E331 at minimum 2.86 pounds per square foot for 15 minutes.
7. Water vapor permeance: 11 Perms, Wet Cup.

2.3 ACCESSORIES

A. General: Accessory materials as described in manufacturer's written installation instructions, recommended to produce complete air barrier assembly meeting performance requirements, and compatible with air barrier membrane material and adjacent materials.

B. Primer: Liquid primer meeting VOC limitations, recommended for substrate by membrane air barrier manufacturer, when installing modified bituminous self-adhered membranes.
1. Basis of Design Product: Tremco, Inc., ExoAir Primer

C. Transitions:
1. Counterflashing Strip: Modified bituminous, 40 mils (1.0 mm) thick self-adhering composite sheet consisting of 32 mils (0.8 mm) of SBS rubberized asphalt laminated to an 8 mils (0.2 mm) high-density, cross-laminated polyethylene film, for counterflashing of metal flashings and for substrate transitions and for termination of air barrier to bituminous roof membranes and to air barrier terminations at openings.
a. Basis of Design Product: Tremco, Inc., ExoAir TWF Thru-Wall Flashing.
2. High Temperature Flashing Strip and Underlayment: Butyl, 24 mil thick self-adhering composite sheet consisting of 20 mils of butyl laminated to 4 mil polyethylene film; thermally stable under intermittent, non-continuous exposure up to 240 deg F (115 deg C).
a. Basis of Design Product: Tremco, Inc., ExoAir 110AT.

D. Reinforcing Fabric: High strength mesh fabric consisting of open-weave glass fiber saturated with synthetic resins formulated for high moisture resistance, for reinforcing of liquid applications; not less than 2.5 oz/sq. yd (85 g/sq. m).
1. Basis of Design Product: Tremco, Inc., Tremco 2011.

E. Liquid Joint Sealants:
1. ASTM C 920, single-component polyurethane, approved by air barrier manufacturer for adhesion and compatibility with membrane air barrier and accessories.a.Basis of Design Product: Tremco, Inc., Dymonic 100.
2. ASTM C 920, single-component, neutral-curing silicone, approved by air barrier manufacturer for adhesion and compatibility with membrane air barrier and accessories post installation of the membrane.
a. Basis of Design Product: Tremco, Inc., Spectrem

F. Sprayed Polyurethane Foam Sealant: Sprayed Polyurethane Foam Sealant: Foamed-in-place, 1.5- to 2.0-lb/cu. ft. (24- to 32-kg/cu. m) density, with flame-spread index of 25 or less per ASTM E 162, for filling of gaps at openings and penetrations.
1. Basis of Design; Tremco Inc., Flexible Low Expanding Foam (LEF)

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces to receive weather barrier; remove loose and foreign matter that could impair adhesion

or performance.

B. Protect adjacent and underlying surfaces.

C. Fill voids, holes, and cracks over 1/16 inch in width with patching compound; finish flush with adjacent surfaces. Apply one coat of weather barrier over patched areas and allow to dry.

D. Apply joint tape centered over sheathing joints. Lap ends 2 inches minimum. Press to full bond with substrate without voids, wrinkles, bridging, or fishmouths.

3.2 APPLICATION - FLUID APPLIED WEATHER BARRIERS

A. Apply weather barrier in accordance with manufacturer's instructions.

B. Air barrier thickness: Wet film and dry film application thicknesses: As recommended by air barrier manufacturer’s product data.

C. Apply primer to joints in substrate, inside and outside corners, and around perimeter and penetrations. Apply joint tape over primer; press to full bond with substrate.

D. Apply weather barrier by roller or spray to continuous and uniform coverage with minimum mil thickness as recommended by manufacturer.

E. Seal to door and window frames, around penetrations, and at perimeter with flashing sheet. Press to full bond with substrate without voids, wrinkles, bridging, or fishmouths.

3.3 FIELD QUALITY CONTROL

A. Testing Services: Perform adhesion testing of minimum one area per day of application to confirm adequate adhesion to substrate. Submit reports to Owner and design team.

B. Inspect weather barrier for damage just prior to covering.

C. Clean damaged areas and cover with additional weather barrier material minimum 6 inches larger than damaged area on all sides.

D. Testing and Inspection Services:
   1. Owner will employ an independent testing and inspection firm to perform air testing.
   2. Perform tests after manufacturer’s recommended curing time has elapsed.
   3. Air leakage testing: Perform qualitative air leakage testing per ASTM E1186.

END OF SECTION

SECTION 072600

VAPOR RETARDERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Vapor barrier and installation accessories for installation under concrete slabs.
2. Vapor barrier and installation accessories for installation in existing building crawlspace.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 033000 - Cast-In-Place Concrete.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Include product description and performance characteristics.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Stego Industries. (www.stegoindustries.com)

B. Other Acceptable Manufacturers:
1. Griffolyn, Division of Reef Industries. (www.reefindustries.com)
2. Raven Industries. (www.rufco.com)
3. W.R. Meadows, Inc. (www.wrmeadows.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Vapor Barrier - Under Concrete Slabs:
1. Source: Stego Wrap Vapor Barrier by Stego Industries LLC., or approved substitute.
2. Exceed requirements of ASTM E1745, Class A.
3. Description: Reinforced two ply polyethylene film.
4. Water vapor permeance: Maximum 0.01 Perms as tested in accordance with mandatory conditioning tests per ASTM E1745.
5. Strength: ASTM E1745 Class A.
6. Thickness: 15 mils minimum.
7. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745.

B. Vapor Barrier - Crawlspace Liner:
1. Source: StegoCrawl Vapor Barrier by Stego Industries, or approved substitute.
2. Water vapor permeance: Maximum 0.01 Perms as tested in accordance with mandatory conditioning tests per ASTM E1745.
3. Strength and Longevity: ASTM E1745.
4. Thickness: 15 mils minimum.

2.3 ACCESSORIES

A. Vapor Barrier - Crawlspace Liner Accessories:
1. Seams and Penetrations of Liner: StegoCrawl Tape by Stego Industries LLC.
2. Perimeter/edge seal:

a. StegoCrawl Term Bar by Stego Industries LLC.
b. StegoTack Tape (double sided) by Stego Industries LLC.

B. Vapor Barrier - Under Slabs on Grades:
1. Seams: Stego Tape by Stego Industries LLC.
2. Sealing Penetrations of Vapor barrier:
a. Stego Mastic by Stego Industries LLC.
b. Stego Tape by Stego Industries LLC.
3. Perimeter/edge seal:
a. Stego Crete Claw by Stego Industries LLC.
b. Stego Term Bar by Stego Industries LLC.
c. StegoTack Tape (double-sided sealant tape) by Stego Industries LLC.
4. Penetration Prevention:
a. Beast Foot by Stego Industries LLC.
b. Beast Form Stake by Stego Industries LLC.
5. Vapor Barrier-Safe Screed System
6. Beast Screed by Stego Industries, LLC.
7. Beast Hook by Stego Industries, LLC.

PART 3 EXECUTION

3.1 INSTALLATION - UNDER SLABS ON GRADE

A. Install vapor barrier in accordance ASTM E1643 and manufacturer's instructions:
1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
2. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments, such as dowels, waterstops, or any other site condition requiring early termination of the vapor barrier. At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself.
a. Seal vapor barrier to the entire slab perimeter using Stego Crete Claw, per manufacturer's instructions.
b. Seal vapor barrier to the entire perimeter wall or footing/grade beam with double sided StegoTack Tape, or both Stego Term Bar and StegoTack Tape, per manufacturer's instructions. Ensure the concrete is clean and dry prior to adhering tape.
3. Overlap joints 6 inches and seal with manufacturer's seam tape.
4. Apply seam tape/Crete Claw to a clean and dry vapor barrier.
5. Seal all penetrations (including pipes) per manufacturer's instructions.
6. For interior forming applications, avoid the use of non-permanent stakes driven through vapor barrier. Use Beast Form Stake and Beast Foot as a vapor barrier-safe forming system. Ensure Beast Foot's peel-and-stick adhesive base is fully adhered to the vapor barrier.
7. If non-permanent stakes must be driven through vapor retarder, repair as recommended by vapor retarder manufacturer.
8. Use reinforcing bar supports with base sections that eliminate or minimize the potential for puncture of the vapor barrier.
9. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile.
10. For vapor barrier-safe concrete screeding applications, install Beast Screed (vapor barrier-safe screed system) per manufacturer's instructions prior to placing concrete.

3.2 INSTALLATION - CRAWLSPACE LINER

A. Install crawlspace liner in accordance to manufacturer's instructions:
1. Turn StegoCrawl Vapor Barrier up the foundation wall to a minimum height of six inches above the outside/exterior grade or in compliance with local building codes and terminate with StegoCrawl Term Bar. To form a complete seal, apply StegoTack Tape to the foundation wall prior to installing StegoCrawl Term Bar.

2. Seal StegoCrawl Vapor Barrier around all penetrations and columns using StegoCrawl Tape and/or StegoTack Tape.
3. Place StegoCrawl Vapor Barrier directly over the crawlspace floor. Where consistent with local code, if rigid insulation is to be used, install StegoCrawl Vapor Barrier prior to insulation (under insulation and between the foundation wall and insulation).
4. Overlap seams a minimum of six inches and seal with StegoCrawl Tape. Some codes require a minimum of a twelve inch overlap. Check appropriate codes prior to installation.
5. No penetration of the liner is allowed except for reinforcing steel and permanent utilities.
6. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all sides with tape.

3.3 REPAIR

A. Inspect vapor retarder for damage just prior to covering.

B. Clean damaged areas and cover with additional vapor retarder material cut minimum 6 inches larger than damaged area on all sides. Seal to main vapor retarder with continuous tape.

END OF SECTION

SECTION 074113

METAL ROOF PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Preformed metal roof panel system.
2. Underlayment.
3. Flashings, trim, anchorage, and accessories.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 079200 - Joint Sealants.

1.2 SYSTEM DESCRIPTION

A. Design Requirements; design roof system to withstand:
1. Live and dead loads in accordance with Building Code.
2. Minimum wind pressures in accordance with ASCE 7, with maximum allowable deflection of L/240 , tested in accordance with ASTM E1592.
3. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show configuration of panels, trim members, and closures. Include and label sizes and spacings of attachments, clips/furring/sub-framing, and detail components that interface with adjacent construction.
2. Product Data: Show system components including panels, trim, and accessories.
3. Samples: Provide color card for initial color selection, then submit 12 inch long panel samples in selected finish.
4. Warranty: Sample warranty form.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
1. Build mockup of typical roof area and eave, including fascia, termination at soffit and ridge, and gutter and downspout as shown on Drawings; approximately 48 inches square by full length, including attachments, underlayment, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE AND HANDLING

A. Protect panels from contact with materials that could cause staining or discoloration of finish.

1.6 PROJECT CONDITIONS

A. Do not install underlayment at ambient or surface temperatures less than 40 degrees F or on wet or frozen substrate.

B. Do not install panels on wet or frozen substrate.

1.7 WARRANTIES

A. Furnish manufacturer's 20 year warranty providing coverage against chipping, cracking, fading, or delamination of panel finish.

B. Furnish manufacturer's 10 year watertightness warranty.

C. Furnish installer's 2 year watertightness warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Berridge Manufacturing Co. (www.berridge.com)

B. Other Acceptable Manufacturers:
1. AEP-Span. (www.aepspan.com)
2. Centria Architectural Systems. (www.centria.com)
3. Fabral. (www.fabral.com)
4. MBCI. (www.mbci.com)
5. Morin, A Kingspan Group Company. (www.kingspan.com)
6. Petersen Aluminum Corp. (www.pac-clad.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Metal Roof Panels:
1. Source: S-Deck Panel by Berridge Manufacturing Co., or approved substitute.
2. Profile: 7/8" corrugations spaced 2 1/2" on center, exposed fasteners.
3. Material: Prefinished Aluminum-Zinc Alloy Coated Steel Sheet, ASTM A792/A792M, Commercial Quality, AZ55 aluminum-zinc alloy coating, Grade 40, yield strength 40 ksi min.
4. Thickness: Minimum 24 gauge.
5. Finish: Unpainted metal with clear acrylic coating on both sides of material.

B. Underlayment:
1. Provide underlayment materials as approved by Berridge for a watertightness warranty, include one of the following:
   a. Grace Ice & Water Shield (40 mil)
   b. Grace Ultra (30 mil)
   c. Tamko TW Underlayment (40 mil)
   d. Tamko TW Metal & Tile (75 mil)
   e. Carlisle WIP 300 HT (40 mil)
   f. Soprema Lastobond Shield HT (40 mil)
   g. Polyglass Polystick MTS (60 mil)
   h. Mid-States Asphalt Quik-Stick HT Pro (60 mil)

2.3 ACCESSORIES

A. Fasteners:
1. Panels and trim: 300 Series stainless steel, type best suited to application; head color to match panels where exposed, with neoprene gasketed washers.

B. Joint Sealants: Specified in Section 079200.

2.4 FABRICATION

A. Trim: Profiles as indicated or as required, fabricated from same material as panels.

B. Roll form panels and trim to required profiles in longest practical lengths.

PART 3 EXECUTION

3.1 INSTALLATION OF UNDERLAYMENT

A. Install in accordance with manufacturer's instructions.

B. Starting at low edge, apply underlayment horizontally on roof. Weatherlap each sheet 4 inches over preceding sheet. Lap ends 6 inches minimum.

C. Press with roller to full bond with substrate without voids, wrinkles, bridging, or fishmouths. Seal ends and edges.

D. Lap underlayment minimum 12 inches over hips and ridges from both sides. Apply 36 inch wide strip centered lengthwise over ridge.

E. Extend minimum 6 inches up abutting vertical surfaces and wrap down over blocking behind fascia.

F. Flash penetrations, curbs, and similar projections through underlayment with membrane and sealant.

3.2 INSTALLATION OF METAL PANELS

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Install clips and concealed cleats; seal fastener penetrations through underlayment with compatible sealant where roof panels are installed at less than manufacturer warranted slope.

C. Install aligned, level, and plumb.

D. Locate panel joints over supports. Lap end joints 4 inches minimum. Install panels in continuous lengths from eave to ridge without end joints.

E. Install trim to maintain visual continuity of system.

F. Install joint sealants and gaskets to prevent water penetration. Provide line of tape sealant for weathertightness at panel side laps and end laps.

G. Flash penetrations through roofing with metal trim to match panels:
   1. Lap flashings over roof panels 12 inches minimum on all sides and seal with double bead of joint sealant.
   2. Install metal draw band and joint sealant at top of pipe penetrations.
   3. Install metal cricket water diverter at uphill side of square and rectangular penetrations.

H. Installation Tolerances:
   1. Variation from location: Plus or minus 1/4 inch.
   2. Variation from plane: 1/4 inch in 10 feet.

END OF SECTION

SECTION 074213

FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exposed-fastener, lap-seam metal wall panels.
2. Concealed-fastener, lap-seam metal wall panels.
3. Metal liner panels.

B. Related Sections:
1. Section 061000 – Rough Carpentry.
2. Section 072500 – Weather Barriers.
3. Section 074800 – Rainscreen Attachment System.
4. Section 076200 – Sheet Metal Flashing and Trim.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review of procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 3 inches per 12 inches (1:5).

C. Calculations:

1. Include calculations with registered engineer seal, verifying wall panel and attachment method resist wind pressures imposed on it pursuant to applicable building codes.

D. Samples for Initial Selection: For each type of metal panel indicated with factory-applied finishes.

1. Include Samples of trim and accessories involving color selection.

E. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in architectural sheet metal products.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical metal panel assembly 100 sf, including corner, supports, attachments, and accessories.
2. Water-Spray Test: Conduct water-spray test of metal panel assembly mockup, testing for water penetration according to AAMA 501.2.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Remove strippable protective covering on metal panels during installation. Do not leave film on installed panels.

E. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Galvalume Substrate Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing or perforating.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: 20 years and six months from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory- applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, chipping, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 29 percent.

B. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.
2. Deflection Limits: For wind loads, no greater than 1/240 of the span.

2.2 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS

A. General: Provide factory-formed metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.

B. Wide-Reveal-Joint, Concealed-Fastener Metal Wall Panels: Formed with horizontal or vertical panel edges and a corrugated profile between panel edges, resulting in a wide reveal joint between panels.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Berridge Manufacturing Company; HC-16

2. Metallic-Coated Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ55 (Class AZM155) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
   a. Nominal Thickness: 0.024 inch (0.61 mm).
   b. Surface: Smooth finish.
   c. Finish: Unpainted metal with clear acrylic coating on both sides of material.
3. Panel Coverage: 16 inches (406 mm).
4. Panel Height: 0.875 inches (22 mm).

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275) hot-dip galvanized coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.4 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs if required for full length of panel.

C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on continuous coil coating line, with top-side dry film thickness of 0.75 ±0.05 mil (0.019 ±0.0013 mm) over 0.2 ±0.05-mil (0.05 ±0.0013-mm) primer coat, to provide total dry film thickness of 0.95± 0.10 mil (0.024 ±0.0025 mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Mica Fluoropolymer: AAMA 621. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on continuous coil coating line, with top-side dry film thickness of 0.75 ±0.05 mil (0.019 ±0.0013 mm) over 0.2 ±0.05-mil (0.05 ±0.0013-mm) primer coat, to provide total dry film thickness of 0.95± 0.10 mil (0.024 ±0.0025 mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
3. Metallic Fluoropolymer: AAMA 621. Two-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on continuous coil coating line, with top-side dry film thickness of 0.75 ±0.05 mil (0.019 ±0.0013 mm) over 0.2 ±0.05-mil (0.05 ±0.0013-mm) primer coat, to provide total dry film thickness of 0.95± 0.10 mil (0.024 ±0.0025 mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

4. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.35 mil (0.009 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized steel fasteners for surfaces exposed to the interior.
2. Aluminum Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use stainless steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

5. Flash and seal panels with weather closures at perimeter of all openings.

E. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Metal Liner Panels: Install panels on per approved Shop Drawings.

G. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

H. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal

flashing and trim to fit substrates and achieve waterproof performance.

2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.4 FIELD QUALITY CONTROL

A. Testing Agency: [**Owner will engage**] [**Engage**] a qualified testing agency to perform tests and inspections.

B. Water-Spray Test: After installation, test area of assembly [**indicated on Drawings**] [**as directed by Architect**] **<Insert area>** for water penetration according to AAMA 501.2.

C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.

D. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.

E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

F. Prepare test and inspection reports.

3.5 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 074800

RAINSCREEN ATTACHMENT SYSTEM

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

A. Provide a thermally broken, rainscreen attachment system to sufficiently support cladding installed over exterior insulation while maintaining visual design concepts.

B. Design Requirements:
1. Employ qualified professional engineer licensed in State of Texas to perform structural design.
2. Design furring system to withstand live and dead loads in accordance with Building Code.
3. Minimum stud gauge of back-up wall assembly to be 43 mil thickness.
4. Continuous, solid, non-perforated framing profiles (including C- or Z-shaped sections or furring) penetrating insulation are not allowed.
5. Attachment system must have proven thermal isolation with a reduction in thermal bridging as indicated by calculations or finite element analysis in accordance with ASHRAE guidelines.
6. Fasteners: tension shall be taken as the sum of direct tension plus tension due to prying for eccentrically loaded connections. Prying may be reduced or eliminated if proven via engineering analysis or testing.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conference:
1. Attendance: Architect, Owner, Contractor, installer, and related trades.
2. Review: Project conditions, back-up wall framing, manufacturer requirements, delivery and storage, staging and sequencing, and protection of completed work.

1.3 SUBMITTALS

A. Action Submittals:
1. Drawings: Illustrate products, installation, spacing and connection to adjacent construction.
2. Product Data: Manufacturer’s descriptive data and product attributes.
3. Samples: Selection samples.

B. Informational Submittals:
1. Structural calculations: Manufacturer's comprehensive structural design analysis signed and sealed by a registered professional engineer.
2. Three-dimensional thermal modeling indicating framing system’s impact on exterior insulation rated R-value.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Firm specializing in work of this Section, with minimum 3 years’ documented experience.

B. Mock-Ups: Coordinate mock-up materials and requirements with mock-up specified in Division 01 and exterior cladding specification.

C. Single source responsibility: Furnish engineered rainscreen attachment system components under direct responsibility of single manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturers' original, unopened and undamaged containers or crates. Keep materials clean, dry and free of dirt and other debris and protect from weather or construction activities. Follow manufacturers' recommendations.

1.6 WARRANTY

A. Manufacturer's 10-year limited warranty against structural failure of system; includes the labor and material cost for removal and replacement of defective material; includes the labor cost for removal and reinstallation of overlying façade finish panels as required to access defective materials. All materials and components to be supplied and installed per manufacturer's requirements. Excludes repairs, replacement, and corrective work to the substrate, primary structure, finish panels, and/or property – unless otherwise noted above.

B. Installer's 2-year warranty against defects in installation of system.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract Documents are based on products by Knight Wall Systems. www.knightwallsystems.com

B. Substitutions: Refer to Division 01.

2.2 MATERIALS

A. Steel Sheet:
   1. Steel classification: Structural steel, 50 ksi yield strength.
   2. Corrosion protection coating: ASTM A1046, zinc-aluminum-magnesium, minimum thickness ZM40.

2.3 COMPONENTS

A. Comply with ANSI/ASHRAE 90.1.

B. Primary Girts:
   1. Profile: ThermaZee; z-channel, front and back flanges of equal length, with attachment holes.
   2. Thickness: Minimum 18 gage.
   3. Web perforations: Minimum 50 percent open area.
   4. Depth: As indicated.
   5. Thermal isolation:
      a. Located between back flange and substrate; continuous along length of channel
      b. Minimum 0.25 inch thickness.
      c. Thermal conductivity: Less than 0.18 Watts per Meter Kelvin.
      d. Designed to prevent accumulation of liquid water on upper edge.
   6. Finish: Black PVDF coated.

C. Secondary Rails:
   1. Profile: PanelRail; square hat channel with stiffening lips, weep drains and attachment holes.
   2. Thickness: Minimum 18 gage.
   3. Web perforations: 3/4 inch diameter holes at maximum 4 inches on center.
   4. Fastening face width: As determined by structural analysis.
   5. Depth: 3/4 inch.
   6. Finish: Black PVDF coated.

D. Secondary Vertical Joint Rail:
   1. Profile: RevealRail; square hat channel with stiffening lips.

2. Thickness: Minimum 18 gage.
3. Dimensions: 2.0 inches at web, 1.625 inches at each flange, with 0.25 stiffening lips.
4. Depth: 3/4 inch.
5. Finish: Black PVDF coated.

2.4 ACCESSORIES

A. Thermal Insulation: Refer to Section 072113.

B. Formed Metal Wall Panels: Refer to Section 074213.

C. Wall Anchors: Corrosion resistant coated steel; thermally isolated with minimum 1/8 inch thick polymer washer; type, spacing and embedment as system engineer requires.

D. Bracing, Furring, Bridging, Plates, Gussets, and Clips: Formed sheet steel, thickness to meet structural requirements.

E. Galvanic Protection: Utilize tapes and other methods to separate and prevent contact between dissimilar metals.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved engineering calculations.

B. Place girts no greater than maximum spacings indicated.

1. Girt layout may need to be coordinated with cladding layout and fastening requirements.
2. Components must not be cut while installed on the building unless a shearing instrument is used.

C. Friction fit thermal insulation tight to girts.

D. Install metal wall panels as specified in Section 074213.

3.2 ADJUSTING

A. Clean and touch up damaged coatings.

END OF SECTION

SECTION 075400

THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Rigid roof insulation.
2. Cover board.
3. Fully adhered single ply thermoplastic membrane roofing.
4. Base flashings.
5. Walkway pads.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 061000 - Rough Carpentry.
3. Section 076200 - Sheet Metal Flashing and Trim.

1.2 SYSTEM DESCRIPTION

A. Design Requirements: Design roofing system to resist minimum wind loads in accordance with Building Code and ASCE 7.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Indicate:
a. Setting plan for insulation.
b. Roof slopes.
c. Layout of seams.
d. Base flashing, termination, and special details.
e. Fastener types and locations.
2. Product Data: Manufacturer's product specifications, installation instructions, and general recommendations for each product.
3. Samples: Walkway pad.
4. Warranty: Sample warranty form.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that roofing system meets fire hazard and windstorm classification requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:
1. Minimum 3 years documented experience in work of this Section.
2. Licensed or certified by roofing materials manufacturer.
3. Class A Fire Hazard Classification, tested to ASTM E108.

B. Pre-Installation Conference:
1. Convene at site 2 weeks prior to beginning work of this Section.
2. Attendance: Architect, Contractor, roofing applicator, roofing manufacturer's representative, and related trades.
3. Review and discuss: Contract Documents, roofing system manufacturer's literature, project conditions, scheduling, and other matters affecting application.
4. Tour representative areas of roofing substrates; discuss substrate construction, related work, work conditions, and materials compatibility.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store materials, other than membrane, in protected, dry area, between 60 and 80 degrees F until used; provide proper ventilation.

B. Protect sheet goods from damage and wetting.

1.6 PROJECT CONDITIONS

A. Do not apply roofing to damp or frozen substrate.

B. Do not apply roofing during inclement weather or at temperatures below 40 degrees F, or above 100 degrees F or if freezing weather is anticipated within 24 hours after application. Do not use frozen materials.

1.7 WARRANTIES

A. Furnish manufacturer's 20 year no dollar limit warranty providing coverage against water leakage through roofing system.
   1. Make repairs to roofing system required due to defects in materials or workmanship resulting in water leakage into or through roofing system.
   2. Include cost of labor and materials necessary to make required repairs.
   3. Cover all roofing system components including roofing membrane, built-up and metal flashings, high wall waterproof flashings, roof insulation, and preflashed accessories.
   4. Not limited to specific dollar amount.
   5. Transferable to subsequent building owners during warranty period.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - TPO Roofing System:
   1. Carlisle Syntec, Inc. (www.carlisle-syntec.com)
   2. Firestone Building Products Co. (www.firestonebpco.com)
   3. GAF. (www.gaf.com)
   4. Johns Manville. (www.jm.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Rigid Insulation:
   1. Type: ASTM C1289, Type II, rigid polyisocyanurate faced both sides with glass fiber mat facings.
   2. Thermal resistance: Minimum R value of 25. Provide insulation in two approximately equal thicknesses.
   3. Maximum board size: 4 feet x 4 feet.
   4. Provide board tapered to 1/2 inch per foot at crickets and minimum 1/4 inch per foot elsewhere.

B. Cover Board: Type required by roofing manufacturer for warranty requirements or as indicated below:
   1. Source: DensDeck Prime with Eonic Technology by GP Gypsum Corporation, or approved substitute.
   2. Type: ASTM C1177/C1177M; 48 inches wide x 1/2 inch thick, maximum practical length, square cut ends and edges.
   3. Mold resistance: 10, tested to ASTM D3273.

C. Roof Membrane:
   1. Type: ASTM D6878/D6878M, reinforced thermoplastic polyolefin (TPO), ultraviolet resistant.
   2. Size: Maximum sheet size permitted by application and job conditions.
   3. Thickness: 60 mils.
   4. Color: Manufacturer’s standard tan.

D. Flashing Sheet: Manufacturer's standard flashing sheet, color to match membrane.

2.3 ACCESSORIES

A. Accessories: By manufacturer of roofing system, including adhesives, tapes, solvents, sealants, water cutoff mastic, and prefabricated pipe flashings.

B. Low Rise Foam Adhesive: Type recommended by manufacturer for attachment of insulation and cover board layers.

C. Walkway Pads: Reinforced white thermoplastic material, 30 inch width x maximum length, textured top surface and smooth bottom surface for welding to TPO roofing membrane, recommended by roofing manufacturer, minimum 1/2 inch thick.

D. Fasteners: Hot-dip galvanized or fluoropolymer coated steel, approved by roofing system manufacturer, type and length suited to project conditions.

E. Insulation Fasteners: Hot-dip galvanized or fluoropolymer coated steel, approved by roofing system manufacturer, type and length suited to project conditions, with plastic plates.

F. Termination Bar: Corrosion resistant 6063-T6 extruded aluminum.

G. Nailers and Curbs:
   1. Preservative treated wood, specified in Section 061000.
   2. Nailers: 3-1/2 inch face dimension x insulation thickness.

H. Metal Flashings: Metal flashings, TPO-coated where recommended by manufacturer, specified in Section 076200.

I. Joint Sealants: Specified in Section 079200.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove projections that could puncture membrane from substrate.

B. Clean substrate of loose and foreign material, oil, and grease.

C. Complete roof penetrations and preparation for drains, flashings, and other penetrations prior to beginning roofing.

D. Protect adjacent and underlying surfaces.

3.2 INSTALLATION - GENERAL

A. Install roofing system in accordance with roofing system manufacturer's instructions, NRCA Manual, and approved Shop Drawings.

3.3 INSTALLATION OF INSULATION

A. Apply base layer with long edges continuous and perpendicular to deck ribs. Stagger end joints in adjacent rows. Locate ends over solid bearing.

B. Adhere first layer to concrete substrates, fasten to wood/metal deck substrates in accordance with manufacturer's instructions.

C. Apply top layer with long edges perpendicular to those of base layer, with joints staggered in adjacent rows. Offset joints from those in base layer.

D. Adhere all subsequent layers to substrate in accordance with manufacturer’s instructions.

E. Fit insulation to other boards and at perimeter and around penetrations with maximum 1/4 inch voids.

3.4 INSTALLATION OF COVER BOARD

A. Apply panels with long edges continuous and perpendicular to direction of insulation. Stagger end joints in adjacent rows. Offset joints from those in insulation.

B. Adhere to substrate in accordance with manufacturer’s instructions.

C. Fit panels to other panels and at perimeter and around penetrations with maximum 1/4 inch voids.

3.5 INSTALLATION OF ROOF MEMBRANE

A. Position sheets without stretching; minimize wrinkles. Allow membrane to relax before proceeding.

B. Provide minimum 5-1/2 inch lap at joints between adjacent sheets.

C. Splice sheets by heat welding method.

D. Bond membrane to substrate with adhesive applied in accordance with manufacturer’s instructions.

E. Fasten membrane to perimeter nailers with fasteners spaced 6 inches on center maximum.

F. Daily Seal:
1. Ensure that water does not flow beneath completed sections of roof.
2. Temporarily seal loose edge of membrane with night seal when weather is threatening.
3. When work is resumed, pull sheet free before continuing installation.

3.6 INSTALLATION OF FLASHINGS

A. Construct in accordance with roofing system manufacturer's standard details.

B. Juncture of Horizontal and Vertical Surfaces:
1. Use longest practical length flashing to minimize joints.
2. Complete splice between flashing and main roof sheet before bonding flashing to vertical surface. Extend splice 3 inches beyond fasteners that attach membrane to horizontal surface.
3. Adhere flashing to substrate with full bed of adhesive.
4. Fasten top of flashing at 12 inches on center maximum with termination bar, under metal flashing.

C. Penetrations through Membrane:
1. Flash pipe with premolded pipe flashings wherever possible.
2. Where molded pipe flashings cannot be installed, use field fabricated pipe seals.
3. Seal clusters of pipes and unusually shaped penetrations with perimeter curb and sheet metal hood, with each penetration separately sealed through the side of the hood and oriented to slope downward away from the curb.

D. Roof Drains:
1. Taper insulation around drain to provide smooth transition from roof surface to drain clamping ring.
2. Seal between membrane and drain base with water cutoff mastic.

3.7 INSTALLATION OF WALKWAY PADS

A. Clean underside of pad; heat weld to roofing membrane.

B. Leave 2 inch space between pieces.

3.8 FIELD QUALITY CONTROL

A. Testing and Inspection Services: Perform Flood Testing of roof drains for min. 48 hours per ASTM D5957.

END OF SECTION

SECTION 076200

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Metal flashings and trim.
2. Copings.
3. Gutters and downspouts.
4. Gutter and downspout accessories.
5. Reglets.
6. Break metal closure at flat roof edges.
7. Counterflashings over membrane roof base flashings.
8. Counterflashings at roof mounted equipment and utility penetrations.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 079200 - Joint Sealants.

1.2 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show locations, types and thicknesses of metal, profiles, dimensions, fastening methods, provisions for expansion and contraction, and joint details.
2. Samples:
a. Each flashing and trim profile, minimum 12 inches long. Include corners where applicable.
b. 3 x 3 inch prefinished metal samples in specified color.

1.3 QUALITY ASSURANCE

A. Fabricator and Installer Qualifications: Minimum 3 years documented experience in work of this Section.

B. Design, fabricate, and install metal copings in accordance with ANSI/SPRI ES-1.

1.4 WARRANTIES

A. Roof system associated flashings are to be included within Roofing System Manufacturer's Warranty. Refer to roofing sections for warranty requirements.

PART 2 PRODUCTS

2.1 MATERIALS

A. Galvanized Steel Sheet:
1. ASTM A755/A755M, Structural Quality, G90 galvanized coating class, 24 gage core steel unless noted otherwise.
2. Precoated where indicated: AAMA 621, fluoropolymer coating, containing minimum 70 percent PVDF resins, color to be selected from manufacturer's full color range.

B. Aluminum-Zinc Alloy Coated Steel Sheet (Galvalume):
1. ASTM A792/A792M, Commercial Quality, AZ55 aluminum-zinc alloy coating, 24 gage core steel unless noted otherwise.
2. Precoated where indicated: AAMA 621, fluoropolymer coating, containing minimum 70 percent PVDF resins, color to be selected by Architect.

C. Stainless Steel Sheet: ASTM A666, Type 304 or 316, 2D conventional annealed finish, 0.018 inch thick.

2.2 ACCESSORIES

A. Solder: ASTM B32.

B. Fasteners: Same material and finish as sheet metal, with neoprene gasketed washers where exposed.

C. Joint Sealants: Specified in Section 079200.

2.3 FABRICATION

A. Fabricate components in accordance with SMACNA Manual.

B. Fabricate counterflashings at roof membrane base flashings and equipment and utility penetrations, within 6 inches of grade and lower, and other high moisture exposure areas in Stainless Steel Sheet.

C. Gutter:
1. Material: Galvaume steel, natural finish.
2. Profile: 6" half-round.
3. Fabricate end caps, outlets, and hangers from same material as gutter in profile to suit gutter.
4. Provide downspout strainers at each downspout outlet.
5. Provide rain chains at porch roof gutters:
   a. Source: Kenchuki Stainless Steel Rain Chain.
   b. Description: 316L marine grade stainless steel, 2 1/2" wide x 4" high cylinder shaped cups on link chain, with installation V-hook.

D. Downspouts:
1. Material: Galvalume steel, natural finish.
2. Profile: Round, 4 inches, or as determined by SMACNA.
3. Locate seam on back of downspout; continuously lock and solder.
4. Fabricate transitions, elbows, and outlets from same material as downspout in profile to suit downspout.
5. Provide splash blocks at existing building downspouts:
   a. Source: Oberfields LLC 24" Splash Block #1.
6. 6. Provide cast iron boots at addition downspouts
   a. Source: J.R. Hoe O-Series Round Downspout Boot, 4" round, 16" length, light gray rust inhibitive primer.

E. Copings:
1. Fabricate in Precoated Galvanized or Aluminum-Zinc Alloy Coated Steel Sheet, minimum 0.0396 inches thick.
2. Fabricate copings to profiles indicated.
3. Furnish continuous cleats of same material as coping, one gage thicker, to support edge of external leg; drill elongated holes for fasteners on interior leg.
4. Fabricate vertical faces with bottom edge formed outward 1/4 inch at 45 degrees and hemmed to form drip.
5. Provide 6 inch wide joint cover plates in same material and gage as coping.
6. Fabricate corners in single units with minimum 18 inch long legs.
7. Provide expansion joints in lengths exceeding 15 feet:
   a. Place joints at 10 feet on center maximum and maximum 2 feet from corners and intersections.
   b. Joint width: Consistent with types and sizes of materials, minimum width 1/4 inch.

F. Solder shop formed joints except pop rivet and seal joints at prefinished metal. After soldering, remove flux and wash clean.

G. Fabricate corners in single units with minimum 18 inch long legs.

H. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

I. Form sections accurate to size and shape, square and free from distortion and defects.

J. Provide for thermal expansion and contraction in sheet metal:
   1. Provide expansion joints in sheet metal exceeding 15 feet in running length.
   2. Fabricate expansion joints in metal copings with backing and cover plates formed to flashing profile, minimum 8 inches long.
   3. Place expansion joints at 10 feet on center maximum and maximum 2 feet from corners and intersections.
   4. Joint width: Consistent with types and sizes of materials, minimum width 1/4 inch.

K. Unless otherwise indicated, provide minimum 3/4 inch wide flat lock seams; lap in direction of water flow.

L. Fabricate cleats and starter strips of same material as sheet metal, minimum one gage thicker than sheet metal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install flashing and sheet metal as indicated and in accordance with SMACNA Manual.

B. Install cleats and starter strips before starting installation of sheet metal. Fasten at 6 inches on center maximum.

C. Expansion Joints:
   1. Center backing plate between flashing pieces at end joints.
   2. Apply two continuous beads of joint sealant between backing plate and flashing sections at each end.
   3. Install flashing pieces with 1/2 inch expansion space at abutting ends; apply sealant to expansion space.
   4. Apply two continuous beads of joint sealant between cover plate and flashing sections at each end.

D. Secure flashings at 12 inches on center minimum with concealed fasteners where possible.

E. Apply a roof manufacturer approved general purpose sealant for bedding metal flashings between metal and bituminous flashings.

F. Fit flashings tight, with square corners and surfaces true and straight.

G. Seam and seal field joints.

H. Separate dissimilar metals with roof manufacturer approved general purpose sealant or non-absorptive gaskets.

I. Reglets:
   1. Install reglets true to line and level. Seal top of surface mounted reglet with joint sealant.
   2. Install flashings into reglets to form tight fit. Secure with lead or plastic wedges at 9 inches on center maximum. Seal remaining space with joint sealant.

J. Gutters: Secure with straps spaced maximum 36 inches on center and within 12 inches of ends.

K. Downspouts:
   1. Secure with straps spaced maximum 8 feet on center and within 2 feet of ends and elbows.
   2. Flash downspouts into gutters and fasten.
   3. Flash upper sections into lower sections minimum 2 inches at joints; fasten sections together.

L. Apply joint sealants as specified in Section 079200.

3.2 CLEANING

A. Clean sheet metal; remove slag, flux, stains, spots, and minor abrasions without etching surfaces.

END OF SECTION

SECTION 076500

FLEXIBLE FLASHINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Stainless steel flexible flashing for concealed wall flashings.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 033000 - Cast-In-Place Concrete.
   3. Section 044000 - Stone Assemblies.
   4. Section 061000 - Rough Carpentry.
   5. Section 061600 - Exterior Sheathing.
   6. Section 072500 - Weather Barriers.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Manufacturer's descriptive data and installation instructions.

1.3 QUALITY ASSURANCE

A. Pre-Installation Conference:
   1. Convene at site 2 weeks prior to beginning work of this Section.
   2. Attendance: Contractor's site foreman, manufacturer's technical representative, installer, Owner's Representative, and Architect.
   3. Review and discuss:
      a. Construction schedule and availability of materials, Installer’s personnel, equipment, and facilities needed to make progress and avoid delays.
      b. Site use, access, staging, and set-up location limitations.
      c. Approved mockup procedures.
      d. Forecast weather conditions.
      e. Surface preparation and substrate condition and pretreatment.
      f. Installation procedures.
      g. Special details.
      h. Testing and inspection requirements.
      i. Site protection measures.
      j. Governing regulations if applicable.

1.4 PROJECT CONDITIONS

A. Do not apply flashings at ambient or surface temperatures less than 40 degrees F.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on 304 SA products by York Manufacturing, Inc. (www.yorkflashings.com)

B. Other Acceptable Manufacturers:
   1. GE Silicones, Inc.; GE Elemax SS Flashing
   2. Vapro Shield, Inc.; VaproThru-Wall Flashing SA

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Stainless Steel Flexible Flashing:
1. Source: 304 SA SS by York Manufacturing, Inc., or approved substitute.
2. Type: Stainless steel core with one uncoated (bare) stainless steel face (outward facing) with a butyl block copolymer adhesive (inward facing).
3. Stainless steel: Type 304, ASTM A240. Domestically sourced per DFARS 252.225-7008 and/or DFARS 252.225-7009.
4. Adhesive: block copolymer
5. No primer required.
6. UV resistant.
7. Fire resistant: ASTM E84 Class A material.
8. Mold resistant: passes ASTM D3273.
9. Passes AAMA 711-20.
10. Passes air barrier material test: ASTM E2178-13.
11. Size: Manufacturer's standard width rolls.

2.3 ACCESSORIES

A. Polyether sealant: York Manufacturing, Inc.; UniverSeal US-100.

B. Splice Tape: York Manufacturing, Inc.; York 304 SA.

C. Corner and End Dams: Form the stainless steel flashing in the field or use 26 gauge stainless steel pre-manufactured corners.

D. Mortar deflection:
1. Source: York Manufacturing; Weep-Armor.
2. Description: Polyester strands that will not degrade and keep the weep vents from clogging with mortar.

E. Termination bar: Rigid PVC or stainless steel termination bar with sealant catch lip:
1. York Manufacturing, Inc.; T-96 termination bar
2. York Manufactuirng, Inc.; SS Term Bar

PART 3 EXECUTION

3.1 INSTALLATION

A. Provide flexible flashings in exterior wall assemblies at:
1. Exterior door heads.
2. Window heads and sills.
3. Storefront heads.
4. Horizontal control joints.
5. Changes in veneer materials, vertically.
6. Other openings and penetrations through walls

B. Install in accordance with manufacturer’s instructions.

C. Extend flashing 6" minimum beyond the opening. Fold flashing ends at the end of openings or horizontal flashing terminations to form end dam or use pre-manufactured units of 26 gauge stainless steel.

D. Flashing width: Width required starting flush with the outside face of exterior wythe, extending through the cavity, rising height required to extend above lintel steel at least 2".

E. Splice end joints by overlapping flashing at least 2" and seal with a compatible sealant or metal splice tape.

F. Masonry back up:
   1. Surface apply after a dampproofing installation specified in Weather Barrier Section in accord with manufacturer's installation instructions.
   2. Fasten to masonry backup surface at the top by embedding in a layer of sealant or use a non-corrosive termination bar and fasten it to the backer wall at the top edge of the flashing and seal the top edge with compatible sealant or use a termination clamp, which is embedded in the block back up the wall.

G. Stud back up with sheathing: Fasten to stud backup at the top by embedding in a layer of sealant or use a non-corrosive termination bar and fasten it to the backer wall at the top edge of the flashing and seal the top edge with a compatible sealant.

H. Leave ready for certified compatible weather barrier installation lapping flashing top installed per Section 072500.

I. Fold ends of flashing at the end of the opening to form dam; seal with polyether sealant or use purchased manufacturers preformed end dams.

J. Inside and outside corners: Make in an industry-accepted manner using corner and splice material or purchase manufactured corners from the manufacturer.

K. Use stainless steel or copper drip edge at any location that the underside of the flashing will be exposed and/or deemed necessary by the design professional or AHJ on the project.

L. Cover flashing within a few days of installation to protect it from damage from the different trades, the environment, and falling debris. If the flashing is left unprotected and it is punctured, torn, or has loose poly, you should contact the manufacturer for repair instructions.

END OF SECTION

SECTION 078400

FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Firestopping perimeter of and penetrations through fire and smoke rated assemblies.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SYSTEM DESCRIPTION

A. Provide continuous protection against passage of heat, fire, smoke, and gases at perimeter of and penetrations through rated assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data:
a. Firestopping schedule; prepare in tabular format and identify:
1) Type of assembly receiving firestop and required fire rating.
2) Type of penetrating item.
3) Proposed firestop system.
b. Include UL or equivalent details for each firestop system.
2. Test Reports: Indicate conformance with ASTM E814, ASTM E1966, ASTM E2307, UL 1479, or UL 2079.

B. Quality Control Submittals:
1. Certificates of Compliance: Indicate conformance of installed systems with specified requirements.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 3 years experience in work of this Section.

B. Firestopping: Fire resistance rating equivalent to adjacent construction; tested to ASTM E814, ASTM E1966, ASTM E2307, UL 1479, or UL 2079.

C. Pre-Installation Conference:
1. Convene at site 2 weeks prior to beginning work of this Section.
2. Attendance: Architect, Owner, Contractor, firestopping applicator, firestopping manufacturer's representative, and related trades.
3. Review and discuss: Contract Documents, fire rating requirements, manufacturer's literature, job conditions, scheduling, and other matters affecting application.
4. Tour representative areas of firestopping substrates; discuss substrate construction, related work, work conditions, materials compatibility, and protection after application.

1.5 PROJECT CONDITIONS

A. Do not apply sealants, mortars, or putties when temperature of substrate material and surrounding air is below 40 degrees F or is anticipated to drop below that temperature within 24 hours after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Hilti, Inc. (www.us.hilti.com)
2. 3M Fire Protective Products. (www.3m.com)
3. Rectorseal. (www.rectorseal.com)
4. Specified Technologies, Inc. (www.stifirestop.com)
5. Tremco, Inc. (www.tremcosealants.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Firestopping: One or more of the following:
1. Silicone elastomer compound: Single or multiple component, low modulus, moisture curing silicone sealant.
2. Ceramic sealant: Single component, moisture curing ceramic sealant.
3. Intumescent sealant: Single component, water based intumescent sealant.
4. Acrylic sealant: Single component acrylic sealant, suitable for painting.
5. Putty: Single component ceramic fiber base putty or intumescent elastomer putty that expands on exposure to surface heat gain.
6. Mortar: Hydraulic cementitious mortar.
7. Pillows or blocks: Formed intumescent or mineral fiber pillows or blocks.
8. Intumescent strips: Solvent free intumescent wrap strips.
9. Mechanical devices: Incombustible fillers or silicone elastomer covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
10. Cast-in-place devices: Containing intumescent material and smoke/water seals.

2.3 ACCESSORIES

A. Forming and Damming Materials: As recommended by firestopping manufacturer for intended use.
1. Permanent: Mineral fiber board, mineral fiber matting, or mineral fiber putty.
2. Temporary: Plywood, particle board, or other.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare openings to receive firestopping as directed by manufacturer:
1. Remove incidental and loose materials from penetration opening.
2. Remove free liquids and oil from involved surfaces and penetration components.
3. Install damming materials to accommodate and ensure proper thickness and fire rating requirements and provide containment during installation.
4. Remove combustible materials and materials not intended for final penetration seal system.

3.2 INSTALLATION

A. Install firestopping at perimeter of and penetrations through fire and smoke rated assemblies.

B. Apply materials in accordance with manufacturer's instructions.

C. Apply firestopping material in sufficient thickness to achieve required ratings.

D. Compress fibered material to achieve a density of 40 percent of its uncompressed density.

E. Place foamed material in layers to ensure homogenous density, filling cavities and spaces.

F. Place sealant to completely seal junctions with adjacent dissimilar materials.

G. Place intumescent coating in sufficient coats to achieve rating required.

H. Remove dam material after firestopping material has cured.

I. Finish exposed surfaces to smooth, flush appearance.

END OF SECTION

SECTION 079200

JOINT SEALANTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Joint backup materials.
   2. Joint sealants.
   3. Acoustical joint sealants.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Indicate sealants, primers, backup materials, bond breakers, and accessories proposed for use.
   2. Samples: 1/2 x 1/2 x 3 inch long joint sealant samples in specified colors.
   3. Warranty: Sample warranty form.

B. Quality Assurance Submittals:
   1. Product Certificates: Signed by manufacturers of joint sealants certifying that products furnished comply with requirements and are suitable for the use indicated.
   2. Compatibility and Adhesion Test Reports: From sealant manufacturer indicating the following:a. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.b. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

1.3 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 3 years documented experience in work of this Section.

B. Mockups: Prior to the start of the sealant work but following the cleaning work, perform mock-up(s) using the proposed sealant for each combination of substrates to be sealed. In each, demonstrate all aspects of old sealant removal, joint preparation, installation of back-up materials, and installation of sealant where applicable.
   1. Retain approved mock-ups in place to establish standards and guidelines for acceptable installation of sealant work.

1.4 PROJECT CONDITIONS

A. Do not apply sealants at temperatures below 40 degrees F unless approved by sealant manufacturer.

B. Do not apply material if it is raining or snowing or if such conditions appear to be imminent.

C. Do not apply work of this Section on surfaces which are wet, damp, or have frost.

1.5 WARRANTIES

A. Furnish manufacturer’s 10 year warranty providing coverage for exterior sealants and accessories that fail to provide air and water tight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Dow. (www.dow.com)
2. GE Silicones. (www.siliconeforbuilding.com)
3. Pecora Corp. (www.pecora.com)
4. Sika Group. (www.sika.com)
5. Tremco, Inc. (www.tremcosealants.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Joint Sealant Type 1:
1. ASTM C920, Grade P, multiple component polyurethane type, self-leveling and slope grades.
2. Movement capability: Plus or minus 25 percent.
3. Color: To be selected from manufacturer's full color range.

B. Joint Sealant Type 2:
1. ASTM C920, Grade NS, single component silicone type, nonstaining, non sag, formulated to adhere to low energy surfaces.
2. Movement capability: Plus or minus 25 percent.
3. Color: White.

C. Joint Sealant Type 3:
1. ASTM C920, Grade NS, single component polyurethane type, non sag.
2. Movement capability: Plus or minus 25 percent.
3. Color: To be selected from manufacturer's full color range.

D. Joint Sealant Type 4:
1. ASTM C920, Grade NS, single component silicone type, nonstaining, non sag.
2. Movement capability: Plus or minus 25 percent.
3. Color: To be selected from manufacturer's full color range.

E. Joint Sealant Type 5:
1. ASTM C834, single component acrylic latex, non sag.
2. Movement capability: Plus or minus 7-1/2 percent.
3. Color: To be selected from manufacturer's full color range.

F. Joint Sealant Type 6:
1. ASTM C920, Grade NS, single component silicone, non sag, mildew resistant.
2. Movement capability: Plus or minus 25 percent.
3. Color: To be selected from manufacturer's full color range.

G. Joint Sealant Type 7:
1. ASTM C834, single component acrylic latex, non sag, non-hardening, non-corrosive, recommended by manufacturer for acoustical applications.
2. Movement capability: Plus or minus 7-1/2 percent.
3. Color: White.

2.3 ACCESSORIES

A. Primers, Bondbreakers, and Solvents: As recommended by sealant manufacturer.

B. Joint Backing:
   1. ASTM C1330, closed cell polyethylene foam or bi-cellular polyethylene foam, preformed round joint filler, non absorbing, non staining, resilient, compatible with sealant and primer, recommended by sealant manufacturer for each sealant type.
   2. Size: Minimum 1.25 times joint width.

2.4 MIXES

A. Mix multiple component sealants in accordance with manufacturer's instructions.
   1. Mix with mechanical mixer; prevent air entrainment and overheating.
   2. Continue mixing until color is uniform.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove loose and foreign matter that could impair adhesion. If surface has been subject to chemical contamination, contact sealant manufacturer for recommendation.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Protect adjacent surfaces with masking tape or protective coverings.

D. Sealant Dimensions:
   1. Minimum joint size: 1/4 x 1/4 inch.
   2. Joints 1/4 to 1/2 inch wide: Depth equal to width.
   3. Joints over 1/2 inch wide: Depth equal to one half of width.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Install sealants and accessories in accordance with ASTM C1193.

C. Install acoustical sealants and accessories in accordance with ASTM C919.

D. Install joint backing to maintain required sealant dimensions. Compress backing approximately 25 percent without puncturing skin. Do not twist or stretch.

E. Use bondbreaker tape where joint backing is not installed.

F. Fill joints full without air pockets, embedded materials, ridges, and sags.

G. Tool sealant to smooth profile.

H. Apply sealant within manufacturer’s recommended temperature range.

3.3 CLEANING

A. Remove masking tape and protective coverings after sealant has cured.

B. Clean adjacent surfaces.

3.4 SCHEDULE

JOINT LOCATION OR TYPE	SEALANT TYPE
Exterior Joints:	
Joints in horizontal surfaces subject to traffic	1
Joints in concealed above-grade surfaces at flexible flashings (if required)	2
Joints in plaster surfaces above grade where required for compatibility	3
Joints in other above-grade surfaces	4
Interior Joints:	
Joints in horizontal surfaces subject to pedestrian traffic	1
Joints in toilet rooms, countertops	6
Joints in acoustical assemblies	7
Other joints	5

END OF SECTION

SECTION 080381

WOOD DOOR AND FRAME RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Restoration and replacement of deteriorated wood.
2. Restoration of existing hardware.
3. Restoration and replacement of missing folding/sliding door leaves.
4. Replacement of damaged and missing hardware.
5. Refinishing.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 060122 - Wood Restoration.
3. Section 087100 - Door Hardware.
4. Section 099100 - Painting.

1.2 REFERENCES

A. National Park Service - Secretary of Interior Standards for Rehabilitation. (www.nps.gov/tps/standards.htm)

1.3 DEFINITIONS

A. Severe Deterioration: Deteriorated of the whole or part of an element to include voids and where the structural integrity of the element or the assembly in which the element is located is jeopardized.

B. Moderate Deterioration: Deterioration of the whole or part of an element to include voids and where the element is punctured under moderate pressure from a screwdriver, but where the structural integrity of the element or the assembly in which the element is located is not jeopardized.

C. Minor Deterioration: Deterioration of the whole or part of an element to the point where it feels soft but is not punctured under light pressure from a screwdriver, and voids do not exist.

1.4 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Documentation of each door to be restored and description of work to be done.

B. Quality Control Submittals:
1. Qualifications: Restorer qualifications, including previous projects.

1.5 QUALITY ASSURANCE

A. Restorer Qualifications:
1. Minimum 3 years experience in work of this Section.
2. Successful completion of at least 3 projects of similar scope and complexity within past 5 years.

B. Mockup:
1. Size: One typical door and frame.
2. Show: Each wood restoration process, hardware, glazing, and finishing.
3. Locate where directed.
4. Approved mockup may remain as part of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Hardware: Specified in Section 087100.

B. New wood: Compatible with existing, as specified in 060122.

PART 3 - EXECUTION

3.1 RESTORATION

A. This Section describes the overall restoration of existing doors, related wood trim, hardware, and glass. Other sections referenced under "Related Sections" specify portions of the Work in more detail.

3.2 REPAIR AND REPLACEMENT OF WOOD

A. Minor Deterioration: Consolidate soft wood as specified in Section 060122.

B. Moderate Deterioration: Consolidate soft wood and patch voids as specified in Section 060122.

C. Severe Deterioration:
1. Replace deteriorated wood door and frame members with new wood as specified in Section 060122.
2. Match new wood to profile and grain of existing wood.
3. Fit replacement wood to hairline joint, glue and nail. Stapling not permitted.

D. Missing Elements:
1. Replace missing wood door and frame members with new wood as specified in Section 060122.
2. Match new wood to profile and grain of original wood.
3. Fit replacement wood to hairline joint, glue and nail. Stapling not permitted.

3.3 REPAIR AND REPLACEMENT OF HARDWARE

A. Where reuse of existing hardware is indicated in the Documents, restore existing operable items to working condition.

B. Replace damaged and missing hardware.

C. Replace missing fasteners with new to match original. Tighten existing fasteners.

D. Lubricate operable parts.

E. Adjust for smooth operation.

3.4 REFINISHING WOOD

A. Refinish wood to match existing paint as specified in Section 099100.

B. Refinish exterior and interior faces of doors and exterior and interior side of frames.

C. Remove doors from frames to permit access to edges. Finish edges same as faces.

END OF SECTION

SECTION 080383

WOOD WINDOW RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Restore windows, work generally includes:
   a. Replacement of sashes, glass, parting strip, and exterior mullion trim to match existing.
   b. Reinforcing bottom rail of upper sashes.
   c. Restoration of frame, blind stop, sill, brick mold, interior stops, and existing hardware.
   d. Replacement of deteriorated wood.
   e. Refinishing.
2. Replacement of perimeter sealants.
3. Replacement of sash cords 100%, replacement of missing or damaged hardware beyond repair (Reuse existing where in restorable condition), replacement of weatherstripping, and reuse of sash weights.
4. Fixing sashes in place, including metal angles to support upper sash as indicated on the Drawings.

B. Related Sections:

1. Division 1: Administrative, procedural, and temporary work requirements.
2. Section 012200 – Unit Prices
3. Section 012300 – Alternates for replacing windows and frames.
4. Section 061000 – Rough Carpentry.
5. Section 079200 – Joint Sealants.
6. Section 088000 – Glazing.
7. Section 099100 – Painting for field painting.

C. Related Documents:

1. Lead-Based Paint abatement specifications provided by others.

1.2 REFERENCES

A. AWI – Architectural Woodwork Institute.

B. WDMA – Window and Door Manufacturers Association: I.S. 6A-01 Industry Standard for Architectural Stile and Rail Doors.

1.3 SUBMITTALS

A. Shop drawings:

1. Provide plans and elevations indicate materials, surface grain direction, profiles, assembly methods, joint details, fastening methods, accessories, hardware, and finishes.

a. Field Measurements: Obtain field measurements of each type of original window frame unit and sash to be replicated and indicate on shop drawings.

b. Where windows or sashes are scheduled to be replicated from existing similar assemblies, match exactly the dimensions, profiles, construction details, materials, and finish of original windows unless noted otherwise.

1.4 QUALITY REQUIREMENTS

A. Quality Standard: Comply with the following standard:

1. AWI Quality Standard: "Architectural Woodwork Quality Standards" of the Architectural Woodwork Institute, Section 1000 for Premium Grade.

B. Fabricator/Installer Qualifications:

1. Minimum 5 years documented experience in work of this Section.
2. Successful completion of at least 3 projects of similar scope and complexity within past 5 years.

B. Mockups:

1. Provide mockup of one completely restored window with new sashes.
2. Show frame, sash, trim, joint sealants, paint, hardware, and weatherstripping.
3. Locate where directed.
4. Approved mockup may remain as part of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber for opaque finish:

1. Species: Sapele, of quality suitable for opaque finish on interior and exterior faces.
2. Cut: Plain sawn
3. Maximum moisture content: 6 percent.

B. Hardware:

1. Existing original sash locks in good condition are to remain and be refinished to match original condition. Where sash locks are missing, provide new locks to match existing.
   a. Install restored and replica sash locks. Install original hardware in their existing location
2. Sash locks:
   a. Sash Lock: # 4 solid brass lock as manufactured by The Architectural Resource Center (brasswindowhardware.com), (800) 370-8808.
   b. Obtain hardware in un-lacquered brass, typical for all window hardware.
3. Sash Lift:
   a. Model LFD30 (1 per sash), solid brass, un-lacquered brass finish, as manufactured by Phelps Company, Brattleboro, VT, (802) 257-4314, or match existing.
4. Pulley (2 per window): Model SP250BBRE solid brass, , un-lacquered brass finish, as manufactured by Phelps Company, (802) 257-4314, or match existing.
5. Sash Cord: Cotton cord with nylon core at wood windows.

C. Weatherstripping:

1. Head: Series 6, item 1B, 12 gauge bronze, as manufactured by Zero International.
2. Jamb: Series 6, item 4B, 9 gauge bronze, as manufactured by Zero International.
3. Meeting Rail: Series 6, items 2B & 3B, (item 2, provide 10 gauge bronze; item 3 provide 9 gauge bronze), as manufactured by Zero International.
4. Sill: #8054S-Bk, kerf neoprene seal.

D. Perimeter Sealants: Specified in Section 07920.

E. Preservative Treatment: Bora-Care termite pretreatment, as manufactured by Nisus Corporation, or approved equal.

F. Glass and Glazing Accessories: Specified in Section 088000.

G. Paints and Coatings: Specified in Section 099100.

H. Consolidant: Low viscosity penetrating consolidant, 8 hour minimum cure time; LiquidWood by Abatron, Inc. Or approved substitute.

I. Epoxy Fill Patching Compound:

1. Exterior surfaces: Epoxy based, multiple component; WoodEpox by Abatron, Inc. Or approved substitute.
2. Interior surfaces: Minwax Wood Putty by Minwax Company or approved substitute, color matched to wood.

2.2 FABRICATION OF NEW COMPONENTS

A. Comply with AWI Section 1000.

B. Fabricate new windows and sashes with profiles to match existing.

C. Fabricate mullions and sash members with mortised and tenoned joints. Fit to hairline joint, glue and nail. Stapling not permitted.

D. Finger joints not permitted.

E. Form glass stops of solid wood, sloped for water wash.

F. Install hardware centered or symmetrically located.

G. Weatherstrip operable sash, seal fixed sash.

H. Form sills in one piece. Slope sills for water wash.

I. Size units to allow for tolerances of rough openings and shim space around perimeter.

PART 3 – EXECUTION

3.1 REPLACEMENT OF DETERIORATED AND MISSING WOOD

A. Replace deteriorated wood sash and trim members with new wood.

B. Match new wood to profile and grain of existing wood.

C. Fabricate frame and sash members with mortised and tenoned joints. Fit to hairline joint, glue and nail. Stapling not permitted.

D. If sashes are removed, provide temporary plywood infill that provides weather tight protection over opening. Coordinate installation procedures with Construction Manager. Install with a method of attachment that does not damage existing materials to remain.

3.2 EPOXY PATCHING OF EXISTING WOOD

A. Mix and apply epoxy in accordance with manufacturer's instructions

B. Apply epoxy putty to fill voids after consolidant has cured.

C. Embed wood in center of large patches to reduce amount of filler.

D. After filler has cured, sand, chisel or plane off to smooth surface, flush with adjacent surfaces.

3.3 CONSOLIDATION OF EXISTING WOOD

A. Remove damaged and deteriorated wood to sound material and apply consolidant.

B. Apply consolidant in accordance with manufacturer's instruction

C. Completely saturate damaged wood with consolidant; allow to cure 8 hours minimum.

D. Apply to end grain where exposed. Where end grain is not exposed, drill 1/8 inch holes staggered and at angles to side grain to expose as much end grain as possible.

E. Prevent leakage with wax or clay plugs. Clean leakage before it cures.

F. Apply second coat if first coat does not completely saturate and harden wood.

3.4 FIXING OPERABLE SASH IN PLACE

A. Fix all sashes in place.

B. Fix upper sash of double hung window in place by securing sash with countersunk or concealed fasteners into 3" x 3" x 1/8" thick bent metal plate. Embed in sash and frame each side to support top sash(es). Finish to match sash and frame. Coordinate placement of fasteners with Construction Manager.

C. Apply joint sealer to sash-to-frame joints at fixed window sashes.

3.5 REFINISHING WOOD

A. Refinish wood under provisions of Section 099100.

B. Paint exposed exterior surfaces; paint exposed interior surfaces.

C. Avoid damage to existing interior surfaces. Properly protect interior surfaces from damage.

D. Replacement members and existing adjacent interior members affected by construction are to be refinished to match existing surfaces.

3.6 REINFORCEMENT OF BOTTOM RAIL AT UPPER SASHES

A. Provide 3/16 inch thick stainless steel reinforcing plate, rout flush to bottom rail at all upper sashes as indicated on Drawings.

3.7 PREPARATION

A. Prior to installation, condition windows to average humidity that will prevail after installation.

3.8 INSTALLATION OF NEW WINDOWS

A. Install windows plumb and level.

B. Maintain alignment with adjacent construction.

C. Set units plumb, level, and square; shim as required.

D. Secure windows to adjacent construction without distortion or stress.

END OF SECTION

SECTION 081113

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Hollow steel doors and frames.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 061000 - Rough Carpentry.
   3. Section 087100 - Door Hardware.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Show locations, elevations, dimensions, model designations, acoustic, fire, and thermal ratings, preparation for hardware, and anchoring details.
   2. Product Data: Show elevations, dimensions, gages of metal, hardware reinforcing gages and locations, and anchor types.
   3. Door Schedule: Use same reference designations as indicated on Drawings in preparing schedule for doors and frames.

B. Quality Control Submittals:
   1. Certificates of Compliance: Certification that products furnished comply with ANSI/SDI A250.3, ANSI/SDI 250.4, and ANSI/SDI A250.10.

1.3 QUALITY ASSURANCE

A. Doors: ANSI/SDI A250.8.
   1. Grade: II - Heavy Duty.
   2. Model: 2 - Full flush.
   3. Exterior doors: Maximum thermal transmittance (U-value) of 0.50, tested to ASTM C518.

B. Frames: ANSI/SDI A250.8, Grade II - Heavy Duty.

C. Fire Door and Frame Construction: Conform to UL 10C.

D. Installed Fire Rated Door and Frame Assemblies: Conform to NFPA 80.

E. Acoustic Door and Frame Assemblies: Minimum STC ratings as indicated in the Drawings, measured in accordance with ASTM E413.

1.4 DELIVERY, STORAGE AND HANDLING

A. Ship door frames with removable angle spreader; do not remove until frame is installed.

B. Store doors upright in protected, dry area, off ground or floor, with at least 1/4 inch space between individual units.

C. Do not cover with non vented coverings that create excessive humidity.

D. Remove wet coverings immediately.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Ceco Door (www.cecodoor.com)
2. Curries. (www.curries.com)
3. Pioneer Industries, Inc. (www.pioneerindustries.com)
4. Steelcraft. (www.steelcraft.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Hollow Metal Doors and Frames:
1. Exterior doors: Foamed-in-place polyurethane insulation manufactured using low-emitting, urea formaldehyde-free binders.
2. Interior doors: Resin impregnated fibrous honeycomb.

B. Steel Sheet: ASTM A1008/1008M, cold rolled.

C. Galvanized Steel Sheet: ASTM A653/A653M, hot dipped, Structural Quality, Class G40 galvanized.

2.3 ACCESSORIES

A. Primer: Zinc rich type.

B. Batt Insulation: Non-combustible, lightweight, mineral wool batt insulation to ASTM C665, Type 1.

2.4 FABRICATION

A. Fabricate doors and frames in accordance with ANSI/SDI A250.8.

B. Fabricate exterior doors and frames from galvanized steel sheet.

C. Fabricate exterior frames with 3/8 inch vinyl thermal break separating interior and exterior surfaces.

D. Doors:
1. Fabricate from minimum 18 gage sheets.
2. Close top and bottom edges of doors with steel channel, minimum 16 gage, extending full width of door, and spot welded to both faces, with top channel flush and bottom channel recessed.
3. Fill voids between vertical steel stiffeners with batt insulation.

E. Frames:
1. Fabricate from minimum 16 gage sheets.
2. Close corner joints tight with trim faces mitered and face welded, full profile welded, or continuously welded and ground smooth.
3. Anchors:
   a. Provide one anchor at each jamb for each 30 inches of door height.
   b. Design anchors to provide positive fastenings to adjacent construction.
   c. Provide one floor anchor welded to each jamb.

F. Accurately form to required sizes and profiles.

G. Grind and dress exposed welds to form smooth, flush surfaces.

H. Do not use metallic filler to conceal manufacturing defects.

I. Fabricate with internal reinforcement for hardware specified in Section 087100; weld in place.

J. Design Clearances:
   1. Between door and frame: Maximum 1/8 inch.
   2. Between meeting edges of pairs of doors:
      a. Non-fire rated doors: 3/16 inch plus or minus 1/16 inch.
      b. Fire-rated doors: 1/8 inch plus or minus 1/16 inch.
   3. Undercut:
      a. Non-fire rated doors: Maximum 3/4 inch.
      b. Fire-rated doors: Comply with NFPA 80.
   4. Between face of door and stop: 1/16 to 3/32 inch.

K. Manufacturing Tolerances: In accordance with SDI-117.

2.5 FINISHES

A. Dress tool marks and surface imperfections to smooth surfaces.

B. Clean and chemically treat steel surfaces.

C. Touch up damaged metallic coatings.

D. Apply manufacturer's standard rust inhibiting primer paint, air-dried or baked on, meeting requirements of ANSI/SDI A250.10.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

A. Install doors and frames in accordance with ANSI/SDI A250.11.

B. Set plumb and level.

C. Secure to adjacent construction using fastener type best suited to application.

D. Install hardware in accordance with Section 087100.

E. Solidly pack batt insulation inside frames at metal stud partitions.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions in primer paint to match factory finish.

END OF SECTION

SECTION 081433

STILE AND RAIL WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Wood stile and rail doors.
2. Factory finishing.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 087100 - Door Hardware.
3. Section 088000 - Glazing.

1.2 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show locations, elevations, dimensions, and preparation for hardware.
2. Samples:
a. 6 x 6 inch door samples showing stile, rail, and panel.
b. 6 x 12 inch wood samples showing selected stain color and finish.
3. Warranty: Sample warranty form.

1.3 QUALITY ASSURANCE

A. Fire Door Construction: Conform to UL 10C.

B. Installed Fire Rated Door Assembly: Conform to NFPA 80.

1.4 DELIVERY, STORAGE AND HANDLING

A. Package doors in heavy plastic with identifying marks; slit plastic wrap on site to permit ventilation, but do not remove from plastic until ready to install.

B. Do not deliver doors until building is substantially water and weather tight.

C. Store doors flat and level, with spacers between doors to allow for air circulation, in protected, dry area.

D. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of doors:
1. Temperature: 60 to 80 degrees F.
2. Humidity: 25 to 55 percent.

1.5 WARRANTIES

A. Furnish manufacturer’s 5 year warranty providing coverage against:
1. Defects in materials and workmanship.
2. Warpage beyond specified amount.
3. Telegraphing of core construction.
4. Delamination of faces. and workmanship and warpage beyond specified amount.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Masonite. (www.masonite.com)
2. TruStile. (www.trustile.com)
3. VT Industries. (www.vtindustries.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Stile and Rail Wood Doors: AWI Architectural Woodwork Standards.
1. Exposed wood:
a. Transparent Finish: Refer to Drawings for species and cut, of quality suitable for transparent finish.
b. Opaque Finish: Refer to Drawings for species and cut, of quality suitable for opaque finish.
2. Adhesives: Waterproof type.
3. Thickness: 1-3/4 inches, typical at new doors.

2.3 ACCESSORIES

A. Glass and Glazing Accessories: Specified in Section 088000.

2.4 FABRICATION

A. Fabricate doors in accordance with AWI Architectural Woodwork Standards.
1. Grade: Premium.
2. Performance Level: Heavy Duty.
3. Panel and glass retention: Molding to be selected by Architect.
4. Stiles and rails: Solid wood construction.
5. Panels: Solid wood construction; flat type.

B. Prefitting; fit doors to frames at factory with following clearances:
1. Width: Cut hinge and lock edges equally.
2. Height: Cut bottom edge only; maximum 3/4 inch.
3. Edge clearances:
a. Jambs and head: 1/8 inch maximum between door and frame.
b. Sills without thresholds: 3/8 inch maximum between door and top of finish floor.
c. Sills with thresholds: 1/4 inch maximum between door and top of threshold.
d. Meeting stiles of pairs: 1/8 inch maximum between doors.
e. Double leaf pocket doors to be detailed to rabbit together when closed to eliminate sight gap between doors.
4. Lock edge: Bevel 1/8 inch in 2 inches.

C. Premachining: Machine doors at factory to receive hardware specified in Section 087100.

2.5 FINISHES

A. All door leaf, frame, and trim surfaces must be primed or sealed. Prime or seal mortises.

B. Factory Finishing:
1. Factory finish doors in accordance with AWI Architectural Woodwork Standards.
2. Finish system: 8 - UV Curable, Acrylated Epoxy, Polyester, or Urethane.
3. Color and Sheen: To be selected from manufacturer's full color range.

PART 3 EXECUTION

3.1 PREPARATION

A. Condition doors to average humidity that will be encountered after installation.

3.2 INSTALLATION

A. Install doors in accordance with AWI Architectural Woodwork Standards.

B. Install doors plumb and level.

C. If field cutting for height is necessary, cut bottom edge only, 3/4 inch maximum.

D. Seal field cut surfaces.

E. Install door hardware in accordance with Section 087100.

F. Install glass as specified in Section 088000.

G. Installation Tolerances:
1. Warp: Maximum 1/4 inch in any 3'-0" x 7'-0" portion of door, measured with taut string or straight edge on concave face of door.

END OF SECTION

SECTION 083113

ACCESS DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Access doors and frames for wall and ceiling surfaces.
2. Access doors and frames for mechanical soffit in Multi-Use A and B

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Division 23 and Mechanical Drawings: For custom mechanical soffit access panels in Multi-Use A and B.

1.2 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show layouts, sizes, and relationship to adjacent construction.
2. Product Data: Provide sizes, types, finishes, scheduled locations, and details of adjoining work.

1.3 QUALITY ASSURANCE

A. Fire Door Construction: Conform to UL 10B.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Acudor Products, Inc. (www.acudor.com) and mechanical soffit access products by Bauco Access Panel Solutions Inc. (www.accesspanelsolutions.com)

B. Other Acceptable Manufacturers:
1. Babcock-Davis, Inc. (www.babcockdavis.com)
2. J.L. Industries. (www.jlindustries.com)
3. Karp Associates, Inc. (www.karpinc.com)
4. Milcor. (www.milcorinc.com)
5. Nystrom, Inc. (www.nystrom.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Access Panels - Drywall Faced:
1. Source: Acudor Products, Inc, or approved substitute.
2. Description: Concealed hardware gypsum wallboard access panel.
3. Size: Refer to Drawings.

B. Access Panels - virtually invisible front-mounting recessed drywall access panel for walls:
1. Source: Bauco XL by Bauco Access Panel Solutions, Inc., or approved substitute.
2. Description: Heavy-duty non-fire rated recessed access doors with concealed hardware and gypsum board inlay for flush installation and virtually invisible finish. Install on the front of surrounding wallboard.
3. Size: Refer to Drawings.

C. Steel Sheet: ASTM A1008/A1008M, cold rolled.

D. Galvanized Steel Sheet: ASTM A653/A653M, Structural Quality.

2.3 FABRICATION

A. Fabricate door frame of steel sheet:
   1. Doors 16 x 16 inches and smaller: Minimum 18 gage.
   2. Doors over 16 x 16 inches: Minimum 16 gage.
   3. Fabricate frames with flange type to suit installation conditions.

B. Fabricate non-rated door panels of minimum 14 gage steel sheet.

C. Fabricate fire rated door panels of two sheets of minimum 20 gage steel sheet. Fill core with noncombustible insulation.

D. Provide drywall faced access panels in public areas.

E. Weld, fill, and grind joints to flush and square appearance.

F. Hardware:
   1. Continuous steel hinges, 175 degree opening.
   2. Screwdriver operated cam latch.
   3. Automatic closers for fire rated doors.

2.4 FINISHES

A. Exterior Doors and Interior Doors in Wet Locations: Hot dip galvanized, G90 coating class.

B. Other Interior Doors: One coat rust-inhibiting primer paint, sprayed and baked.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install plumb and level in openings. Secure rigidly in place.

C. Position units where indicated or where required to provide convenient access to concealed work requiring maintenance.

END OF SECTION

SECTION 084113

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Aluminum entrance doors and frames.
2. Aluminum framed glazed storefronts.
3. Glass infill panels.
4. Door hardware.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 079200 - Joint Sealants.
3. Section 087100 - Door Hardware.
4. Section 088000 - Glazing.

1.2 SYSTEM DESCRIPTION

A. Design Requirements: Design exterior systems to withstand:
1. Design wind pressure in accordance with ASCE 7, with maximum allowable deflection of L/175, tested in accordance with ASTM E330.
2. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.
3. Movement between storefront and adjacent construction.
4. Dynamic loading and release of loads.
5. Deflection of supports.
6. Overhead structure deflection of 1/2 inch.

B. Performance Requirements:
1. Air infiltration, tested to ASTM E283.
   a. Entrances:
      1) Single door: Maximum 0.5 CFM per minute per linear foot of perimeter crack, at static pressure differential of 6.24 PSF.
      2) Pairs of doors: Maximum 1.0 CFM per minute per linear foot of perimeter crack, at static pressure differential of 6.24 PSF.
   b. Storefront: 0.06 CFM per square foot of fixed area at static pressure differential of 6.24 PSF.
2. Water infiltration: No uncontrolled water leakage, tested to ASTM E331 at minimum test pressure of 6.24 PSF for inswing doors and 8.0 PSF for outswing doors and storefront.
3. Uniform structural loading: No glass breakage or permanent damage to fasteners or system components, tested to ASTM E330 at 1.5 times design pressure.
4. Thermal transmittance due to conduction (Uc): Maximum 0.60, tested to AAMA 1503 on two 6'-0" x 6'-0" units with 1 inch clear insulating glass.
5. Condensation resistance factor (CRF): Minimum 50, tested to AAMA 1503.
6. Solar Heat Gain Coefficient (SHGC) = .6 maximum.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, trim, sealers, hardware, and accessories.
2. Samples: 3 x 3 inch coating samples showing available colors.

B. Quality Control Submittals:
1. Test Reports: Certified results of previous tests by a recognized independent laboratory substantiating compliance with specified design and performance criteria, current within past 5 years.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

B. Conform to applicable accessibility code for locating hardware and for door opening force requirements.

1.5 DELIVERY, STORAGE AND HANDLING

A. Handle products in accordance with AAMA CW-10.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Kawneer Co., Inc. (www.kawneer.com)

B. Other Acceptable Manufacturers:
1. EFCO Corporation. (www.efcocorp.com)
2. Oldcastle BuildingEnvelope. (www.oldcastlebe.com)
3. Tubelite, Inc. (www.tubeliteinc.com)
4. YKK AP America, Inc. (www.ykkap.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Aluminum:
1. Extrusions: ASTM B221, 6063-T5 alloy and temper.
2. Sheet: ASTM B209, alloy and temper best suited to application.

2.3 COMPONENTS

A. Storefront:
1. Source: EnCORE by Kawneer, or approved substitute.
2. Type: Flush glazing system designed to receive 1 inch glass by means of elastomeric gaskets; 1-3/4 inch face width x 4-1/2 inch depth, front glass application, thermally broken at exterior locations.

B. Entrances Doors:
1. Source: 190 Standard Entrances by Kawneer, or approved substitute.
2. Type: Narrow stile configuration with nominal 2-1/8 inch vertical stiles and top rail and 10 inch bottom rail, thermally broken at exterior locations.

C. Door Hardware: Specified in Section 087100.

2.4 ACCESSORIES

A. Fasteners:
1. Series 300 stainless steel for wet locations and exposed fasteners.
2. Stainless or fluoropolymer coated steel for other locations.

B. Joint Sealants: Specified in Section 079200.

C. Glass and Glazing Accessories: Specified in Section 088000.

D. Weatherstripping: Replaceable, nonporous synthetic wool pile type.

2.5 FABRICATION

A. Fabricate with minimal clearances and shim spaces around perimeter.

B. Accurately fit and secure joints and intersections. Make joints flush, hairline, and weathertight.

C. Fabricate in largest practical units.

D. Conceal fasteners and attachments from view.

E. Fabricate fascias, covers, closures, flashings, and trim members from same material as storefront.

F. Fabricate aluminum components with integral low conductance thermal barrier located between exterior and interior exposed components that eliminates metal-to-metal contact.

G. Doors:
1. Mechanically fastened and welded corner construction.
2. Fabricate stiles and rails of minimum 0.188 inch thick extrusions and glass stops from minimum 0.050 inch thick extrusions.
3. Provide weatherstripping at door head, jambs, meeting stiles, and sills.
4. Prepare with internal reinforcements for door hardware.

2.6 FINISHES

A. Aluminum: Kawneer Permanodic® AA-M10C21A44, AAMA 611, Architectural Class I Color Anodic Coating (Color to be selected by Architect from manufacturer’s full line).

B. Apply bituminous coating to aluminum surfaces in contact with cementitious materials.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Install components plumb and level, in proper plane, free from warp and twist.

C. Anchor to supporting construction.

D. Set thresholds and sill members exposed to weather in mastic and secure.

E. Install hardware using templates provided by manufacturer.

F. Install glass and accessories in accordance with Section 088000.

G. Installation Tolerances:
1. Maximum variation from plumb or level: 1/8 inch in 3 feet or 1/4 inch in any 10 feet, whichever is less.
2. Maximum misalignment of members abutting end to end: 1/32 inch.
3. Sealant space between framing members and adjacent construction: 1/2 inch plus or minus 1/8 inch.

3.2 ADJUSTING

A. Adjust hardware for smooth operation.

B. Adjust doors to operate with maximum opening forces in accordance with applicable accessibility code.

C. Touch up minor scratches and abrasions to match original finish.

D. Adjust weatherstripping to contact appropriate surfaces and form weather seal.

END OF SECTION

SECTION 085213

ALUMINUM-CLAD WOOD WINDOWS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Shop fabricated aluminum-clad wood windows, with fixed and operable sash.
2. Shop glazing.
3. Operating hardware.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 064000 - Architectural Woodwork.
3. Section 076500 - Flexible Flashings.
4. Section 079200 - Joint Sealants.
5. Section 088000 - Glazing.

1.2 SYSTEM DESCRIPTION

A. Windows: AAMA/WDMA/CSA 101/I.S.2/A440.
1. Product type:
a. Operable Single Hung Window - H
b. Fixed Wood Window - F.
2. Performance Classification: LC.
3. Performance Grade: 40.
4. Thermal transmittance of window assembly: Maximum U-value of 0.35 BTU/square foot per hour per degree F, tested to NFRC 100.
5. Forced entrance resistance: Conform to ASTM F588.

B. Design Requirements; design windows to withstand:
1. Design wind pressure in accordance with Building Code, with maximum allowable deflection of L/180.
2. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.
3. Movement between system and adjacent construction.
4. Dynamic loading and release of loads.
5. Deflection of supports.
6. Overhead structure deflection of 1/8 inch.
7. Solar Heat Gain Coefficient (SHGC) = .3

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Include locations, dimensions, profiles, relationship to adjacent construction, and attachments.
2. Samples:
a. Window corner, minimum 6 x 6 inches, showing corner construction, cross section, and finish.
b. 3 x 3 inch finish samples showing available colors.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

B. Conform to applicable accessibility code for locating hardware.

C. Windows: Energy Star qualified for project location; bear Energy Star label.

D. Mockup:
   1. Size: One full sized window unit.
   2. Locate where directed.
   3. Approved mockup may remain as part of the Work.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver units factory assembled, with sash installed in frame.

1.6 WARRANTY

A. Standard exterior aluminum cladding finish is warranted against manufacturing defects resulting in chalk, fade and loss of adhesion (peel) per the American Architectural Manufacturer's Association (AAMA) Specification 2605-11 Section 8.4 and 8.9 for twenty (20) years from the date of Substantial Completion.

B. Factory-applied interior finish is warranted to be free from finish defects for a period of five (5) years from the date of Substantial Completion.

C. Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on Ultimate Series products by Marvin Windows. (www.marvin.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Aluminum-Clad Wood Windows:
   1. Source: Ultimate Single Hung G2 and Ultimate Picture by Marvin Windows, or approved substitute.
   2. Simulated divided lite with internal spacer bars painted black or bronze.
   3. Interior Sash Sticking: Standard Ogee
   4. Jamb Extensions: By trim installer
   5. Aluminum Extrusions: Mullion cap A116, Field-fit and applied Frame Expander A110.

B. Wood:
   1. Species and Grade: Douglas Fir, of quality suitable for opaque finish.
   2. Preservative treated in accordance with WDMA I.S.4, kiln dried to maximum 12 percent moisture content.

C. Glass and Glazing Accessories: Specified in Section 088000.

D. Exterior Cladding: Extruded aluminum, shop fit to profile of wood members.

E. Operating Hardware:
   1. Aluminum, stainless steel, plated steel, or other noncorroding material. Finish to be selected by Architect from Manufacturer's full range.
   2. Spiral steel extension spring-type balances on each sash, self-aligning sash lock and strike, and lift handles.
   3. Locking system that provides locking, unlocking, balancing, and tilting of the sash members
   4. Bottom Rail Lock Actuator Assembly - Lift Lock with Custodial design features.
      a. Material: Zinc die-cast, finish to be selected by Architect from Manufacturer's full range.

F. Weatherstripping: Manufacturer's standards.

2.3 ACCESSORIES

A. Fasteners: Stainless steel, hot-dip galvanized steel, or fluoropolymer coated steel; type best suite to application.

2.4 FABRICATION

A. Fabricate to AAMA/WDMA/CSA 101/I.S.2/A440.

B. Fabricate mullions and sash members with mortised and tenoned joints; fit to hairline joints.

C. Finger joints not permitted.

D. Form glass stops of solid wood, sloped for water wash.

E. Weatherstrip operable sash.

F. Form sills and stools in one piece. Slope sills for water wash.

G. Size units to allow for tolerances of rough openings and shim space around perimeter.

H. Clad exterior surfaces with aluminum. Match and align cladding for continuity of design and line.

I. Provide internal drainage to exterior for moisture entering glazing channels.

J. Provide exterior perimeter trim to match design and finish of exterior sash.

K. Form glass muntins of wood, applied to interior and exterior glass surface with spacer bars between glass.

2.5 FINISHES

A. Aluminum Cladding: AAMA 2605 fluoropolymer coating containing minimum 70 percent PVDF resins, matte black color to be selected from manufacturer's full color range.

B. Interior Wood: Factory-applied water-borne acrylic primer. Meets WDMA TM-11 requirements.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install windows in accordance with ASTM E2112, manufacturer's instructions, and approved Shop Drawings.

B. Set plumb, level, and rigid, free from warpage.

C. Anchor to supporting construction.

D. Installation Tolerances:
   1. Maximum variation from plumb or level: 1/8 inch in 3 feet or 1/4 inch in any 10 feet, whichever is less.
   2. Maximum misalignment of members abutting end to end: 1/32 inch.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions in factory finish.

3.3 CLEANING

A. Remove visible labels and adhesive residue according to manufacturer’s instruction.

B. Leave windows and glass in a clean condition.

C. Protect windows from damage by chemicals, solvents, paint or other construction operations that may cause damage.

END OF SECTION

SECTION 087100

DOOR HARDWARE

PART 1 – GENERAL:

1.01 SUMMARY:

A. Section includes the supply and installation of the Finish Hardware.
   1. Include the termination of all Electrified Hardware.
   2. Include field verification of any existing doors, frames, or hardware.

B. Related Sections
   1. Division 1
   2. Sealants – Division 7 / Division7
   3. Openings – Division 8 / Division 8
   4. Finishes – Division 9 / Division9
   5. Fire Alarm – Division 13/ Division28
   6. Electrical – Division 16 / Division26
   7. Security – Division 16 / Division 28

1.02 REFERENCES:

A. Documents and Institutes that shall be used in estimating, detailing, and installing the items specified.
   1. International Building Code – Current/Adopted Edition
   2. ICC/ANSI A117.1 – Accessible and Usable Building and Facilities - Current/Adopted Edition
   3. NFPA 70 – Current/Adopted Edition
   4. NFPA80 –Standards for Fire Doors and Fire Windows–Current/Adopted Edition
   5. NFPA101 – Life Safety Code – Current/AdoptedEdition
   6. NFPA105 – Installation of Smoke-Control Door Assemblies – Current/Adopted Edition.
   7. ANSI - American National Standards Institute
   8. BHMA – Builders Hardware Manufacturers Association
   9. UL – Underwriters Laboratory
   10. DHI – Door and Hardware Institute
   11. Texas Accessibility Standards – Current Adopted Edition
   12. Local Building Codes

1.03 SUBMITTALS

A. Comply with pertinent provisions of Division01.

B. Finish Hardware Schedule to be in vertical format to include:
   1. Heading #/Hardware Set
   2. Door #, Location, Hand, Degree of Opening, Door Size and Type, Frame Size and Type, Fire Rating
   3. Quantity, type, style, function, product, product number, size, fasteners, finish, and manufacturer of each hardware item.
   4. Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
   5. Keying schedule

6. Title Sheet, Index, Abbreviations, Manufacturers List, Template List and Templates.
7. Mounting locations for hardware.
8. Explanation of abbreviations, symbols, and codes contained in schedule. Date of the Finish Hardware Specification and Drawing / Door Schedule used in completing the Finish Hardware Schedule.
9. In Name, Company and Date of Field Verification if required.
10. Door Index; include door number, heading number, and hardware group.
11. Name and phone number for local manufacturer's representative for each product.
12. Submit in conjunction with Door and Frame Submittal.
13. Operation Description of openings with electrified hardware.

C. LEED Submittals:
1. Refer to Division 1 for any LEED submittal requirements.

D. Product Data: Provide product data in the form of a binder, manufacturer's technical product fact sheets for each item of hardware. Include whatever information may be necessary to show compliance with requirements, including instructions for installation and for maintenance of operating parts and finish.

E. Wiring Diagrams: Provide Riser/Elevation and Point to Point Wiring Diagrams for all openings with electrified hardware. Include all information that is necessary for coordination with other trades.

F. Samples: Provide samples as requested by Owner or Architect with Heading # and Door# marked on boxes. All samples will be returned to the contractor and used on doors for which they were marked.

G. Templates: Provide templates of finish hardware items to each fabricator of doors, frames and other work to be factory or shop prepared for the installation of hardware.

H. Keying Schedule: After meeting with the Owner, a keying schedule shall be submitted using keyset symbols referenced in DHI manual "Keying Systems and Nomenclature." The keying schedule shall be indexed by door number, keyset, hardware heading number, cross keying instructions and special key stamping instructions.

I. Operations and maintenance data: At the completion of the job, provide to the Owner one hard copies or one electronic copy of an Owner's operation and maintenance manual. The manual shall consist of a labeled hardcover three ring binder with the following technical information:
1. Title page containing: Project name, address, and phone numbers. Supplier's name, address, and phone numbers.
2. Table of Contents.
3. Copy of final (file and field use/as-installed) Finish Hardware Schedule.
4. Final Keying Schedule.
5. Maintenance instruction, adjustment, and preservation of finishes for each item of hardware.
6. Catalog pages for each item of hardware.
7. Installation Instructions for each item of hardware
8. Parts List for each item of hardware.
9. As installed point to point wiring diagrams for electrified hardware.
10. Warranties include Order #.

1.04 QUALITY ASSURANCES

Substitutions: Request for substitutions shall not be accepted within this project. Architect, Owner and Finish Hardware Consultant have selected one (1) specified and two (2) equals listed hereinafter in the Hardware Schedule. By this selection process they have established three (3) equal products for competitive pricing, while insuring no unnecessary delays by a substitution process. If any specified product is listed as a “No Substitution” product, this product will be supplied as specified, with no alteration or request of substitution. The reason for this is to comply with the uniformity established at this project. Parts and supplies are inventoried for these particular products for ease and standardization of replacement.

A. Supplier Qualifications: Supplier shall be recognized architectural finish hardware supplier, with warehousing facilities, who have been furnishing hardware in the project vicinity for a period of not less than 2 year and who is or employs a DHI Certified AHC, DHC, DHSC or person with a minimum of 10 years of experience as a hardware supplier. This person shall be available at reasonable times during the course of the work for consultation about products hardware requirements, to the Owner, Architect and General Contractor.

B. Installer Qualifications (Mechanical Hardware): All finish hardware shall be installed by the Finish Hardware Installer with a minimum of at least two (2) years documented experience. Installer shall attend a pre-installation meeting between the General Contractor, Finish Hardware Supplier/s, hardware manufacturer’s representative for locks, closers and exit devices, and all door / frame suppliers. The Finish Hardware Installer shall be responsible for the proper installation and function of all doors and hardware.

C. Installer Qualifications (Electrified Hardware): All electrified finish hardware (power source, electrified locking or control device, switching device, through wire device and monitoring device) shall be installed by an Electronic Access Control Installer licensed by the Texas Department of Public Safety. The Electrified Finish Hardware Installer shall have a minimum of at least two (2) years of documented experience. Installer shall attend a pre-installation meeting between the General Contractor, Finish Hardware Supplier/s, Electrical Contractor, Fire Alarm Contractor, Security Contractor, hardware manufacturer’s representative for electrified hardware, all door / frame suppliers. The Electrified Finish Hardware Installer shall be responsible for the proper installation, termination, and function of all opening with electrified hardware. Installation shall include termination of all electrified products (including the required wire to the power supply and/or junction box).

1.05 DELIVERY, STORAGE AND HANDLING

A. Marking and packaging: Mark each item or package separately, with identification related to hardware set number, door number and keyset symbol.

B. Delivery:
1. Deliver individually packaged and properly marked finish hardware at the proper time and location to avoid any delays in construction or installation.
2. At time of delivery, inventory hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

C. Storage: Store hardware in enclosed, dry, and locked area.

1.06 WARRANTY

A. All finish hardware products shall be covered by a 1-year factory warranty from the date of substantial completion of the project.

B. Supply warranty verification to the owner for all products that provide factory warranty. Warranty should include Factory Order # and date.

1.07 MAINTENANCE:

A. Maintenance Service
1. None

B. Extra Materials:
1. All extra screws, fasteners, and all special installation tools furnished with the hardware shall be turned over to the owner at the completion of the job.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Screws and Fasteners:
1. All closers and exit devices provided for exterior doors, hollow metal doors, and all other required shall be provided with thru-bolts.
2. All finish hardware shall be installed to manufacturer's recommendations, using screws, attachments and installation tools provided with the hardware. No other screws or attachments are acceptable.

B. Hinges:
1. Template: Provide templated units only.
2. Exterior: All exterior hinges shall be stainless steel base with stainless steel pin and stainless-steel finish.
3. Interior: All interior hinges steel based.
4. Interior corrosive: All interior hinges at corrosive areas shall be stainless steel base with stainless still pin and stainless-steel finish.
5. All hinges on doors over 36" wide, with exit devices, or with push/pull shall be heavy weight.
6. Electric Hinge: Provide minimum 8 wire.
7. Provide non-removable pins for out swinging doors that are locked or are lockable.
8. All hinges on doors with door closers shall be ball bearing.
9. All hinges shall be full mortise.
10. Size: Provide 4 ½ x 4 ½ hinges on doors up to 3'0" in width. Provide 5 x 4½ hinges over 3'0" to 4'0" in width. Reference manufacturers catalog for all other sizes.
11. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges for door leaf for doors 90" or less in height and one additional hinge for each 30" of additional height.
12. Adjust hinge width as required for door, frame, trim and wall conditions to allow proper degree of opening.
13. Provide hinges conforming to ANSI/BHMA A156.1.

14. Provide spring hinges where specified. Provide two spring hinges and one bearing hinge per door leaf for doors 90 inches (2286 mm) or less in height. Provide one additional bearing hinge for each 30 inches (762 mm) of additional door height.
15. Supply from the following list of manufacturers:
    Ives IVE
    Mckinney MCK
    Bommer BOM
16. Supply ball tips where indicated in finish to match.

C. Continuous Hinges
1. Continuous hinges to be manufactured of6063-T6aluminum.
2. Continuous hinge shall be certified to ANSI 156.26, Grade 1
3. Continuous hinge should be tested an approvedUL10C.
4. Electrified – Provide minimum 8 wire with removable panel.
5. Provide hinges 1 inch shorter in length than nominal height of door, unless otherwise noted.
6. Provide reinforcing for doors weighing over 450 pounds and up to 600 pounds.
7. Supply from the following list of manufacturers:
    Ives IVE
    Select SEL
    Stanley STA

D. Mortise Locks
1. All locks on this project should be manufactured by the same manufacturer.
2. Mortise locksets shall meet ANSI/BHMA A156.13, Series 1000, Grade 1 Operational with all standard trims and conventional mortise cylinders.
3. All mortise locks shall be UL Listed for 3-hourfire door. Review lock for any height restriction.
4. Provide locks with a standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latch bolt. Provide deadbolt with full 1 inch (25 mm) throw, constructed of stainlesssteel.
5. Provide dust box.
6. Supply from the following list of manufacturers:
    Schlage SCH
    Falcon FAL
    Best BES

E. Cylindrical Locks
1. All locks on this project should be manufacturer by the same manufacturer.
2. All locks shall meet the new ANSI/BHMA A156.2, Series 4000, Grade1.
3. All cylindrical locks shall be UL Listed for 3-hour fire door. Review lock for any height restriction.
4. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with a 1/2-inch (13 mm) latch throw. Provide proper latch throw for UL listing at pairs.
5. Provide standard ASA strikes unless extended lip strike is necessary for frame/trim or 7/8” lip strike is necessary at pair with overlapping astragal.
6. Provide dust box.
7. Lockset shall adjust to fit door thickness from 1 ¾” to21/8”.

8. Supply from the following list of manufacturers:
9. Schlage SCH
   Falcon FAL
   Best BES

F. Exit Devices
1. All exit device types on this project should be manufactured by the same manufacturer.
2. Exit devices are to be architectural grade touch bar type. Touchpad to extend one half of door width.
3. Mechanism case to be smooth.
4. Exit devices shall meet ANSI A156.3, Grade1.
5. All exit devices are UL listed Panic Exit or Fire Exit Hardware.
6. All lever trim to match lock trim in design and finish.
7. Dogging: Non-rated devices are to be provided with dogging. Less dogging where shown in Hardware Sets (some exterior, electrical rooms, electrified) Cylinder dogging as shown in hardware sets.
8. Exit devices are to be supplied and installed with thru-bolts for exterior, hollow metal doors, or as required for application.
9. Provide proper power supply for exit devices as required. Coordinate with Fire Alarm, Electrical and Security Contractor.
10. Push pads shall be metal, no plastic inserts allowed.
11. Exit devices shall have a flush endcap.
12. Exit devices shall be ordered with the correct strike for application.
13. Exit devices shall be order in the proper length to meet door width.
14. Exit devices shall have dead latching.
15. Exit device shall be provided in width/height required based on door size.
16. Install exit devices with fasteners supplied by exit device manufacturer.
17. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits as required.
18. Provide proper concealed vertical rods for wood or hollow metal doors as required.
19. Factory or field drill weep holes for exit devices used in full exterior applications, highly corrosive areas, and where noted in the hardware sets.
20. Supply from the following list of manufacturers:
    Von Duprin VON 35/98 Series
    Falcon FAL
    Detex DET

G. Flush Bolts
1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.
2. Supply from the following list of manufacturers:
   Ives IVE
   Trimco TRI
   Rockwood ROC

H. Coordinators

1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers and surface vertical rod exit device strikes. Factory-prep coordinators for vertical rod devices and hardware as required.
3. Supply from the following list of manufacturers:

Ives	IVE
Trimco	TRI
Rockwood	ROCPull Plates/Pulls/Push Plate

4. Pull and Push Plates to meet ANSI 156.6 for .050" thickness.
5. Pull and Push Plate size to 4" x 16".
6. Pull Plate to have 10" center and 1" round on pull plate with concealed fasteners.
7. Provide straight and offset pulls with fasteners as required.
8. Provide concealed fasteners for all applications.
9. Prep plate for cylinder/lock as required.
10. Supply from the following list of manufacturers

Ives	IVE
Trimco	TRI
Rockwood	ROC

I. Door Closers

1. All door closers on this project should be manufactured by the same manufacturer.
2. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory.
3. Door closers shall be furnished with standard cover. Provide full cover as shown in hardware sets.
4. Size in accordance with the manufacturer's recommendations for door size and condition.
5. Door closers shall be furnished with delayed action, hold-open as listed in the Hardware Sets.
6. Door closers shall be mounted out of the line of sight wherever possible (i.e., room side of corridor doors, etc.) with parallel arm mounting on out swinging doors.
7. All closer installation shall include thru bolts on exterior, hollow metal doors or where required for application.
8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.
9. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
10. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
11. Supply from the following list of manufacturers

Falcon	FAL SC70 / SC80
LCN	LCN 4011 /4111
Norton	NOR 78B/D

J. Door Protection Plates
1. Protective plates shall meet ANSI A156.6 requirements for .050 thickness.
2. Protection plates should be fabricated from stainless steel or brass based on finish.
3. Protection plate shall be height as shown in Hardware Sets. Width shall be 10" by 2" less than door width on single door or pair with a mullion and 1" less than door width on pair of doors without mullion.
4. Beveled 4 edges.
5. Provide kickplate on all doors with closers, unless not required for aesthetic reasons.
6. Prep protective plates for hardware as required.
7. Supply from the following manufacturers:

Ives	IVE
Rockwood	ROC
Trimco	TRI

K. Door Stops and Holders:
1. Supply wall stops at all openings to protect doors or door hardware. Install so lock does not lock unintentionally. Install blocking in wall where wall stop will be mounted.
2. When wall conditions do not permit use of wall stop provide floor stops with risers as needed to adjust for floor conditions.
3. When wall conditions do not permit use of wall stop provide overhead stops. Jamb mount where required to not be visible from Corridor.
4. Exterior Ground Level Doors: Provide security floor stop.
5. Exterior Roof Doors: Provide heavy duty overhead stop.
6. Supply from the following list of manufacturers:

Glynn Johnson	GLY
Rockwood	ROC
Trimco	TRI

L. Silencers
1. Provide silencers on all doors without seal. 3 for single doors and 2 for pairs.
2. Provide silencers as required for frame conditions. SR64 for hollow metal frames. SR65/SR66 for wood frames.
3. At wood frames, ensure height of stop is compatible with silencer.
4. Supply from the following list of manufacturer's

Ives	IVE
Rockwood	ROC
Trimco	TRI

M. Thresholds/Weatherstripping

1. Thresholds on doors in the accessible path shall conform to accessibility codes.
2. Threshold should be based on sill detail.
3. Smoke seal shall be teardrop design bulb seal.
4. Exterior seal/thresholds shall be silicone or brush as shown in hardware sets.
5. Drip strips shall protrude 2 ½" and be 4" wider than opening.
6. At S Label single doors provide seals on frame to comply with UL1784
7. At S Label pair of doors provide seals on frame and as meeting stile to comply with UL1784.

8 Automatic Door Bottom shall be mortised to comply with accessibility codes.
9 Supply from the following list of manufacturer's

Zero	ZER
National Guard	NGP
Pemko	PEM

N. Top Hung Interior Folding Partitions on Bi-Fold Track System

1 8 panel unit pivoted to one side with an additional single hung panel leaf.
2 Floor pivot socket to be flush to adjacent floor.
3 Longest track lengths are referred.
4 Supply from the following list of manufacturer's or similar.

Basis of design Brio	BRI

2.03 KEYING:

A. General: Finish Hardware Supplier shall meet in person with owner to finalize keying requirements prior to the locks and exit devices being ordered and match existing or start a new Master Key System for the project. During keying meeting all hardware functions should be reviewed with the owner to finalize lock and exit device functions. During keying meeting determine all expansion required.

B. Cylinders: Provide the correct and quantity of cylinders for all applications. Keys: Provide nickel silver keys only. Furnish 2 change keys for each lock: 5 control keys: 5 master keys for each master system and 5 grandmaster keys for each grandmaster key system. Deliver all keys to Owners Representative.

C. Cores and keys shall be provided with identification stamping.

D. Provide construction keying / construction cores for this project with constructions keys.

E. Provide Bitting List to Owner.

2.04 KEY CONTROL:

A. Key Management: Key control shall be provided, by supplying a complete key storage and management system. Each key shall be fully cut, indexed, tagged, and installed on cabinet hooks by the lock supplier and shipped with the locks. Key cabinet provided shall be wall-mounted type with capacity plus 50%.

PART 3 – EXECUTION:

3.01 EXAMINATION:

A. Examine doors, frames and related items for conditions that would prevent the proper application of any finish hardware items. Do not proceed with installation until all defects are corrected.

B. Existing Door and Frame Compatibility: Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION:

A. Follow Door and Hardware Institute Publication:
Recommended Location for Architectural Hardware for Standard Steel Doors and Frames
Recommended Location for Builder's Hardware for Custom Steel Doors and Frames
Recommended Locations for Architectural Hardware for Wood Flush Door

B. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

C. Follow ANSI A117.1-1998 Accessible and Usable Building and Facilities and Texas Accessibility Standards.

D. Review mounting locations with Architect where required.

E. Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Closers should not be visible in corridors, lobbies, and other public spaces where possible.

F. Locate power supplies in accessible location and indicate in as-builts where located.

G. Set threshold in full bed of sealant complying with requirements specified in Division 07.

H. Pre-Installation meeting required with attendees to include Architect, General Contractor, Mechanical Hardware Installer, Electrified Hardware Installer, Finish Hardware Supplier and Manufacturer's Representative for Exit Device, Locks and Closers and Door/Frame Suppliers before installation begins.

3.03 FIELD QUALITY CONTROL:

A. After installation has been completed, obtain the services of an Architectural Hardware Consultant to check for proper installation of finish hardware, according to the finish hardware schedule and keying schedule. In addition, check all hardware for adjustments and proper operation.

3.04 ADJUST AND CLEAN:

A. Adjust, clean, and inspect all hardware, to ensure proper operation and function of every opening. Replace items, which cannot be adjusted to operate freely and smoothly as intended for the application made.

3.05 PROTECTION:

A. The General Contractor shall use all means at his disposal to protect all finish hardware items from abuse, corrosion and other damage until the owner accepts the project as complete.

3.06 TRAINING

A. After installation has been completed, provide training to the Owner on the operation of the Finish Hardware and programming of any electrified hardware.

3.07 HARDWARE SCHEDULE

A. These hardware set shown below are for use as a guideline. Provide hardware as required to meet the requirements of the openings, security, and code requirements.

Door#	HwSet#
1	C714AJ
2A	S711J
2B	SC715J
3A	S711J
3B	001
4	S203JS
5	S711J
6	C2121SJ
7	S203J
8	S403J
9	343JS
10	203JS
11	2121SJ
13C	C715AJ
14	801CJ
15	801J
16	103S
17	343JS
18	203JS
19	343J
20	C714AJ
21	103J
22	103J

106327 OPT0359200 Version 5

Legend:
Link to catalog cut sheet

Hardware Group No. 001

For use on Door #(s):
3B

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)	643e	MCK
1		PUSH/PULL	8311	613	IVES
1		PUSH PLATE	8200	613	613
8		BI-FOLD PANEL ONE SIDE	BRIO	SN	BRI
		TRACK	350 (STANDARD LENGTHS)		
		BRACKET	1SS/250		
1		PIVOT SET	21HP/21HP-C		
3		HANGERS	21/4HN		
1		HANGERS	21HN		
21		HINGES	404/3S		
4		GUIDES	21RB/94		
		CHANNELS	94A,94B,94P,94A		
5		FLUSH PULLS	401		
5		FLUSH BOLTS	456		

COORDINATE WITH ARCHITECT TO RESTORE & UTILIZE EXISTING RECESSED PULL HARDWARE

Hardware Group No. 103J

For use on Door #(s):
21 22

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	OFFICE/ENTRY LOCK	L9050T LATA L583-363		643e	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH
1	EA	WALL STOP	WS406/407CCV		613	IVE
3	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)		GRY	IVE

Hardware Group No. 103S

For use on Door #(s):
16

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	OFFICE/ENTRY LOCK	L9050T LATA L583-363		643e	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH
1	EA	OH STOP	90S		643E/716	GLY
3	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)		GRY	IVE

Hardware Group No. 203JS

For use on Door #(s):
10 18

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	STOREROOM LOCK	L9080T LATA		643e	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH
1	EA	OH STOP	90S		643E/716	GLY
3	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)		GRY	IVE

Hardware Group No. 343J

For use on Door #(s):
19

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	L9040 LATA L583-363 OS-OCC		643e	SCH
1	EA	WALL STOP	WS406/407CCV		613	IVE
3	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)		GRY	IVE

Hardware Group No. 343JS

For use on Door #(s):
9 17

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	L9040 LATA L583-363 OS-OCC		643e	SCH

1	EA	OH STOP	90S		643E/716	GLY
3	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)		GRY	IVE

Hardware Group No. 801CJ

For use on Door #(s):
14

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	TRADITIONAL CAST PULL	RM5532		613	ROC
1	EA	TRADITIONAL PLAIN CAST PLATE 3.5" X 15"	RM5598B		613	ROC
1	EA	SPRING ARM CLOSER	UNI78B/D MTG BRKT, SPCR & PLATE AS REQ		613	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		613	IVE
1	EA	WALL STOP	WS406/407CCV		613	IVE
3	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)		GRY	IVE

Hardware Group No. 801J

For use on Door #(s):
15

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	TRADITIONAL CAST PULL	RM5532		613	ROC
1	EA	TRADITIONAL PLAIN CAST PLATE 3.5" X 15"	RM5598B		613	ROC
1	EA	REGULAR ARM CLOSER	78B/D-RA		613	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		613	IVE
1	EA	WALL STOP	WS406/407CCV		613	IVE
3	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)		GRY	IVE

Hardware Group No. 2121SJ

For use on Door #(s):
11

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	CONST LATCHING BOLT	FB61P		613	IVE
1	EA	DUST PROOF STRIKE	DP2		643E/716	IVE
1	EA	STOREROOM LOCK	L9080T LATA		643e	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH

1	EA	OH HOLD-OPEN	90H		643E/716	GLY
1	EA	WALL STOP	WS406/407CCV		613	IVE
2	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)		GRY	IVE

Hardware Group No. C714AJ

For use on Door #(s):
1 20

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONTINUOUS HINGE	112XY EPT		313AN	IVE
2	EA	POWER TRANSFER	EPT10 CON		SP313	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-3347A-EO-LBR-CON 24 VDC		313	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-3347A-NL-OP-LBR-388-CON 24 VDC		313	VON
1	EA	RIM CYLINDER	20-057 ICX W/ CONSTRUCTION CORE		613	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH
2	EA	TRADITIONAL CAST PULL	RM5510		613	ROC
2	EA	SPRING ARM CLOSER	UNI78B/D MTG BRKT, SPCR & PLATE AS REQ		613	NOR
1	EA	RAIN DRIP	142D DOOR WIDTH + 4"		D	ZER
1	EA	PERIMETER SEAL	BY FRAME MANUFACTURER			B/O
1	EA	MEETING STILE SEAL	BY DOOR MANUFACTURER			B/O
2	EA	DOOR SWEEP	39D		D	ZER
1	EA	THRESHOLD	655D-E-223		D	ZER
1	EA	CREDENTIAL READER	BY SECURITY - DIVISION 28			B/O
2	EA	DOOR POSITION SWITCH	BY SECURITY - DIVISION 28			B/O
1	EA	POWER SUPPLY FOR ELEC PANIC	PS902 900-2RS 120/240 VAC		LGR	SCE

- DOORS NORMALLY CLOSED AND LOCKED.
- ENTRY BY THE CREDENTIAL READER OR KEY OVERRIDE.
- FREE EGRESS AT ALL TIMES.
- DOORS WILL REMAIN LOCKED UPON LOSS OF POWER.
- COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.
- OMIT POWER SUPPLY WHERE PROVIDED BY THE SECURITY CONTRACTOR.

Hardware Group No. C715AJ

For use on Door #(s):
13C

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONTINUOUS HINGE	112XY EPT		313AN	IVE
1	EA	POWER TRANSFER	EPT10 CON		SP313	VON

1	EA	ELEC PANIC HARDWARE	RX-QEL-33A-NL-OP-388-299-CON 24 VDC	643E	VON
1	EA	RIM CYLINDER	20-057 ICX W/ CONSTRUCTION CORE	613	SCH
1	EA	FSIC PERMANENT CORE	23-030	613	SCH
1	EA	TRADITIONAL CAST PULL	RM5510	613	ROC
1	EA	SPRING ARM CLOSER	UNI78B/D MTG BRKT, SPCR & PLATE AS REQ	613	NOR
1	EA	RAIN DRIP	142D DOOR WIDTH + 4"	D	ZER
1	EA	PERIMETER SEAL	BY FRAME MANUFACTURER		B/O
1	EA	DOOR SWEEP	39D	D	ZER
1	EA	THRESHOLD	655D-E-223	D	ZER
1	EA	CREDENTIAL READER	BY SECURITY - DIVISION 28		B/O
1	EA	DOOR POSITION SWITCH	BY SECURITY - DIVISION 28		B/O
1	EA	POWER SUPPLY FOR ELEC PANIC	PS902 900-2RS 120/240 VAC	LGR	SCE

- DOORS NORMALLY CLOSED AND LOCKED.
- ENTRY BY THE CREDENTIAL READER OR KEY OVERRIDE.
- FREE EGRESS AT ALL TIMES.
- DOORS WILL REMAIN LOCKED UPON LOSS OF POWER.
- COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.
- OMIT POWER SUPPLY WHERE PROVIDED BY THE SECURITY CONTRACTOR.

Hardware Group No. C2121SJ

For use on Door #(s):
6

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
5	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)	643e	MCK
1	EA	ELECTRIC HINGE	TA2714 4.4 x 4.5 CC8 BT (BALL TIP)	643e	MCK
1	EA	CONST LATCHING BOLT	FB61P	613	IVE
1	EA	DUST PROOF STRIKE	DP2	643E/716	IVE
1	EA	ELEC MORTISE LOCK (FAIL SECURE)	L9092TEU LATA RX CON 12/24 VDC	643e	SCH
1	EA	FSIC PERMANENT CORE	23-030	613	SCH
1	EA	OH STOP	90S	643E/716	GLY
1	EA	WALL STOP	WS406/407CCV	613	IVE
2	EA	SILENCER	SR64 OR SR65 (HM OR WD FRAME)	GRY	IVE
1	EA	CREDENTIAL READER	BY SECURITY - DIVISION 28		B/O
2	EA	DOOR POSITION SWITCH	BY SECURITY - DIVISION 28		B/O
1	EA	POWER SUPPLY FOR ELEC LOCK	PS902 120/24 VAC	LGR	SCE

- DOORS NORMALLY CLOSED AND LOCKED.
- ENTRY BY THE CREDENTIAL READER OR KEY OVERRIDE.
- FREE EGRESS AT ALL TIMES.
- DOORS WILL REMAIN LOCKED UPON LOSS OF POWER.
- COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.
- OMIT POWER SUPPLY WHERE PROVIDED BY THE SECURITY CONTRACTOR.

Hardware Group No. S203J

For use on Door #(s):
7

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	STOREROOM LOCK	L9080T LATA		643e	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH
1	EA	WALL STOP	WS406/407CCV		613	IVE
1	EA	PERIMETER SEAL (FOR SOUND)	117SBK PSA		BK	ZER
1	EA	CONCEALED AUTO DOOR BOTTOM (FOR SOUND)	350AA		AA	ZER

Hardware Group No. S203JS

For use on Door #(s):
4

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	STOREROOM LOCK	L9080T LATA		643e	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH
1	EA	OH STOP	90S		643E/716	GLY
1	EA	PERIMETER SEAL (FOR SOUND)	117SBK PSA		BK	ZER
1	EA	CONCEALED AUTO DOOR BOTTOM (FOR SOUND)	350AA		AA	ZER

Hardware Group No. S403J

For use on Door #(s):
8

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	TA2714 4.4 x 4.5 BT (BALL TIP)		643e	MCK
1	EA	PASSAGE SET	L9010 LATA		643e	SCH
1	EA	WALL STOP	WS406/407CCV		613	IVE

1	EA	PERIMETER SEAL (FOR SOUND)	117SBK PSA		BK	ZER
1	EA	CONCEALED AUTO DOOR BOTTOM (FOR SOUND)	350AA		AA	ZER
1	EA	KICK DOWN HOLDER	FS455		613	IVE

Hardware Group No. S711J

For use on Door #(s):
2A 3A 5

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	T4A3386 4.5 X 4.5 BT (BALL TIP)		613	MCK
1	EA	PANIC HARDWARE	55-L-01-SNB		643E	VON
1	EA	RIM CYLINDER	20-057 ICX W/ CONSTRUCTION CORE		613	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH
1	EA	PARALLEL ARM CLOSER	78B/D-PA		613	NOR
1	EA	ADJUSTABLE THRESHOLD	68 (2), 676		D	ZER
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		613	IVE
1	EA	PERIMETER SEAL (FOR SOUND)	117SBK PSA		BK	ZER
1	EA	CONCEALED AUTO DOOR BOTTOM (FOR SOUND)	350AA		AA	ZER

Hardware Group No. SC715J

For use on Door #(s):
2B

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	T4A3386 4.5 X 4.5 BT (BALL TIP)		613	MCK
1	EA	ELECTRIC HINGE	T4A3386 4.5 X 4.5 -+CC8 BT (BALL TIP)		613	MCK
1	EA	ELEC EXIT DEVICE	RX-QEL-99-NL-OP-110MD-CON 24 VDC		313	VON
1	EA	RIM CYLINDER	20-057 ICX W/ CONSTRUCTION CORE		613	SCH
1	EA	FSIC PERMANENT CORE	23-030		613	SCH
1	EA	TRADITIONAL CAST PULL	RM5510		613	ROC
1	EA	SPRING ARM CLOSER	UNI78B/D MTG BRKT, SPCR & PLATE AS REQ		613	NOR
1	EA	RAIN DRIP	142D DOOR WIDTH + 4"		D	ZER
1	SET	GASKETING	328D H & J		D	ZER
1	EA	DOOR SWEEP	39D		D	ZER
1	EA	ADJUSTABLE THRESHOLD	68 (2), 269 (2), 675 (3)		D	ZER
1	EA	CREDENTIAL READER	BY SECURITY - DIVISION 28			B/O
1	EA	DOOR POSITION SWITCH	BY SECURITY - DIVISION 28			B/O
1	EA	POWER SUPPLY FOR ELEC PANIC	PS902 900-2RS 120/240 VAC		LGR	SCE

- DOORS NORMALLY CLOSED AND LOCKED.
- ENTRY BY THE CREDENTIAL READER OR KEY OVERRIDE.
- FREE EGRESS AT ALL TIMES.
- DOORS WILL REMAIN LOCKED UPON LOSS OF POWER.
- COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.
- OMIT POWER SUPPLY WHERE PROVIDED BY THE SECURITY CONTRACTOR.

END SECTION 087100

SECTION 088000

GLAZING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Glass for other sections referencing this Section.
2. Unframed mirrors.
3. Glazing film.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SYSTEM DESCRIPTION

A. Glass Thicknesses:
1. Indicated thicknesses are minimums; select actual glass thicknesses by analyzing loads and conditions.
2. Size glass to withstand positive and negative wind pressure acting normal to plane in accordance with Building Code as measured in accordance with ASTM E330.
3. Provide glass in thicknesses and strengths to meet or exceed following criteria:
   a. Comply with ASTM E1300.
   b. Probability of breakage for vertical glazing: 8 lites per 1000 for lites set within 15 degrees of vertical and under wind load for load duration of 3 seconds.
   c. Thickness of tinted glass: Provide same thickness for each tint color for all applications.

B. Thermal and Optical Performance Properties: Provide glass meeting specified performance properties, based on manufacturer's published test data for units of thickness indicated:
1. U-factor: Per NFRC 100 expressed as Btu/square foot x hour x degree F.
2. Solar heat gain coefficient: Per NFRC 200.
3. Solar optical properties: Per NFRC 300.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Descriptive data and performance attributes for insulating glass.
2. Samples:
   a. 12 x 12 inch glass samples.
   b. 1/4 x 1/4 x 3 inch long sealant samples showing available colors.
3. Warranty: Sample warranty form.

B. Quality Control Submittals:
1. Test Report: Preconstruction adhesion and compatibility test report from glazing sealant manufacturer, based on submitted samples or acceptable data from previous testing of current formulations with similar products.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

B. Regulatory Requirements:
1. Provide safety glass for locations subject to human impact as required by Building Code.
2. Safety glass: Tested and labeled to CPSC 16 CFR 1201.

C. Perform Work in accordance with:
1. NGA Engineering Standards Manual.
2. NGA Laminated Glazing Reference Manual.

3. NGA GANA Sealant Manual.
4. IGMA TB-3001.
5. IGMA TM-3000.

1.5 PROJECT CONDITIONS

A. Perform glazing when ambient temperature is above 40 degrees F.

B. Perform glazing on dry surfaces.

1.6 WARRANTIES

A. Insulating Glass Units: Provide manufacturer's 10 year warranty against material obstruction of vision through unit due to:
   1. Intrusion of dust or moisture.
   2. Internal condensation.
   3. Film formation on internal glass surfaces caused by failure of hermetic seal except failure caused in whole or in part by breakage or fracturing of any portion of glass surface.

B. Glass Coatings: Provide manufacturer's 10 year warranty against peeling, cracking, or deterioration of coating under normal conditions.

C. Mirrors: Provide manufacturer's 10 year warranty against silver spoilage resulting from manufacturing defects.

D. Glazing Film: Provide manufacturer's 5 year warranty against peeling, cracking, or deterioration of coating under normal conditions.

E. Laminated Glass Units: Provide manufacturer's 5 year warranty against manufacturing defects resulting in edge separation, delamination, or material obstruction of vision through glass surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Glass:
   1. Cardinal Glass Industries. (www.cardinalcorp.com)
   2. Guardian Industries Corp. (www.guardian.com)
   3. Oldcastle BuildingEnvelope. (www.obe.com)
   4. Pilkington Architectural. (www.pilkington.com)
   5. Viracon, Inc. (www.viracon.com)
   6. Vitro Architectural Glass. (www.vitroglazings.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS - GLASS

A. Clear Glass: ASTM C1036, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.

B. Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select, Kind FT fully tempered.

C. Clear Heat Strengthened Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select, Kind HS heat strengthened.

D. Mirror Glass: ASTM C1036, Type I transparent flat, Class 1 clear, Quality q1 mirror select.

2.3 ACCESSORIES

A. Setting Blocks: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 80 to 90 Shore A durometer hardness.

B. Spacers: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 50 to 60 Shore A durometer hardness.

C. Glazing Gaskets:
   1. Dense compression gaskets: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone or thermoplastic polyolefin rubber, molded or extruded shape to fit glazing channel retaining slot; black color.
   2. Soft compression gaskets: ASTM C509, Type II, black, molded or extruded, neoprene, EPDM, silicone or thermoplastic polyolefin rubber, of profile and hardness required to maintain watertight seal; black color.

D. Contact Sealant:
   1. Type: Single component, medium modulus, neutral moisture curing silicone sealant; ASTM C1184 and ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G and A.
   2. Movement capability: 50 percent in extension and compression.
   3. Compatible with glass unit edge seals; tested to ASTM C1294.
   4. Color: To be selected from manufacturer's full color range.

E. Weatherseal Sealant:
   1. Type: Single component, low modulus, neutral moisture curing silicone sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G and A.
   2. Movement capability: 50 percent in extension and compression.
   3. Compatible with glass unit edge seals; tested to ASTM C1294.
   4. Color: To be selected from manufacturer's full color range.

F. Glazing Sealant: ASTM C920, Type S, Grade NS, Class 25; single component silicone, low modulus, non sag, color to be selected from manufacturer's full color range.

G. Sealant Backing: ASTM C1330, Type O, size and density to control glazing sealant depth and produce optimum glazing sealant performance.

H. Primer: As recommended by glazing sealant manufacturer.

I. Glazing Tape: AAMA 800; closed cell polyvinyl chloride foam, maximum 2 percent water absorption by volume, designed for 25 percent compression percent for air barrier and vapor retarder seal, black color, coiled on release paper over adhesive on two sides; widths required for installation.

J. Glazing Compound: Modified oil type, non hardening, knife grade consistency, color to be selected from manufacturer's full color range.

K. Mirror Adhesive: Adhesive setting compound, produced specifically for setting mirrors by spot application method.

L. Mirror and Glass Attachment Accessories: Stainless steel clips.

M. Glazing Film: 3M Sun Control Window Film Prestige Exterior Series PR 70, or approved substitute.

N. Laminating Film: Polyvinyl butyral sheet, thickness as required.

2.4 FABRICATION

A. Annealed Glass: Comply with ASTM C1036.

B. Heat Strengthened and Tempered Glass:
   1. Comply with ASTM C1048.

2. Process in horizontal position so that inherent roller distortion will run parallel to building floo lines after installation.

C. Sealed Insulating Glass:
1. Comply with ASTM E2190.
2. Fabricate spacer bar frame of tubular aluminum filled with desiccant.
3. Bond spacer bar frame to glass panes with twin primary seals.
4. Fill space outside frame to glass edge with elastomeric sealant.

D. Laminated Glass:
1. Comply with ASTM C1172 and ANSI Z97.1.
2. Laminate glass with laminating film by manufacturer's standard heat and pressure process.
3. Cut glass to required size at factory.
4. Discard glass with voids, delamination, or entrapped dirt or foreign matter.

E. Low-E Coated Glass: Apply low-emissivity coating to scheduled glass surface.

F. Mirror Glass:
1. Apply one coat of silver, one coat of electroplated copper, and one coat of organic mirror backing compound to back surface of glass.
2. Ease and polish edges.

G. Fabrication Tolerances: ASTM C1036 and ASTM C1048.

H. Glass Identification:
1. Apply manufacturer's label indicating type and thickness to each light of glass. Show position of exterior face when installed, where applicable.
2. Etch manufacturer's label on each light of tempered glass.

I. Source Quality Control:
1. Preconstruction adhesion and compatibility testing:
a. Perform adhesion test including ultraviolet exposure through glass on production samples of metals and glass in accordance with ASTM C794.
b. Test glass units, glazing materials, and glass framing members with specified finish for sealant compatibility, priming, and preparation requirements for optimum adhesion and performance.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean glazing rabbets; remove loose and foreign matter.

B. Remove protective coatings on metal surfaces.

C. Clean glass just prior to installation.

3.2 INSTALLATION - GENERAL

A. Install glass in accordance with glass manufacturer's instructions.

B. Maintain manufacturer's recommended edge and face clearances between glass and frame members.

3.3 INSTALLATION - STRUCTURAL SILICONE GLAZING METHOD

A. Mask aluminum and glass surfaces adjacent to sealant pockets.

B. Install temporary glass retainers to align faces of glass.

C. Apply contact sealant; completely fill pockets. Tool joints and remove masking tape before sealant skim cure begins.

D. Allow sealant to cure minimum time required by manufacturer.

E. Remove temporary glass retainers.

F. Insert joint backing to fill void between glass unit edges and glass spacer.

G. Mask both sides of glass for full length of joint.

H. Apply weatherseal sealant; tool to smooth, slightly concave profile.

3.4 INSTALLATION - GASKET GLAZING METHOD

A. Fabricate gaskets to fit openings; allow for stretching of gaskets during installation.

B. Set soft compression gasket against fixed stop or frame with bonded miter cut joints at corners.

C. Set glass centered in openings on setting blocks.

D. Install removable stops and insert dense compression gaskets at corners, working toward centers of glass, compressing glass against soft compression gaskets to produce weathertight seal.

E. Seal joints in gaskets.

F. Allow gaskets to protrude past face of glazing stops.

3.5 INSTALLATION - SEALANT AND TAPE GLAZING METHOD

A. Apply tape to permanent stops, projecting slightly above sight line.

B. Press glass into contact with tape.

C. Install removable stops with spacer shims between stop and glass.

D. Fill gap between removable stop and glass with glazing sealant.

E. Trim protruding tape edges.

3.6 INSTALLATION - COMPOUND GLAZING METHOD

A. Locate and secure glass using glazing clips.

B. Fill voids between glass and stops with glazing compound; tool to straight line. Slope to exterior for watershed.

3.7 INSTALLATION - MIRRORS WITH ADHESIVE

A. Apply mirror adhesive in accordance with manufacturer's instructions to cover maximum 25 percent of back of mirror. Set mirror and press against substrate to ensure adhesive bond.

B. Leave minimum 1/8 inch open ventilation space between mirror and substrate over 75 percent of mirror area. Do not seal off ventilation space at edges.

C. Place plumb and level without distortion.

3.8 INSTALLATION - MIRRORS WITH CLIPS

A. Set mirrors and back painted glass wall surfaces with clips where indicated in the Drawings. Anchor rigidly to wall construction.

B. Place plumb and level without distortion.

3.9 INSTALLATION - GLAZING FILM

A. Install glazing film per manufacturer’s instructions.

3.10 PROTECTION

A. After installation, mark glass with an 'X' using removable plastic tape.

3.11 SCHEDULE

A. Type GL-1:
   1. Description:
      a. Outboard lite: 1/4 inch thick clear glass, heat strengthened or tempered where required, with low-e coating on No. 3 surface.
      b. Inboard lite: 1/4 inch thick clear glass, tempered where required.
   2. Total unit thickness: 1 inch.
   3. Locations: Aluminum Clad Wood windows. Aluminum-Framed Storefront.

B. Type GL-2:
   1. Description: Laminated glass to match existing thickness. Apply glazing film where indicated in Drawings.
   2. Locations: Restored exterior wood windows.

C. Type GL-3:
   1. Description: 1/4 inch thick clear tempered glass.
   2. Locations: Interior door vision panels.

D. Type GL-4:
   1. Description: Nominally 1/4 inch thick clear mirror glass, ease and polish exposed edges.
   2. Locations: Toilet Rooms, Dressing Room.

E. Type GL-5:
   1. Descriptions:
      a. Outboard 1/4" thick clear glass, heat strengthened and tempered with low-e coating on No. 3 surface
      b. Inboard lite: 1/4" thick clear tempered glass
   2. Total unit thickness: 3/4"
   3. Locations: Storefront doors.

F. Type GL-6:
   1. Descriptions: 1/4" thick frosted glass, tempered.
   2. Locations: Interior door vision panels at addition offices.

END OF SECTION

SECTION 089100

LOUVERS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Extruded aluminum, wind driven rain resistant, stationary louver with horizontally mounted sight proof blades.

1.2 RELATED SECTIONS

A. Section 061000 - Rough Carpentry.

B. Section 076200 – Sheet Metal Flashing and Trim.

C. Section 079200 - Joint Sealants.

D. Section 099100 - Paints.

E. Division 23 – Opening Requirements.

1.3 REFERENCES

A. AAMA 2604 – High Performance Organic Coatings on Architectural Extrusions and Panels.

B. AAMA 2605 - High Performance Organic Coatings on Architectural Extrusions and Panels.

C. AAMA 611 – Voluntary Specification for Anodized Architectural Aluminum.

D. AMCA 500 - Test Methods for Louvers, Dampers and Shutters.

E. AMCA 511 - Certified Ratings Program for Air Control Devices.

F. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

G. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

H. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

I. ASTM D822 - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings

J. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.

K. ASTM D2244 - Standard Test Method for Calculation of Color Differences From Instrumentally Measured Color Coordinates.

L. USGBC: U.S. Green Building Council LEED® Rating System.

1.4 DEFINITIONS

A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.

B. Horizontal Louver: Louver with horizontal blades; i.e., the axes of the blades are horizontal.

C. Vertical Louver: Louver with vertical blades; i.e., the axes of the blades are vertical.

D. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

E. Rain-Resistant Louver: Louver that provides specified wind-driven rain performance, as determined by testing according to AMCA 500-L.

1.5 ACTION SUBMITTALS

A. Submit under provisions of Section 013300.

B. Product Data: For each product to be used, including:
1. Manufacturer's product data including performance data.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Installation methods.

C. Shop Drawings:
1. Submit shop drawings indicating materials, construction, dimensions, accessories, and installation details.

D. Product Schedule: For louvers. Use same designations indicated on Drawings.

E. Samples: Submit sample of louver to show frame, blades, bird screen, gutters, downspouts, vertical supports, sill, accessories, finish, and color.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Test Reports: For each type of louver, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For manufacturer's warranties.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. The manufacturer shall have implemented the management of quality objectives, continual improvement, and monitoring of customer satisfaction to assure that customer needs and expectations are met.
2. Manufacturer shall be International Organization for Standardization (ISO) 9001 accredited.

B. Product Qualifications:
   1. Louvers licensed to bear AMCA Certified Ratings Seal. Ratings based on tests and procedures performed in accordance with AMCA 511 and comply with AMCA Certified Ratings Program. AMCA Certified Ratings Seal applies to air performance and water penetration ratings.
   2. Louvers shall be factory engineered to withstand the specified seismic loads.
      a. Minimum design loads shall be calculated to comply with ASCE – 7, or local requirements of Authority Having Jurisdiction (AHJ).

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store materials in a dry area indoors, protected from damage and in accordance with manufacturer's instructions.

C. Handling: Protect materials and finishes during handling and installation to prevent damage.

D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.9 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10 WARRANTY

A. Manufacturer shall provide standard limited warranty for louver systems for a period of five years (60 months) from date of installation, no more than 60 months after shipment from manufacturing plant. When notified in writing from the Owner of a manufacturing defect, manufacturer shall promptly correct deficiencies without cost to the Owner.

B. Manufacturer shall provide 20 year limited warranty for fluoropolymer-based finish on extruded aluminum substrates.
   Finish coating shall not peel, blister, chip, crack or check.
   Chalking, fading or erosion of finish when measured by the following tests:
      a. Finish coating shall not chalk in excess of 8 numerical ratings when measured in accordance with ASTM D4214.
      b. Finish coating shall not change color or fade in excess of 5 NBS units as determined by ASTM D2244 and ASTM D822.
      c. Finish coating shall not erode at a rate in excess of 10%/ 5 year as determined by Florida test sample.

C. Manufacturer shall provide a 5 year limited warranty for Class I and a 3 year limited warranty for Class II anodized finish on extruded aluminum substrates.
   1. Seller warrants the Finish under normal atmospheric conditions.
      a. Will not crack, craze, flake or blister
      b. Will not change or fade more than (5) Delta-E Hunter units as determined by ASTM method D-2244
      c. Will not chalk in excess of ASTM D-4214-07 number (8) rating, determined by the procedure outlined in ASTMD-4214-07 specification test.

2. Any forming or welding must be done prior to finishing. Post forming or welding will void the warranty.
3. This Warranty applies only if the anodized aluminum product is installed in strict accordance with Seller's recommended practices and maintained in accordance with AAMA (American Architectural Manufacturers Association) publication number 609 and 610-09 ("Cleaning and Maintenance Guide for Architecturally Finished Aluminum").

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Ruskin Company; 3900 Dr. Greaves Road, Kansas City, Missouri 64030. Tel: (816) 761-7476.

B. Substitutions: Under provisions of Division 01.

2.2 STATIONARY BLADE LOUVER

A. Model: EME220DD as manufactured by Ruskin Company.

B. Fabrication: Extruded Aluminum stationary horizontal chevron louver style.
1. Design: Double drainable blades shall be contained within the frame with double downspouts in jambs and mullions. Louver design shall limit span between visible mullions to 120 inches (3048 mm).
2. Frame:
   a. Frame Depth: 2 inches (50 mm).
   b. Material: Extruded aluminum, Alloy 6063-T6.
   c. Wall Thickness: 0.060 inch (1.5 mm), nominal.
3. Blades:
   a. Style: Horizontal.
   b. Material: Extruded aluminum, Alloy 6063-T6.
   c. Exterior Wall Thickness: 0.045 inch (1.1 mm), nominal.
4. Fabrication:
   a. Mullion Style – Design incorporates visible mullions or frames at the perimeter of the louver and also at certain intervals within the louver perimeter to support the louver blades. Louver blade sightlines are interrupted at the mullion locations. No rear-mounted blade supports are utilized.
5. Minimum assembly size: 6 inches wide by 6 inches high (102 mm x 02 mm).
6. Maximum Factory Assembly Size: Single sections shall not exceed 120 inches wide by 90 inches high (3048 mm x 2286 mm) or 90 inches wide by 120 inches high (2286 mm x 3048). Louvers larger than the maximum single size shall be require field assembly of smaller sections.
7. Recycled Content: 18% post-consumer. 55% pre-consumer, post-industrial, total 73% by weight.

C. Performance Data:
1. Performance Ratings: AMCA licensed.
   a. Based on testing 48 inch by 48 inch (1219 mm by 1219 mm) size unit in accordance with AMCA 500.
2. Free Area: 43 percent, nominal.
3. Free Area Size: 6.86 sf (.64 sm).
4. Maximum Recommended Air Flow through Free Area: 680 feet per minute (3.5 m/s).
5. Air Flow: 4665 cubic feet per minute (2.2 m^3/s).

D. Wind Driven Water Penetration Performance:
   1. Based on testing 39 inches x 39 inches (1 m x 1 m) core area, 41 inches x 44 inches (1.04 m x 1.12 m) nominal size unit in accordance with AMCA 500-L.
   2. Wind Velocity: 29 mph (47 kph).
      a. Rainfall Rate: 3 inches/hour (76 mm/hour).
      b. Free Area Velocity: 1209 feet per minute (6.1 m/sec).
      c. Water Resistance Effectiveness: 99.3% (AMCA Class A).
   3. Wind Velocity: 50 mph (80 kph).
      a. Rainfall Rate: 8 inches/hour (203 mm/hour).
      b. Free Area Velocity: 757 feet per minute (3.8 m/sec).
      c. Water Resistance Effectiveness: 99.3% (AMCA Class A).

E. Design Windload: Per Code.

F. Louvers shall be factory engineered to withstand the specified seismic loads.
   1. Minimum design loads shall be calculated to comply with ASCE – 7, or local requirements of Authority Having Jurisdiction (AHJ).

2.3 ACCESSORIES

A. Aluminum Blank-Off Panels: 0.040 (1 mm) aluminum sheet, factory installed with removable fasteners and neoprene gaskets.

B. Insulated Aluminum Blank-Off Panels: 0.040 (1 mm) aluminum sheet, 1 inch (25 mm) aluminum skin insulated core, factory installed with removable fasteners and neoprene gaskets.

C. Hinged Frame: Continuous piano hinge attached to angle or channel subframe.

D. Filter Racks: Formed channel racks to accept standard [1 inch (25 mm)] [2 inch (51 mm)] thick filters. Unused bottom portion blanked off with 0.040 inch (1 mm) aluminum sheet.

E. Security Bars:
   1. Location: Front.
   2. Location: Rear.
   3. Construction: Aluminum, 3/4 inch x 1/2 inch (19 mm x 13 mm), welded to louver.
   4. Construction: Galvanized steel, 1/2 inch x 1/2 inch (13 mm x 13 mm), attached to louver with tamper-proof screws.
   5. Construction: Galvanized steel, 3/4 inch x 1/2 inch (19 mm x 13 mm), attached to louver with tamper-proof screws.

F. Bird Screen:
   1. Aluminum: Aluminum, 5/8 inch by 0.040 inch (16 mm by 1 mm), expanded and flattened. Frame: Removable.
   2. Aluminum: Aluminum, 1/2 inch by 0.063 inch (13 mm by 1.5 mm), expanded and flattened. Frame: Removable.

G. Insect Screens:
   1. Aluminum: 18-16 mesh, mill finish, .011 inch (0.3 mm) wire.
   2. Frame: Aluminum.

H. Extended Sills: Extruded aluminum, Alloy 6063-T6. Minimum nominal thickness 0.081 inch (2.1 mm).

I. Visible Mullions: Manufacturer's standard horizontal or vertical visible mullions for architectural accent as indicated on drawings.

2.4 FINISHES

A. Finish: Confirm finish with Architect:
1. 70 percent PVDF: Finish shall be applied at 1.2 mil total dry film thickness.
2. Coating shall conform to AAMA 2605. Apply coating following cleaning and pretreatment. Cleaning: AA-C12C42R1X.
3. 20-year finish warranty.

B. Color: To be selected from manufacturer’s standards.

PART 3 EXECUTION

3.1 EXAMINATION

A. Inspect areas to receive louvers. Notify the Architect of conditions that would adversely affect the installation or subsequent utilization of the louvers. Do not proceed with installation until unsatisfactory conditions are corrected.

B. If opening preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean opening thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install louvers at locations indicated on the drawings and in accordance with manufacturer's instructions.

B. Install louvers plumb, level, in plane of wall, and in alignment with adjacent work.

C. Install joint sealants as specified in Section 07 92 00.

D. Apply field topcoat within 6 months of application of shop prime coat. Apply field topcoat as specified in Section 09 91 00.

3.4 CLEANING

A. Clean louver surfaces in accordance with manufacturer's instructions.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 090391

GYPSUM PLASTER RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gypsum plastering over interior masonry and wood framed walls, scope of work generally includes:
   a. Contractor shall sound/tap plaster finish throughout with a plastic mallet to determine extent of detached plaster finish and mark areas on wall. Contact Architect to review prior to complete removal.
   b. Repair plaster at removed interior partitions, ceilings, and other damaged areas, assume 10% of total wall area.
   c. Replace damaged, deteriorated, and detached plaster finish to sound substrate, assume replacement of 5% of total wall area, includes poor prior patches, and cracked areas.
   d. Replacement of complete plaster assembly and lath where missing at existing openings in wood framed walls, assume 10% of total wall area.
   e. Provide new plaster and lath assembly at infilled former window and door openings in Multi-Use spaces, assume 50 square feet.
   f. Repair plaster damage from channeling for MEP/AV/IT conduit and devices.
2. Repair plaster finish following installation of MEP devices and distribution systems.
3. Repair plaster finish following resetting of standing and running trim.
4. Metal lath, trim, and accessories.

B. Related Sections:

1. Division 1: Administrative, procedural, and temporary work requirements.
2. Section 012200 - Unit Prices
3. Section 012100 - Allowances
4. Section 024120 – Selective Demolition.
5. Section 040342 – Masonry Restoration for re-pointing of masonry walls.
6. Section 099100 – Painting
7. Hazardous Materials Testing Report in the appendix of the project manual.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. C 28 - Gypsum Plaster.
2. C 631 - Bonding Compounds for Interior Plastering.
3. C 847 - Metal Lath.

B. Metal Lath/Steel Framing Association (ML/SFA) 920 - Guide Specifications for Metal Lathing and Furring.

C. Gypsum Construction Handbook, by the United States Gypsum Company, Latest edition.

D. Preservation Brief 21: Repairing Historic Flat Plaster – Walls and Ceilings, Mary Lee MacDonald, National Park Service, October, 1989.

1.3 QUALITY REQUIREMENTS

A. Applicator Qualifications:

1. Minimum 3 years documented experience in work of this Section.
2. Successful completion of at least 3 projects of similar scope and complexity within past 3 years.

B. Analysis of Existing Plaster:

1. Remove four samples of existing plaster from different locations.
2. Retain one sample for later comparison.
3. Break up remaining samples individually with mallet until constituent parts remain. Examine under microscope to determine:
   a. Approximate proportions of aggregate and gypsum.
   b. Type, size, and color of aggregate.
   c. Types of additives.
4. Based on analysis, provide recommended plaster mix compatible with physical and mechanical properties of original plaster materials.

B. Mock-Ups: Prior to installing plaster work, construct mock-up for each type of plaster repair and condition required to demonstrate aesthetic affects, as well as qualities of materials and execution. Build mock-ups to comply with the following requirements, using materials indicated for final unit of Work.

1. Erect sample panel straight plastering, minimum 20 square feet each by full thickness using materials proposed for final work, including lath. Mock-Ups shall be located adjacent to plaster finish scheduled to remain to verify seamless transition between existing and new plaster work.
2. Plaster patch, 24 inch by 24 inch, demonstrating preparation, patching, and finishing technique.
3. Crack repair, 4 lineal feet, demonstrating preparation, patching, and finishing technique.
4. Repair/replacement of delaminating skim coat.
5. Replacement of missing complete plaster assembly and lath at existing openings in walls.
6. Locate where directed by Architect.
7. Obtain Architect’s approval of mockups before start of plaster Work.
8. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.

1.4 SUBMITTALS

A. Product data: Submit manufacturer’s product specifications and installation instructions for each product, including data showing compliance with specified requirements.

B. Samples:

1. Lath, 12 inch by 12 inch sample for each type.
2. Metal accessories, 6” length sample for each type.
3. 12 x 12 inch plaster samples in proposed texture.
4. 12 x 12 inch plaster samples with embedded marble chips.

C. Hot Weather Procedures: Describe materials and procedures to be used.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original packages, containers, or bundles, labeled with manufacturer's name, product brand name, and lot number.

B. Store materials inside, under cover, and dry, protected form weather, direct sunlight, surface contamination, aging, corrosion, and damage from construction traffic and other causes.

C. Protect metal accessories from being bent or damaged.

1.6 PROJECT CONDITIONS

A. Environmental Requirements, General: Comply with requirements of referenced plaster application standards and recommendations of plaster manufacturer for environmental conditions before, during, and after plaster application.

B. Do not apply plaster when ambient or substrate temperature is less than 50 degrees F nor more than 85 degrees F.

C. Maintain minimum ambient temperature of 50 degrees F during and after application of plaster.

D. Ventilation: Ventilate building spaces as required to remove water in excess of that required for hydrating plaster. Begin ventilation immediately after plaster is applied and continue until it sets.

E. Protect contiguous work from soiling, splattering, moisture deterioration, and other harmful effects caused by plastering.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers – Plaster:

1. National Gypsum Co.
2. United States Gypsum Co.

2.2 MATERIALS

A. Plaster Materials:

1. Gypsum Plaster: ASTM C 28.
2. Aggregate: Natural sand, size, color, and texture to match existing original.
3. Additives: As determined by existing plaster analysis, to match existing original plaster.
4. Water: Clean and potable.

B. Metal Lath: ASTM C 847, expanded self-furring diamond mesh, galvanized.

2.3 ACCESSORIES

A. General: Comply with material provisions of ASTM C 1063 and the requirements indicated below; coordinate depth of accessories with thicknesses and number of plaster coats required.

1. Galvanized Steel Components: Fabricated from zinc-coated (galvanized) steel sheet complying with ASTM A 653, G40 minimum coating designation.

B. Metal Corner Reinforcement: Expanded, large-mesh, diamond-metal lath fabricated from zinc alloy or welded-wire mesh fabricated from 0.0475 inch diameter, zinc-coated wire and specially formed to reinforce external corners of Portland cement plaster on exterior exposures while allowing full plaster encasement.

C. Cornerbeads: Small nose cornerbeads fabricated from the following metal, with expanded flanges of large-mesh diamond-metal lath allowing full plaster encasement:

1. Galvanized Steel: Minimum 0.172 inch thick.

D. Casing Beads: Square-edged style, with expanded flanges of the following material:

1. Galvanized Steel: Minimum 0.172 inch thick.

E. Control Joints: Prefabricated, of material and type indicated below:

1. Galvanized Steel: Minimum 0.0172 inch thick.

F. Lath Attachment Devices: Material and type required by ASTM C 1063 for installations indicated.

C. Fasteners: Galvanized steel, minimum 5/8 inch penetration into supports.

D. Patching Compound: Premixed, containing gypsum and aggregate.

E. Tape: Woven glass fiber type, 4 inches wide.

F. Tie Wire: Galvanized annealed steel, minimum 18 gage.

G. Bonding Agent: ASTM C631; type recommended for bonding plaster directly to masonry surfaces:

1. Product: Plaster-Weld, as manufactured by Larsen Products Corp., (800) 633-6668, or approved equal.

2.4 MIXES

A. Scratch, Brown, and Finish Coats: Mix gypsum, additives, and aggregate in proportions to match original plaster. Add water to achieve workable consistency.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Substrates: With installer present, examine substrates to which plaster assemblies attach or abut for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Before applying plaster, clean and prepare substrates according to the manufacturer's instructions for each particular substrate condition and as specified. Roughen or remove substrates that could impair the bond with plaster.

3.2 PREPARATION

A. Prepare unit masonry substrates for plastering by re-pointing where required and cleaning to remove dirt, grease, oil, and other foreign matter and deposits that could impair bond with plaster.

B. Coordinate removal of plaster back to masonry or wood framing and to solid adjacent plaster. Make edges straight, clean, sharp and beveled inward. Repair or replace work to eliminate blisters, buckles, excessive crazing and check cracking, dry-outs, efflorescence and where bond to the substrate has failed.

C. Sequence plaster application with installation and protection of other work so that neither will be damaged by installation of other.

D. Mechanically mix plaster materials at the site; do not hand mix except where small amounts are needed, using less than one bag of plaster material.

3.3 INSTALLATION OF ACCESSORIES

A. Set level and true to line; screw or wire tie to framing at maximum 12 inches on center.

B. Casing Beads: Install where plaster abuts dissimilar material or stops with edge exposed.

C. Corner Beads: Install at external corners.

D. Control Joints: Unless otherwise indicated, locate as required to limit each area of plaster to 144 square feet with no dimension exceeding 12 feet.

E. Apply joint sealer to form waterstop behind joints at intersections.

3.4 INSTALLATION OF METAL LATH AND FURRING

A. General:

1. Interior Lathing and Furring: Install materials indicated of plaster to comply with ASTM C 841.
2. Install Supplementary framing, blocking, and bracing at terminations in Work and for support of fixtures, equipment services, heavy trim, and similar work to comply with details indicated or, if no otherwise indicated, to comply with applicable written instructions of plaster manufacturer or, if not available, of USG's "Gypsum Construction Handbook."
3. Isolation: Where lathing and metal support system abuts building structure horizontally and where partition or wall abuts overhead structure, sufficiently isolate from structural movement to prevent transfer of loading from building structure. Install slip- or cushion-type joints to absorb deflections but maintain lateral support.
    a. Frame both sides of control joint independently and do not bridge joints with furring and lathing or accessories.

B. Apply lathing with long dimension perpendicular to supports, with end joints staggered and occurring over supports.

C. Lap ends minimum 1 inch and sides minimum 1-1/2 inches.

D. Secure to framing with wire ties at maximum 6 inches on center.

E. Stop lath at each side of control joints and secure.

F. Reinforce corners of openings with 6 x 12 inch lath strip installed diagonally at each corner, wire tied to lath.

G. If lath is not continued minimum 3 inches on each side of internal corners, reinforce with 12 inch wide lath strip bent at 90 degrees and wire tied to lath.

3.5 APPLICATION OF PLASTER

A. General:

1. Prepare monolithic surfaces for bonded base coats and use bonding compound to comply with requirements of referenced plaster application standards for conditioning monolithic surfaces.
2. Tolerances: Do not deviate more than plus or minus 1/8 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed at any location on surface.
3. Sequence plaster application with installation and protection of other work so that neither will be damaged by installation of other.
4. Plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground, unless otherwise indicated. Where plaster is not terminated at metal frame by casing beads, cut base coat free from metal frame before plaster sets and groove finish coat at junctions with metal.
5. Apply thicknesses and number of coats of plaster as indicated or as required by referenced standards.

B. Plaster Application Standard: Apply plaster materials, composition, mixes, and finishes indicated to comply with ASTM C 842.

C. Number of Coats: Apply plaster of composition to match original as determined by analysis, to comply with the following requirements:

1. Three Coats: Over the following plaster bases:
   a. Metal lath.
2. Two Coats: Over the following bases:
   b. Unit masonry.
   c. Concrete, cast-in-place or precast when surface condition complies with ASTM C 842 for plaster bonded to solid base.
3. Finish Coats: Apply finish coats to match texture and finish of original adjacent plaster.

D. Installation Tolerances:

1. Plaster Tolerance: Maximum 1/8 inch in 10 feet variation from true flatness.
2. Trim Tolerance: Maximum 1/4 inch in 10 feet variation from plumb, level, or true plane, noncumulative.

E. Provide finish matching surrounding texture at each patch location and blend so that patches are indiscernible from original work.

3.6 REPAIR OF SMALL CRACKS AND MINOR DAMAGE

A. Remove existing damaged plaster back to a point at which sound material is reached.

B. Remove loose and foreign matter that could impair adhesion.

C. Fill voids with patching compound; apply with sufficient pressure to eliminate voids and ensure adhesion.

D. Finish to match adjacent surfaces.

3.7 REPAIR OF LARGE CRACKS

A. Remove existing damaged plaster back to a point at which sound material is reached.

B. Remove loose and foreign matter that could impair adhesion.

C. Fill voids with patching compound; apply with sufficient pressure to eliminate voids and ensure adhesion.

D. Embed tape in wet compound. Apply additional compound to cover tape.

E. Finish to match adjacent surfaces.

3.8 REPAIR OF DELAMINATED PLASTER LAYERS

A. Remove existing damaged plaster layers down to a point at which sound material is reached.

B. Remove loose and foreign matter that could impair adhesion.

C. Apply bonding agent in accordance with manufacturer's instructions.

D. Fill voids with patching compound; apply with sufficient pressure to eliminate voids and ensure adhesion.

E. Finish to match adjacent surfaces.

3.9 REPAIR OF DAMAGED PLASTER OVER METAL LATH

A. Remove existing damaged plaster down to lath.

B. Reattach loose lath with nails or wire ties.

C. Apply scratch, brown, and finish coats to thickness to match original plaster.

D. Finish to match adjacent surfaces.

3.10 REPAIR OF DAMAGED PLASTER OVER MASONRY

A. Remove existing damaged plaster down to masonry.

B. Rout out mortar joint to 5/8 inch depth.

C. Apply bonding agent in accordance with manufacturer's instructions.

D. Apply scratch, brown, and finish coats to thickness to match original plaster.

E. Finish to match adjacent surfaces.

3.11 SKIM COATING EXISTING PLASTER

A. Remove existing damaged plaster down to a point at which sound material is reached.

B. Remove loose and foreign matter that could impair adhesion.

C. Apply bonding agent in accordance with manufacturer's instructions.

D. Apply minimum 1/8 inch plaster skim coat over entire surface.

E. Finish to match original plaster.

3.12 ADJUSTING

A. Repair or replace damaged, discolored, and defective plaster.

3.13 CLEANING

A. Promptly remove plaster from surfaces, which are not to be plastered. Repair floors, walls and other surfaces, which have been stained, marred or otherwise damaged during plaster work. When plastering work is completed, remove unused materials, containers and equipment and clean floors of plaster debris.

B. Work shall be left in clean condition ready for painting.

END OF SECTION

SECTION 090396

WOOD FLOORING RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Replacement of damaged, deteriorated, or non-original wood flooring.
2. Removal and reinstallation of existing wood flooring as required for installation of structural reinforcement.
3. Epoxy patching of minor damage.
4. Screening, sanding, and/or chemically stripping to remove existing finishes.
5. Finishing with tung oil.

B. Related Sections:

1. Division 1: Administrative, procedural, and temporary work requirements.
2. Section 061000 – Rough Carpentry for wood sleepers and other carpentry not exposed to view.
3. Section 26 05 33 – Raceways, Conduits and Boxes

1.2 SUBMITTALS

A. Product data including manufacturer's installation instructions for wood flooring. Include instructions for handling, storage, dimensions of individual components, profiles, edge detail, finishing, protection, and maintenance.

B. Samples:

1. 24 inch long flooring samples, showing species, cut, and profile.
2. Stain samples on representative wood backing, showing available colors.
3. After color selection submit 24 inch long flooring samples, with selected stain and varnish. applied.

C. Qualification Statement: Installer qualifications, including previous projects.

1.3 QUALITY ASSURANCE

A. Installer Qualifications:

1. Minimum 3 years experience in work of this Section.
2. Successful completion of at least 3 projects of similar scope and complexity within past 5 years.

B. Source Quality Control: Obtain flooring of each type from a single manufacturer or source to ensure a match of quality, color, pattern, and texture.

C. Standards: Comply with applicable provisions of the following:

1. NOFMA: National Oak Flooring Manufacturer's Association – Installation Manual.
2. NOFMA: National Oak Flooring Manufacturers Association – Finishing / Refinishing Manual.
3. National Wood Flooring Association's Hardwood Flooring Manual.

D. Mockups:

1. Field Constructed Mock-ups: Prior to start of floor work, prepare the following sample areas in locations acceptable to the Architect. Obtain Architect's acceptance of visual qualities before

proceeding with the work. Retain acceptable areas in undisturbed condition, suitably marked, during construction as a standard for judging completed work.

a. Floor Repair: Samples showing repair of existing damage wood flooring (Each type) to demonstrate methods and quality of workmanship expected, size determine upon location and type of repair.
   1.) Wood dutchman repair.
   2.) Epoxy patching
   3.) Replacement of area of non-original wood flooring.
   4.) Repair of split or cracked flooring.

b. Floor Finish: One sample area approximately 6 foot by 6 foot showing screening, staining, and finishing of wood floor.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect wood flooring from exposure to moisture in shipment, storage, and handling. Deliver in unopened cartons or bundles and store in a dry place with adequate air circulation. Do not deliver material to building until concrete, plaster, masonry, ceramic tile, and other wet work is complete and cured to a condition of equilibrium and temperature and humidity are maintained at or near completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Solid Wood Flooring:

1. Use salvaged existing flooring for patching holes and replacing deteriorated components. Do not reuse rotten, split, termite damaged, or otherwise damaged pieces.
2. If salvaged materials are of insufficient quantity or are unsuitable for reuse, provide new solid wood flooring materials to match existing:
   a. Species: Recycled old growth Longleaf Yellow Pine.
   b. Profile: Tongued-and grooved and end-matched.
   c. Thickness: 1 inch actual. (Verify match with existing).
   d. Face width: 3 1/4 inch actual. (Verify match with existing).
   e. Lengths: Provide lengths as necessary to match variations found in historic.

2.2 EPOXY PATCHING MATERIAL FOR MINOR REPAIRS

A. Description: Adhesive putty and wood replacement system; high-strength non-shrink adhesive paste to fill, repair and replace wood, type compatible with stain or finish, pigmented if necessary to match approved finished wood flooring sample.

B. Product: The West System as manufactured by Gougeon Brothers, Bay City, MI (517) 684-7286.

2.3 ACCESSORY MATERIALS

A. Fasteners: Type and length recommended by flooring manufacturer and or installer, but not less than that recommended in NOFMA “Installation Manual.” Hot dip galvanized steel.

2.4 FINISHING MATERIALS

A. Stain and Varnish (Stain may be necessary for consistent finish where existing deep staining is exposed after screening, sanding, and or chemically stripping):

1. Stain:
   a. Option 1: Oil-based pigment added to varnish (Preferred option for durability).

b. Option 2: Wood Classics Stain as manufactured by Sherwin Williams Co, or approved equal. Color to be selected from manufacturer's standards.

2. Varnish: Pure Tung Oil cut with mineral spirits (paint thinner), citrus solvent, or turpentine. Start with a ratio of one to one. Apply 3-5 coats.

B. Chemical Stripper:

1. Description: Water or solvent based paint & coatings remover formulated without methylene chloride for use on interior wood surfaces.
2. Product:
   a. Option 1: SmartStripPro Professional Strength Paint Remover, as manufactured by Dumond Chemicals Inc., www.dumondchemicals.com
   b. Option 2: Peel Away 7 Paint Removal Systems, as manufactured by Dumond Chemicals Inc., www.dumondchemicals.com

C. Sandpaper: 60 through 160 grit.

D. Cleaner: Trisodium Phosphate (TSP), 4 ounces to one gallon of hot water.

PART 3 - EXECUTION

3.1 PREPARATION

A. Do not install wood flooring until spaces are enclosed and at approximate humidity condition planned for occupancy. Open sealed packages of wood flooring to permit natural adjustment of moisture content and allow flooring to acclimate to the room conditions. Condition wood for 5 days before start of installation by placing in spaces to receive flooring and maintaining ambient temperature between 65 deg F. and 75 deg F (18 deg C and 24 deg C) before, during and after installation.

B. Protect floor outlets and wiring jacks as necessary to prevent damage. Clean and readjust as necessary after completion of work.

3.2 COATING REMOVAL

A. Coating Remover: Comply with manufacturer's written specifications for use of product.

1. Remove all loose and peeling coatings using dry scraping.
2. Apply a thick coating of specified remover to dry surface using a solvent-resistant brush or roller, putty knife, or airless paint sprayer.
3. Let stripper dwell 3-24 hours or until coating(s) “lifts” or shows signs of dissolving.
4. Remove stripper and residue with plastic scraper. Use nylon brush or general purpose Scotch Brite pad and clean water to remove remaining residue.
5. Dispose of resulting lead-based paint coatings as required by local environmental agency having jurisdiction.
6. Repeat process if required until all paint coatings are removed to exposed bare wood.

3.3 INSPECTION AND CLEANING

A. Clean existing floor to remove all residue left from carpet and tile adhesive. Consult with adhesive manufacturer to determine applicable methods.

B. Examine substrates where wood flooring will be installed and/or re-installed and conditions under which work will be performed. Do not proceed with wood flooring work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.4 REPAIR OF EXISTING WOOD FLOORING

A. Minor imperfections in the existing wood flooring are considered a part of the historic character of the building and may remain. Excessive sanding and filling to remove all imperfections is not required. The level of repair will be determined by the Architect based on the required mock-ups.

B. Repair minor defects including holes (Less than ½ inch diameter), gouges, cracks, dings, worn areas, and discolored areas using wood epoxy mixed with stainable pigment.

   a. Apply in accordance with manufacturer's instructions.
   b. After filler has cured, sand to smooth surface, flush with adjacent surfaces.

C. Repair major defects including split edges and holes (Larger than ½ inch diameter) with wood dutchman. New material shall match species, cut, and graining of existing adjacent wood. Graining of dutchman shall be installed in the same direction as existing adjacent wood.

D. Repair minor damage to wood with patching compound.

3.5 INSTALLATION OF SALVAGED WOOD FLOORING

A. General: Comply with instructions and recommendations in NOFMA “Hardwood Flooring Installation Manual,” where applicable for type of flooring to be installed.

B. Pattern: Install salvaged flooring in same direction as existing. Toothed in new boards into existing flooring so that pattern of new flooring is indistinguishable from existing.

C. Expansion space: Provide expansion space at walls and other obstructions and terminations of flooring of not less than ¾ inch unless otherwise indicated on the drawings.

D. Tongue and Groove Flooring Installation: Blind-nail flooring to substrate in accordance with NOFMA recommendations.

E. Accessories: Nail baseboard to wall and shoe molding or other trim to baseboard rather than to flooring.

3.6 SANDING

A. Remove any adhesive or other residue to the fullest extent possible using hand scrappers. Do not damage historic flooring.

B. Machine-sand or screen, existing flooring to remove finish, offsets and non-level conditions, ridges, cups and prior sanding machine marks that would be noticeable after finishing.

   1. Sand and prepare floor using NOFMA-accepted sanding methods.
   2. Machine sanding shall be by drum sander. Rotary or oscillator type sander will not be permitted.
   3. Make sanding passes parallel to the direction of the flooring.
   4. Use three grades of sandpaper, ending with 100 grade.
      a. For stained floor, make final cut with 80-grit paper and screen with 80-100-grit screen.
      b. For unstained floor make final cut with 80-100 grit paper and screen with 120-150 grit screen.
   5. Hand sand areas not accessible by the drum sander.
   6. Following sanding operations, vacuum thoroughly, tack clean and immediately apply finish.

3.7 STAIN / PENETRATING SEALER APPLICATION

A. Comply with manufacturer’s written recommendations for application of finish system

   1. Apply stain / sealer by hand wiping with rags, by brushing, or with a lambs wool applicator.

2. Start application in one corner along one edge of the room and move with the direction of the flooring. Use a paint brush to apply to flooring at wall lines.
3. Distribute material evenly across wood floor. Do not leave puddles or heavy excess on the surface. Avoid lap marks, brush strokes, handprints, and other visible imperfections.
4. Wipe up excess stain/penetrating sealer. Do not allow stain/penetrating sealer to dry before wiping.
5. Repeat application and wiping process as necessary to achieve match to approved mock-up.

3.8 FINISH APPLICATION

A. Apply floor finish according to manufacturer's instructions. Apply as many coats as needed to build a minimum dry film thickness of 3.0 mils. Sand between coats as recommended by manufacturer.

3.9 MISCELLANEOUS

A. Reinstall wood base and replacement wood base in original locations after floor has completely cured.

B. Install miscellaneous electrical floor cover plates.

3.10 PROTECTION

A. Do not cover finished floors with kraft paper, rugs or other material until finish reaches full cure, typically 6 to 7 days or as recommended by manufacturer.

B. Cover flooring with protective covering until ready for final cleaning.

END OF SECTION

SECTION 092900

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Acoustical insulation.
2. Gypsum board.
3. Gypsum board applied to wood flooring.
4. Suspended metal channel ceiling framing.
5. Cementitious panels.
6. Cement backerboard sub floor.
7. Taping and bedding of gypsum board.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 079200 - Joint Sealants.
3. Section 099100 - Painting.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data:
a. Illustrate panel product types, thicknesses, and locations; acoustical insulation; and accessories.
b. Illustrate framing types, gages, and locations.

1.3 QUALITY ASSURANCE

A. Fire Resistance Ratings:
1. Construct assemblies to achieve fire resistance ratings indicated on Drawings, in accordance with applicable GA or UL design number.
2. If requirements of assembly numbers referenced conflict with Contract Document requirements, conform to assembly requirements.

B. Acoustic Ratings: Construct assemblies to achieve acoustic ratings indicated on Drawings, tested to ASTM E90 and classified in accordance with ASTM E413.

C. Metal Framing Manufacturer: Current member of SFIA or SSMA.

D. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

E. Deflection Limits - Metal Framing:
1. Limit deflection of partitions to following limits, based on 5 PSF uniform design load.
a. Partitions to receive tile: L/240.
b. Other partitions: L/120.
c. If partition height exceeds stud manufacturer's limiting height for applicable loading and deflection, install bracing above ceiling, decrease stud spacing, or increase stud gage.
2. Limit deflection of ceilings to L/360.

1.4 PROJECT CONDITIONS

A. Do not install gypsum board until building is substantially weathertight.

B. Maintain temperature in spaces in which work is being performed above 50 degrees F during and after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Gypsum Panels:
1. CertainTeed Gypsum, Inc. (www.certainteed.com)
2. National Gypsum Co. (www.nationalgypsum.com)
3. USG Corporation. (www.usg.com)
4. GP Gypsum Corporation. (www.gp.com)

B. Acceptable Manufacturers - Cementitious Panels:
1. James Hardie Building Products, Inc. (www.jameshardie.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS - GYPSUM PANELS

A. Regular Gypsum Board: ASTM C1396; 48 inches wide x thickness indicated, maximum practical length, tapered edge.

B. Fire Resistant Gypsum Board: ASTM C1396, Type X; 48 inches wide x 5/8 inch thick, maximum practical length, tapered edge; apply to fire rated assemblies.

2.3 MATERIALS - CEMENTITIOUS PANELS

A. Cementitious Panels: ANSI A 118.9, high density, cementitious with glass fiber reinforcing, thickness indicated x 48 inches wide, maximum practical length, ends and edges square cut, apply to walls to receive tile.

2.4 MATERIALS - METAL FRAMING

A. Steel: ASTM A653/A653M or ASTM A1003/1003M, Class G40 hot dip galvanized.

B. Provide components in accordance with ASTM C645.

C. Suspended Ceiling Framing - Runner and Furring Channels:
1. Runner channels: 1-1/2 inches deep, cold roll formed, channel shaped, 16 gage base steel thickness.
2. Furring channels: Hat shaped, 7/8 inch deep, 25 gage base steel thickness.
3. In lieu of runner and furring channels, install proprietary framing system:
   a. ASTM C635; manufactured specifically for suspended gypsum board ceiling applications.
   b. Tees: Double web design; 1-1/2 inches high with 1-3/8 inch wide knurled faces, with interlocking ends and punched holes for cross tees and hanger wires.
   c. Material: Galvanized steel.

2.5 ACCESSORIES

A. Fasteners: ASTM C1002, Type W or screws as applicable, minimum 5/8 inch penetration into framing.

B. Wire: ASTM A641, galvanized steel.
1. Hanger wire: 8 gage base steel thickness.
2. Tie wire: 18 gage base steel thickness, soft annealed.

C. Acoustical Insulation: Non-combustible, lightweight, mineral wool batt insulation to ASTM C665, Type 1, that provides fire resistance to ASTM E136 and sound control to ASTM E90 and ASTM C423.

D. Adhesive: Type recommended by gypsum panel manufacturer.

E. Trim Accessories: ASTM C1047.

1. Material: Formed steel, minimum 26 gage core steel, hot dip galvanized finish, expanded flanges.
2. Corner reinforcement: GA-216, Type CB-100 x 100.
3. Casing: GA-216, Type LC.
4. Control joint.

F. Acoustical Sealant: Specified in Section 079200.

G. Joint Treatment Materials: Reinforcing tape and joint compound; ASTM C475.

PART 3 EXECUTION

3.1 INSTALLATION OF CEILING FRAMING - RUNNER AND FURRING CHANNELS

A. Install in accordance with ASTM C754 and manufacturer's instructions.

B. Space hanger wires 36 inches on center maximum along runner channels and within 6 inches of ends of channels; secure to structure above.

C. Space runner channels 48 inches on center maximum and within 6 inches of abutting construction.
1. Position channels for ceiling height; level and saddle tie along channels.
2. Provide 1 inch clearance between channels and abutting construction.
3. Overlap channel ends 12 inches at splices; secure each end with double loop tie wire.

D. Space furring channels 16 inches on center maximum, perpendicular to runners and within 6 inches of abutting construction.
1. Provide 1 inch clearance between channels and abutting construction.
2. Secure to runners with clips on alternate sides of runners; saddle tie if clips cannot be alternated.
3. Overlap channel ends 8 inches at splices; secure each end with double loop tie wire.

E. Where openings interrupt furring or runner channels, install reinforcing to restore stability.

F. Provide double runner or furring channels side by side where expansion and control joints occur; do not continue channels over joints.

3.2 INSTALLATION OF CEILING FRAMING - PROPRIETARY FRAMING SYSTEM

A. Install in accordance with ASTM C636/C636M and manufacturer’s instructions.

B. Space hanger wires maximum 48 inches on center. Install additional hangers where required to support light fixtures and ceiling supported equipment.

C. Do not suspend hangers directly from metal deck. Attach steel channel horizontally to adjacent framing members; place hanger at regular spacing.

D. Hang suspension system independent of walls, columns, ducts, pipes, and conduit.

E. Where ducts or other equipment prevent regular spacing of hangers:
1. Reinforce nearest related hangers to span extra distance, or:
2. Suspend steel channel horizontally beneath duct or equipment; place hanger at regular spacing.

F. Install main tees at maximum 48 inches on center. Fully engage end locks.

G. Install cross tees perpendicular to main tees to form 16 x 48 inch modules. Lock cross tees to main tees.

3.3 INSTALLATION OF GYPSUM PANELS

A. Install panels and accessories in accordance with ASTM C754, GA-216, and manufacturer's instructions.

B. Accurately cut panels to fit around openings and projections. Do not tear face paper or break gypsum core.

C. Apply panels at non fire-rated assemblies in most economical manner, with ends and edges occurring over supports.

D. Apply panels at fire-rated assemblies as required by design assembly.

E. Stagger joints on opposite sides of partitions.

F. Do not locate joints to align with edges of openings unless a control joint is installed.

G. Mechanically fasten single layer panels to framing. Place fasteners minimum 3/8 inch from edges of panels; drive heads slightly below surface. Stagger fasteners at abutting edges.

H. Apply face layer of double layer applications with joints offset from those in base layer; secure with mechanical fasteners to framing or with adhesive to base layer.

I. At deflection compensating head tracks, cut panels 1/2 inch short of structure at head; do not secure panels to top runner channel.

J. Treat cut edges and holes in moisture resistant gypsum board with joint sealer.

K. Where recessed items occur in fire rated partitions, box item on all sides with gypsum board as required to maintain continuity of fire rating.

L. Ceiling Panels:
   1. Apply panels perpendicular to framing, with end joints staggered.
   2. Support panels around openings in ceiling.
   3. Mechanically fasten to framing.

3.4 INSTALLATION OF ACOUSTICAL PARTITIONS

A. Extend acoustical partitions past intersecting non-acoustical partitions.

B. Install acoustical insulation:
   1. Butt to framing members and adjacent construction.
   2. Carry around pipes, wiring, outlets, and other construction without voids.
   3. Press against one gypsum board surface to form slight air space on opposite side.

C. Seal acoustical partitions at perimeter and around penetrations:
   1. Apply continuous bead of sealer between gypsum panel edges and adjacent construction.
   2. Seal space between gypsum panels at control joints, prior to installing metal control joint.
   3. Apply sealer to penetrations through partitions.
   4. In fire rated partitions, use firestopping sealer specified in Section 078400. In non-fire rated partitions, use acoustical sealer.

3.5 INSTALLATION OF CEMENTITIOUS PANELS

A. Install in accordance with ANSI A108.11 and manufacturer's instructions.

B. Apply panels horizontally, with ends occurring over supports. Stagger end joints in adjacent rows.

C. Cut panels to fit around openings and projections.

D. Mechanically fasten panels to framing at maximum 12 inches on center.

3.6 INSTALLATION OF ACCESSORIES

A. Install in accordance with manufacturer's instructions.

B. Install corner reinforcement at outside corners. Use single lengths where length of corner does not exceed standard length.

C. Install casings where indicated and where gypsum board abuts dissimilar materials or stops with edge exposed.

D. Install control joints at ceilings:
   1. At maximum 50 feet on center.
   2. Where ceiling framing changes direction.

E. Install control joints at walls and partitions:
   1. At changes in backup material.
   2. At maximum 30 feet on center.
   3. Above both jambs of openings in partitions.

3.7 JOINT TREATMENT

A. Treat joints and fasteners in gypsum board in accordance with GA-214.

B. Levels of Finish:
   1. Surfaces in plenums, janitor closets: Level 1 finish.
   2. Surfaces to receive tile: Level 2 finish.
   3. Surfaces in Mechanical, Electrical, Machine Rooms and similar support spaces: Level 3 finish.
   4. Other surfaces to receive paint: Level 4 finish.

END OF SECTION

SECTION 093000

TILING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Tile floor and wall finishes.
2. Marble thresholds.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 079200 - Joint Sealants.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Manufacturer's installation, cleaning, and maintenance instructions.
2. Samples:
a. Tile: Full size samples in each color.
b. Grout: 1/2 x 1/2 x 3 inch long samples showing available colors.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 2 years experience in work of this Section.

B. Dynamic Coefficient of Friction for Floor Tile: Minimum 0.42, tested in accordance with ANSI A137.1 using BOT-3000 tribometer.

C. Mockups:
1. Provide tile mockup.
2. Locate where directed.
3. Size: 3' x 3'.
4. Mockup may not remain a part of the Work.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver mortar and grout containers bearing hallmark certifying compliance with reference standards.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Maintain minimum ambient temperature of 50 degrees F during and after installation.

1.6 MAINTENANCE

A. Extra Materials: One unopened carton of each tile.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on tile products by Daltile. (www.daltile.com)

B. Acceptable Manufacturers - Setting and Grouting Materials:
1. Bostik, Inc. (www.bostik-us.com)
2. Laticrete International, Inc. (www.laticrete.com)
3. Mapei Corporation. (www.mapei.us)

4. Sika Corporation. (www.sika.com)
5. TEC. (www.tecspecialty.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Floor Tile:
1. BOD: Daltile Keystones
2. Unglazed ceramic mosaic floor tile: windmill pattern, 1”x2” and 1”x1” tiles, two color pattern
3. Tile type 1:
   a. Size: 1"x 2" x 1/4" thick
   b. Color: Desert Gray D014
4. Tile type 2:
   a. Size: 1”x1”x1/4” thick
   b. Color: Biscuit D317

B. Wall Tile:
1. BOD: Daltile Classic Color Wheel Collection
2. Polished glazed ceramic wall wainscot subway tile with accent base and bullnose trim
3. Tile type 3 - field tile
   a. Size: 6" wide x 3" high x 5/16" thick
   b. Color: Biscuit K175
4. Tile type 4a - accent surface bullnose S-4269
   a. Size: 6" wide x 2" high x 5/16" thick
   b. Color: Desert Gray X114
5. Tile type 4b - accent surface bullnose S-4269
   a. Size: 6" wide x 2" high x 5/16" thick
   b. Color: Galaxy 1469
6. Tile type 4c - accent surface bullnose S-4269
   a. Size: 6" wide x 2" high x 5/16" thick
   b. Color: Garden Spot 0141
7. Tile type 5a - accent flat top cove base, A-3601
   a. Size: 6" wide x 6" high x 5/16" thick
   b. Color: Desert Gray X114
8. Tile type 5b - accent field tile for base (at polished concrete floor)
   a. Size: 6" wide x 6" high x 5/16" thick
   b. Color: Galaxy 1469
9. Tile type 5c - accent field tile for base (at polished concrete floor)
   a. Size: 6" wide x 6" high x 5/16" thick
   b. Color: Garden Spot 0141

C. Trim units:
1. Furnish inside and outside corners as required.
2. Color to match field or accent tile.

2.3 ACCESSORIES

A. Improved Latex-Portland Cement Mortar: ANSI A118.15, polymer modified, high performance, dry set type. Utilize mortar designed for mosiac and glass tiles for those applications.

B. Dry Set Mortar for Large and Heavy Tiles: ANSI A118.1, A118.4, A118.11, or A118.15; thin set mortar formulated by manufacturer to minimize slump and to facilitate thicker bond coat.

C. Water: Clean, potable.

D. Grout:
1. Kitchens: A118.3, epoxy type.
2. Other Locations: ANSI A118.7, high performance polymer modified type.
3. Colors: To be selected from manufacturer's full color range.

E. Joint Sealants: Specified in Section 079200.

F. Crack Suppression Membrane: ANSI A118.12, load bearing, single component, cold liquid applied type, High Performance Class.

G. Joint Tape: Waterproof, perforated bedding tape.

H. Metal Trim and Transitions: By Schluter (www.schluter.com), profiles to suit conditions.

I. Base Trim:
1. Source: Schluter DILEX-AHKA base trim, size to be confirmed with tile selection.
2. Finish: To be selected from manufacturer's full line.
3. Provide 90 degree outside and inside corner accessories

J. Thresholds:
1. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
   a. Bevel edges as 1:2 slope, with lower edge of bevel aligned with or up to 1/4 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.
2. Marble Thresholds: ASTM C503/C503M, with minimum abrasion resistance of 12 according to ASTM C1353 or ASTM C241/C241M and honed finish.
   a. Source: Botticino Fiorito Marble #M704 by American Olean (www.americanolean.com), or approved substitute.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces to remove loose and foreign matter that could impair adhesion.

B. Remove ridges and projections. Fill voids and depressions with patching compound compatible with setting materials.

C. Allowable Substrate Tolerances:
1. Maximum variation in substrate surface: 1/8 inch in 8 feet.
2. Maximum height of abrupt irregularities: 1/32 inch.

D. Test concrete substrate to ASTM D4263; do not install tile until surfaces are sufficiently dry.

3.2 INSTALLATION

A. Methods:
1. Walls: ANSI A108.5, thin set with latex-Portland cement mortar.
2. Floors:
   a. Install crack suppression membrane in accordance with manufacturer’s instructions.
   b. Install tile in accordance with ANSI A108.5, thin set with latex-Portland cement mortar; utilize dry set mortar for heavy or large tiles (one or more edges exceeding 15 inches, or 5 pounds per square foot or heavier).

B. Minimize pieces less than one half size. Locate cuts to be inconspicuous.

C. Lay tile to pattern furnished by Architect. Do not interrupt tile pattern through openings.

D. Joint Width: 1/8 inch, plus or minus 1/16 inch.

E. Install metal trim and transitions per manufacturers recommendations.

F. Make joints watertight, without voids, cracks, excess mortar, or excess grout. Align joints in wall and floor of same-sized tile.

G. Fit tile around projections and at perimeter. Smooth and clean cut edges. Ensure that trim will completely cover cut edges.

H. Allow tile to set for a minimum of 48 hours before grouting.

I. Grout tile joints in accordance with ANSI A108.10 without excess grout.

J. Control Joints:
   1. Provide control joints at:
      a. Changes in backup material.
      b. Changes in plane.
      c. Over joints in substrate.
      d. Maximum 24 feet on center except maximum 8 feet at surfaces exposed to direct sunlight.
   2. Form joints per TCNA Method EJ-171.
   3. Install joint backing and joint sealant as specified in Section 079200.

3.3 ADJUSTING

A. Remove and replace pieces that have been damaged during installation.

3.4 PROTECTION

A. Provide protection for completed work using nonstaining sheet coverings.

B. Prohibit traffic on tile floors for minimum 3 days after installation.

END OF SECTION

SECTION 095100

ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Suspended metal ceiling grid system.
2. Acoustical panels.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Samples:
a. 12 x 12 inch acoustical panel samples.
b. 6 inch long suspension system samples showing each profile.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that acoustical panels meet fire hazard classification requirements.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 2 years experience in work of this Section.

B. Fire Hazard Classification: Class A rated, tested to ASTM E1264.

1.4 PROJECT CONDITIONS

A. Environmental Requirements: Install in approximately same conditions of temperature and humidity as will prevail after installation.

1.5 MAINTENANCE

A. Extra Materials: One unopened carton of each acoustical panel.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Armstrong. (www.armstrong.com).

B. Other Acceptable Manufacturers:
1. Certainteed Corporation. (www.certainteed.com)
2. USG Interiors, Inc. (www.usg.com)

C. Substitutions under provisions of Division 01.

2.2 MATERIALS

A. Suspension Grid System:
   1. Source: Suprafine by Armstrong, or approved substitute.
   2. ASTM C635, intermediate duty, die cut, interlocking ends.
   3. Material: Hot dipped galvanized steel.
   4. Runners: 1-1/2 inches high, 9/16" exposed tee.
   5. Perimeter molding: Angle shape.
   6. Finish: Factory applied enamel paint, sprayed and baked, white finish to match acoustical panels.
   7. Accessories: Stabilizer bars, clips, and splices.

B. Acoustical Ceiling Tile:
   1. Source: Ultima Tegular by Armstrong, or approved substitute.
   2. Size: 2 feet x 2 feet.
   3. Profile: 9/16" Beveled Tegular.
   4. Color: White.

2.3 ACCESSORIES

A. Support Channels: Galvanized steel; size and type to suit application.

B. Hanger Wire: ASTM A641, minimum 12 gage galvanized steel.

C. Touch-Up Paint: Color to match acoustical panels and suspension grid.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install ceilings in accordance with ASTM C636, CISCA Handbook, and manufacturer’s instructions.

B. Install sloped ceilings where indicated in the Drawings.

C. Minimize panels less than one half size.

D. Install molding around perimeters and abutting surfaces. Miter molding at exterior corners; cut flanges and bend web to form interior corners.

E. Space hanger wires maximum 48 inches on center. Install additional hangers where required to support light fixtures and ceiling supported equipment.

F. Do not suspend hangers directly from metal deck. Attach steel channel horizontally to adjacent framing members; place hanger at regular spacing.

G. Hang suspension system independent of walls, columns, ducts, pipes, and conduit.

H. Where ducts or other equipment prevent regular spacing of hangers:
   1. Reinforce nearest related hangers to span extra distance, or:
   2. Suspend steel channel horizontally beneath duct or equipment; place hanger at regular spacing.

I. Install main tees at maximum 48 inches on center.

J. Install cross tees to form 24 x 24 or 48 inch modules as indicated in the Drawings. Lock cross tees to main tees.

K. Support ends of tees on flange of perimeter molding.

L. Place acoustical panels with edges resting flat on suspension grid.

M. Cutting Acoustic Units:
   1. Cut to fit irregular grid and perimeter edge trim and around penetrations.
   2. Locate cuts to be concealed.

N. Installation Tolerances: Ceilings level to 1/8 inch in 12 feet measured in any direction.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions to match factory finish.

END OF SECTION

SECTION 096513

RESILIENT BASE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Resilient wall base.
2. Carpet tile.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: For each type of product.
2. Samples: 4 inch long samples in each color.

1.3 DELIVERY, STORAGE AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.4 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:
1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg For more than 95 deg F.

C. Install resilient products after other finishing operations, including painting, have been completed.

1.5 MAINTENANCE

A. Extra Materials: One unopened carton of each profile and color.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Mannington Commercial. (www.manningtoncommercial.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Resilient Base:
1. Source: Burkebase by Mannington Commercial, or approved substitute.
2. Material: Thermoplastic rubber wall base.
3. Height: 4 inches.
4. Profile:

a. Carpet Tile locations: Straight.
b. Other locations: Coved.

5. Color: To be selected by manufacturer’s full line.

2.3 ACCESSORIES

A. Adhesive:
1. Water based, waterproof, recommended by base manufacturer.
2. Maximum volatile organic compound (VOC) content: 50 grams per liter.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare surfaces to receive base:
1. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
2. Remove materials that could interfere with adhesion.
3. Fill low spots with patching compound; finish flush with adjacent surface.
4. Remove high spots, ridges and nibs.

B. Do not install resilient products until they are the same temperature as the space where they are to be installed.
1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

C. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply adhesive continuously to back of base.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. Job-Formed Corners:
1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
a. Form without producing discoloration (whitening) at bends.
2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
a. Miter corners to minimize open joints.

G. Scribe to door frames and other interruptions.

3.3 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum horizontal surfaces thoroughly.
   3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION

SECTION 096813

TILE CARPETING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Tile carpeting.
   2. Edgings.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 012100 - Allowances.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Indicate carpet tile locations, dye lot limitations, direction of carpet tile in each room or area, and type and location of edgings.
   2. Samples:
      a. Carpet tile: Full size samples in each color and pattern.
      b. Edgings: 4 inch long samples showing selected profiles and colors.
   3. Warranty: Sample warranty form.

B. Quality Control Submittals:
   1. Certificates of Compliance: Certification from an independent testing laboratory that carpet tiles meet fire hazard classification requirements.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

B. Fire Hazard Classification: Maximum flame spread/smoke developed rating of 75/125, tested to ASTM E84.

1.4 PROJECT CONDITIONS

A. Do not begin installation until painting and finishing work have been completed.

B. Environmental Requirements:
   1. Temperature of spaces and subfloor between 65 and 90 degrees F.
   2. Humidity in spaces to receive carpet tiles between 20 and 65 percent.

1.5 WARRANTIES

A. Furnish manufacturer’s 10 year warranty providing coverage against:
   1. Defective materials and workmanship.
   2. Excessive fading.
   3. Loss of static control.
   4. Edge raveling.
   5. Runs.
   6. Loss of tuft bind strength.
   7. Loss of face fiber.
   8. Excessive wear.

PART 2 PRODUCTS

2.1 MATERIALS

A. Carpet Tiles: Product and color to be selected based on allowance.

2.2 ACCESSORIES

A. Adhesive:
   1. Waterproof, pressure-sensitive, latex based cement formulated specifically for installing carpet tiles; recommended by carpet tile manufacturer.
   2. Maximum volatile organic compound (VOC) content: 50 grams per liter.

B. Transition Strips: Preformed rubber or metal, profile required to suit conditions, color to be selected from manufacturer's full color range.

C. Leveling Compound: Premixed, latex based.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that concrete floors have cured a minimum 28 days and do not exhibit negative alkalinity, carbonization, or dusting.

3.2 PREPARATION

A. Clean substrate to ASTM D4258.

B. Fill cracks, voids, and depressions with leveling compound.

C. Grind ridges and high spots smooth.

D. Test Substrate:
   1. Moisture vapor: Test to ASTM F1869; do not install carpet tiles until moisture emission level is acceptable to carpet manufacturer.
   2. Humidity: Test to ASTM F2170; do not install carpet tiles until relative humidity is acceptable to carpet manufacturer.
   3. Alkalinity: Test to ASTM F710; do not install carpet tiles unless pH is acceptable to carpet manufacturer.

3.3 INSTALLATION OF CARPET TILES

A. Install in accordance with CRI 104.

B. Install carpet tile and adhesive in accordance with manufacturers' instructions.

C. Blend carpet tiles from different cartons to ensure minimal variation in color match.

D. Lay out each room or area to minimize tiles less than one half size.

E. Cut tile clean. Fit tiles tight to intersection with vertical surfaces without gaps.

F. Lay carpet tile to manufacturer's recommended pattern, set parallel to building lines and with corners aligned.

G. Locate change of color or pattern between rooms under door centerline.

H. Fully adhere carpet tiles to substrate.

I. Bind cut edges where not concealed by edge strips.

3.4 INSTALLATION OF EDGINGS

A. Install strips where carpet tiles abut dissimilar flooring materials; secure to subfloor.

B. Center strips under doors where carpet tiles terminate at door openings.

C. Install in longest practical lengths; butt ends tight.

D. Scribe to abutting surfaces.

3.5 CLEANING

A. Clean spots as recommended by carpet tile manufacturer.

B. Cut off loose threads flush with top surface.

C. Clean with commercial vacuum cleaner.

END OF SECTION

SECTION 098413

ACOUSTICAL PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Fabric covered acoustical wall panels.
   2. Acoustical insulation panels.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 012300 - Alternates.

1.2 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Indicate panel locations, sizes, attachment, and relationship to adjacent construction.
   2. Product Data: Manufacturer's descriptive data for wall panels.
   3. Samples:
      a. 6 x 6 inch fabric samples showing available colors.
      b. After fabric selections submit 24 x 24 inch panel samples showing backing, facings, and edges.

B. Quality Control Submittals:
   1. Certification: Manufacturer's certification that Products comply with requirements for fire hazard classification.

1.3 QUALITY ASSURANCE

A. Fabric: Tested to ASTM E84 with following results:
   1. Flame spread: Maximum 25.
   2. Smoke density: Maximum 450.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials in clean, dry storage area at minimum 40 degrees F and normal humidity.

1.5 PROJECT CONDITIONS

A. Maintain minimum temperature of 50 degrees F in areas to receive wall panels for three days prior to, during, and after installation.

1.6 MAINTENANCE

A. Extra Stock: 2 percent extra fabric in each color and pattern.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on Colorsonix Wall Panel products by MBI Products Company, Inc. (www.mbiproducts.com)

B. Approved Manufacturers - Acoustical Wall Panels:
   1. Acoustics America. (www.acousticsamerica.com)
   2. Armstrong. (www.armstrong.com)

3. Kinetics Noise Control (www.kineticsnoise.com)
4. MBI Products Company, Inc. (www.mbiproducts.com)
5. RPG Acoustical Systems. (www.rpgacoustic.com)
6. Wall Technology, an Owens Corning Company. (www.owenscorning.com)
7. FabricMate. (www.fabricmate.com)

2.2 MATERIALS

A. Acoustical Wall Panels:
1. Source: Colorsonix Wall Panel products by MBI Products Company, Inc., or approved substitute.
2. Description: Fabric-Wrapped Acoustic Wall Panels.
3. Core: 6 PCF fiberglass board with hardened edges.
4. Depth: 2 inches.
5. NRC: Minimum 1.00.
6. Fabric: To be selected by Architect from manufacturer’s selections.
7. Mounting: Z-bar attachment.
8. Edge: Beveled.

B. Acoustical Insulation Panels (Alternate #2):
1. Source: Owens Corning SelectSound Black Acoustic Board, or approved substitute. Description: Black matt faced semi-rigid insulation complying with ASTM E136 and ASTM C423.
2. Thickness: 2 inches.
3. Density: 3.0 pcf.
4. R-value: 4.3 per inch.

2.3 ACCESSORIES

A. Mounting Accessories: Type best suited to application. Compliant with Volatile Organic Compound (VOC) and Emissions content for adhesives, if applicable.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare substrate to receive wall panels:
1. Remove high spots.
2. Clean surfaces of materials that could impair adhesion.

3.2 INSTALLATION

A. Install panels in accordance with manufacturer's instructions and approved Shop Drawings.

B. Secure panels with maximum 24 inches on center.

C. Apply pressure over panel face to ensure tape bond to substrate.

D. Place panels plumb, level, and evenly spaced.

END OF SECTION

SECTION 099100

PAINTING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Surface preparation and field application of paints and stains.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 055000 - Metal Fabrications.
3. Section 064000 - Architectural Woodwork.
4. Section 080381 - Wood Door and Frame Restoration.
5. Section 080383 - Wood Window Restoration.
6. Section 081113 - Hollow Metal Doors and Frames.
7. Section 081433 - Stile and Rail Wood Doors.
8. Section 083113 - Access Doors and Frames.
9. Section 085200 - Wood Windows.
10. Section 090391 - Gypsum Plaster Restoration.
11. Section 090396 - Wood Floor Restoration.
12. Section 092900 - Gypsum Board Assemblies.
13. Division 22, 23, 26 and 28 for painting exposed MEP distribution systems and devices.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Manufacturer's data on materials proposed for use including:
   a. Product designation and grade.
   b. Product analysis and performance characteristics.
   c. Standards compliance.
   d. Material content.
   e. Mixing and application procedures.
2. Samples: 3 x 6 inch samples of each coating system on representative substrate. Step back successive coats so that all coats remain exposed. Indicate type of material used for each coat.
3. Paint Schedule: Indicate types and locations of each surface, paint materials, and number of coats to be applied.

1.3 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 2 years documented experience in work of this Section.

B. Materials, Preparation, and Workmanship: Conform to MPI Painting Manual.

C. Mockup - Decorative Paint Finishes:
1. Size: 4 x 4 feet.
2. Locate where directed.
3. Approved mockup may remain as part of the Work.

1.4 DELIVERY, STORAGE AND HANDLING

A. Container Labels: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage rates, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

B. Paint Materials: Store at ambient temperature from 45 to 90 degrees F in ventilated area, or as required by manufacturer's instructions.

1.5 PROJECT CONDITIONS

A. Do not apply materials when surface and ambient temperatures or relative humidity are outside ranges required by paint manufacturer.

B. Maintain ambient and substrate temperatures above manufacturer's minimum requirements for 24 hours before, during. and after paint application.

C. Do not apply materials when relative humidity is above 85 percent or when dew point is less than 5 degrees F different than ambient or surface temperature.

D. Provide lighting level of 30 footcandles at substrate surface.

1.6 MAINTENANCE

A. Extra Materials: 1 gallon of each color and sheen.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Benjamin Moore and Co. (www.benjaminmoore.com)
2. Devoe Paint Co. (www.devoepaint.com)
3. Kelly-Moore Paints. (www.kellymoore.com)
4. PPG Paints. (www.ppgpaints.com)
5. Pratt and Lambert Paints. (www.prattandlambert.com)
6. Sherwin Williams. (www.sherwin-williams.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Paints:
1. As scheduled at end of Section, or approved substitute.
2. Free from all forms of lead and mercury.

B. Maximum Volatile Organic Compound (VOC) Content for interior paints, coatings, and accessories, tested to ASTM D6886:
1. Primers: 100 grams per liter.
2. Flat paints and coatings: 50 grams per liter.
3. Non-flat paints and coatings: 50 grams per liter.
4. Rust preventative coatings: 100 grams per liter.
5. Clear wood finishes: 275 grams per liter.
6. Stains: 100 grams per liter.
7. Dryfall coatings: 150 grams per liter.

C. Gloss Ratings:

Gloss Designation	Units at 60 Degrees	Units at 85 Degrees
Flat	0 to 5	Maximum 10
Eggshell	10 to 25	10 to 35
Satin	20 to 35	Minimum 35
Semigloss	35 to 70	
Gloss	70 to 85	

High Gloss Minimum 85

2.3 ACCESSORIES

A. Accessory Materials: Paint thinners and other materials required to achieve specified finishes; commercial quality.

B. Patching Materials: Latex filler.

C. Fastener Head Cover Materials: Latex filler.

2.4 MIXES

A. Deliver paints pre-mixed and pre-tinted.

B. Uniformly mix to thoroughly disperse pigments.

C. Do not thin in excess of manufacturer's recommendations.

D. Re-mix paint during application; ensure complete dispersion of settled pigment and uniformity of color and gloss.

PART 3 EXECUTION

3.1 EXAMINATION

A. Test shop applied primer for compatibility with subsequent coatings.

B. Measure moisture content of surfaces using electronic moisture meter. Do not apply coatings unless moisture content of surfaces are below following maximums:
   1. Gypsum board: 12 percent.
   2. Masonry: 12 percent.
   3. Wood: 15 percent, measured to ASTM D4442.

3.2 PREPARATION

A. General:
   1. Protect adjacent and underlying surfaces.
   2. Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
   3. Correct defects and clean surfaces capable of affecting work of this section.
   4. Seal marks that may bleed through surface finishes with waterborne stain blocker.

B. Impervious Surfaces: Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water and allow to dry.

C. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

D. Masonry:
   1. Remove dirt, loose mortar, scale, salt and alkali powder, and other foreign matter. Methods to include medium pressure water spray and hand scraping. Take care not to damage or remove existing brick below paint.
   2. Remove oil and grease with solution of trisodium phosphate; rinse and allow to dry.
   3. Remove stains caused by weathering of corroding metals with solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

E. Galvanized Steel: SSPC Method SP1 - Solvent Cleaning.
   1. Shop clean surfaces and apply phosphate film at factory for surfaces to be painted in the field.

F. Aluminum: SSPC Method SP1 - Solvent Cleaning.

G. Uncoated Ferrous Metals: SSPC Method SP2 - Hand Tool Cleaning or Method SP3 - Power Tool Cleaning.

H. Shop Primed Ferrous Metals:
1. SSPC Method SP2 - Hand Tool Cleaning or Method SP3 - Power Tool Cleaning.
2. Feather edges to make patches inconspicuous.
3. Prime bare steel surfaces.

I. Exterior and Interior Wood:
1. Wipe off dust and grit.
2. Seal knots, pitch streaks, and sappy sections with sealer.
3. Fill nail holes and cracks after primer has dried; sand between coats.
4. Reference Drawings and additional preparation requirements at existing historic woodwork.

J. Existing Surfaces:
1. Remove loose, flaking, powdery, and peeling paints.
2. Lightly sand glossy painted surfaces.
3. Fill holes, cracks, depressions and other imperfections with patching compound; sand flush with surface.
4. Remove oil, grease, and wax by scraping; solvent wash and thoroughly rinse.
5. Remove rust by wire brushing to expose base metal.

3.3 APPLICATION

A. Apply paints in accordance with manufacturer’s instructions and MPI Painting Manual, Custom Grade finish requirements.

B. Apply primer or first coat closely following surface preparation to prevent recontamination.

C. Do not apply finishes to surfaces that are not dry.

D. Apply coatings to minimum dry film thickness recommended by manufacturer.

E. Apply each coat of paint slightly darker than preceding coat unless specified otherwise.

F. Apply coatings to uniform appearance without laps, sags, curtains, holidays, and brush marks.

G. Allow applied coats to dry before next coat is applied.

H. When required on deep and bright colors apply an additional finish coat to ensure color consistency.

I. Continue paint finishes behind wall-mounted accessories.

J. Sand between coats on interior wood and metal surfaces.

K. Match final coat to approved color samples.

L. Where clear finishes are specified, tint fillers to match wood. Work fillers into grain before set. Wipe excess from surface.

M. Prime concealed surfaces of interior wood in contact with masonry or cementitious materials with one coat primer paint.

N. Mechanical and Electrical Components:
1. Paint factory primed equipment.
2. Remove unfinished and primed louvers, grilles, covers, and access panels; paint separately.
3. Paint exposed and insulated pipes, conduit, boxes, ducts, hangers, brackets, collars, and supports unless factory finished.

4. Do not paint name tags or identifying markings.
5. Paint exposed conduit and electrical equipment in finished areas.
6. Paint duct work behind louvers, grills, and diffusers flat black to minimum of 18 inches or beyond sight line.

O. Do not Paint:
1. Surfaces indicated on Drawings or specified to be unpainted or unfinished.
2. Surfaces with factory applied finish coat or integral finish.
3. Architectural metals, including brass, bronze, stainless steel, and chrome plating.

3.4 ADJUSTING

A. Touch up or refinish disfigured surfaces.

3.5 CLEANING

A. Remove paint from adjacent surfaces.

3.6 PAINT SCHEDULE

A. Types of paint listed herein are set forth as standard of quality and type of coating required for each type of surface.
1. Paint exposed surfaces of types listed in Paint Schedule.
2. Paint other exposed surfaces not specifically listed with not less than two coats of appropriate type of coating.

B. Prime coat consists of touch up on shop primed surfaces with intact coatings.

SUBSTRATE	MANUFACTURER	PRIMER	TOP COATS
Exterior Surfaces:			
Ferrous and Galvanized Metals	Sherwin Williams	One coat Pro-Cryl Universal Water Based Primer	Two coats Pro Industrial Acrylic Semi-Gloss
Galvanized Metals (unfinished, for touch up)	ZRC		Galvilite Galvanizing Repair
Wood, Opaque Finish	Sherwin Williams	One coat A-100 Exterior Latex Wood Primer	Two coats Duration Exterior Latex Satin Coating
Interior Surfaces:			
Gypsum Board - Ceilings, Latex Flat Finish	Sherwin Williams	One coat ProMar 200 Zero VOC Interior Latex Primer	Two coats ProMar 200 Zero VOC Interior Latex Flat Wall Paint
Gypsum Board - Walls, Latex Eggshell/Satin Enamel Finish	Sherwin Williams	One coat ProMar 200 Zero VOC Interior Latex Primer	Two coats ProMar 200 Zero VOC Interior Latex Eg-Shel Enamel
Gypsum Board, Latex Semi-Gloss Finish	Sherwin WIlliams	One coat ProMar 200 Zero VOC Interior Latex Primer	Two coats ProMar 200 Zero VOC Interior Latex Semi-Gloss Enamel
Ferrous and Galvanized Metals - Semi-Gloss	Sherwin Williams	One coat Pro-Cryl Universal Water Based Primer	Two coats Pro Industrial Acrylic Semi-Gloss

SUBSTRATE	MANUFACTURER	PRIMER	TOP COATS
Wood, Opaque Finish	Sherwin Williams	One coat Premium Wall & Wood Interior Latex Primer	Two coats ProMar 200 Zero VOC Interior Latex Semi-Gloss
Wood, Transparent finish	Sherwin Williams	One coat Wood Classics Interior Stain	Two coats Wood Classics Polyurethane Varnish, Satin
Wood floors at existing building, wood ceiling at addition link	Sherwin Williams	One coat Wood Classics Interior Oil Stain	Three-five coats Pure Tung Oil cut with Mineral Spirits

END OF SECTION

SECTION 101423

INTERIOR PANEL SIGNS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Interior panel signs.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Include sign locations, sizes, mounting heights, and content.
2. Samples:
a. 3 x 3 inch sign samples showing available colors.
b. After color selection, submit typical sign illustrating pictograms, characters, and Braille indications.

1.3 QUALITY ASSURANCE

A. Provide signage as required by Authorities Having Jurisdiction.

B. Conform to applicable accessibility code for sign design, construction, location, and mounting height.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on 1000 ADA System products by Mohawk Sign Systems, Inc. (www.mohawksign.com)

B. Other Acceptable Manufacturers:
1. APCO Graphics, Inc. (www.apcosigns.com)
2. Best Sign Systems, Inc. (www.bestsigns.com)
3. 290 Signs by Mohawk Sign Systems, Inc. (www.mohawksign.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Signage: 1000 ADA System by Mohawk Sign Systems, Inc., or approved substitute.

B. Graphic Process:
1. All signs shall be manufactured using Graphic Process Series 200A - Sand Carved® using Format D.
a. Tactile characters shall be raised the required 1/32" inches from sign face. Glue-on letters or etched backgrounds are not acceptable.
b. All text shall be accompanied by Grade 2 braille. Braille shall be separated 1/2" from the corresponding raised characters or symbols. Grade 2 braille translation to be provided by signage manufacturer.
c. All letters, numbers and/or symbols shall contrast with their background, either light characters on a dark background or dark characters on a light background. Characters and background shall have a non-glare finish.
2. Plaque material: Special Purpose SP125 decorative thermosetting high pressure laminate. Material to be 1/8” thick laminate with a melamine resin surface and a phenolic resin core which

provides resistance to abrasion, stains, alcohol, solvents, boiling water, and heat. The mater shall be NEMA rated and have flammability and smoke values that meet the standards for flammability of interior materials.

3. Background color as selected by architect from manufacturer's actual color samples.
4. Letterform: Gill Sans upper case letters and numbers.
5. Size of letters and numbers:
   a. Room numbers shall be 1".
   b. Lettering for room ID signs shall be 5/8" or as noted.
   c. Symbol size shall be 4".
   d. Standard Grade 2 braille shall be 1/2" below copy.
   e. Corners: 1/2" radius
6. Copy position: CC (centered/centered), or as indicated on Drawings.

2.3 ACCESSORIES

A. Mounting: Vinyl tape and silastic adhesive. Provide mechanical mounting for larger signs as recommended by manufacturer.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces of loose and foreign matter.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Locate signs on wall adjacent to scheduled doors.

3.3 SCHEDULE

Room No.	Quantity	Inscription	Type	Size (H x W)
9	1	Restroom Note: Include 4" international symbol for accessibility	C	8" x 6"
10	1	Janitor	A	3" x 6"
11	1	Storage	A	3" x 6"
7	1	Catering	A	3" x 6"
6	1	AV/IT	A	3" x 6"
14	1	Women's Restroom Note: Include 4" international symbol for accessibility and gender symbol	C	8" x 6"
15	1	Men's Restroom Note: Include 4" international symbol for accessibility and gender symbol	C	8" x 6"
16	1	Dressing Room	A	6" x 6"
17	1	Restroom Note: Include 4" international symbol for accessibility	C	8" x 6"
18	1	Mechanical	A	3" x 6"
19	1	Restroom Note: Include 4" international symbol for accessibility	C	8" x 6"
21	1	Office	B	6" x 6"
22	1	Office	B	6" x 6"
2, 3	2	Maximum Occupancy Signs (TBD)		Size per local code official

END OF SECTION

SECTION 102113

TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. HDPE toilet partitions.
2. HDPE urinal screens.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 102813 - Toilet Accessories.

1.2 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Include layout, dimensions, materials, panel construction, finishes, hardware, and accessories.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on Hiny Hider products by Scranton Products. (www.scrantonproducts.com)

B. Other Acceptable Manufacturers:
1. AJW Architectural Products. (www.ajw.com)
2. Accurate Partitions Corp. (www.accuratepartitions.com)
3. Global Partitions Corp. (www.globalpartitions.com)
4. Knickerbocker Partition Corp. (www.knickerbockerpartition.com)
5. Metpar Corp. (www.metpar.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Doors, Panels and Pilasters:
1. High density polyethylene (HDPE), fabricated from polymer resins compounded under high pressure, forming single thickness panel.
2. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
3. 1 inch thick with edges rounded to 1/4 inch radius.
4. Color: To be selected from manufacturer’s full color range.

B. Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.

C. Stainless Steel: ASTM A167, Type 304.

2.3 HARDWARE

A. Hinges: Regal hinge fabricated from heavy-duty cast aluminum, wrap around flanges, adjustable on 30-degree increments, through bolted to doors and pilasters.

B. Door Strike and Keeper:

1. 6 inches long, fabricate from heavy-duty extruded aluminum with bright dip anodized finish, w wrap-around flanges secured to pilasters with stainless steel tamper resistant Torx head sex bolts.
2. Bumper: Extruded black vinyl.

C. Latch and Housing:
1. Heavy-duty extruded aluminum.
2. Latch housing: Bright dip anodized finish.
3. Slide latch and paddle.

D. Coat Hook/Bumper:
1. Combination type, chrome plated Zamak.
2. Equip outswing handicapped doors with second door pull and door stop.

E. Door Pulls: Chrome plated Zamak.

2.4 COMPONENTS

A. Doors and Dividing Panels: 55 inches high, mounted 14 inches above finished floor, with aluminum heat-sinc fastened to bottom edges.

B. Pilasters: 82 inches high, fastened to pilaster sleeves with stainless steel tamper resistant Torx head sex bolt.

C. Pilaster Sleeves: 3 inches high, 20 gage stainless steel, secured to pilaster with stainless steel tamper resistant Torx head sex bolt.

D. Wall Brackets: 54 inches long, heavy-duty aluminum, bright dip anodized finish, fastened to pilasters and panels with stainless steel tamper resistant Torx head sex bolts.

E. Headrail: Heavy-duty extruded aluminum, anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant Torx head sex bolt and at top of pilaster with stainless steel tamper resistant Torx head screws.

F. Headrail Brackets: 20 gage stainless steel, satin finish, secured to wall with stainless steel tamper resistant Torx head screws.

2.5 ACCESSORIES

A. Fasteners: Stainless steel, theft resistant where exposed.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer’s instructions and approved Shop Drawings.

B. Set partitions straight, plumb, level, and aligned.

C. Locate bottom edge of doors and panels 14 inches above finished floor.

D. Provide 3/8 to 1/2 inch vertical clearances between walls and panels and between walls and end pilasters.

E. Attach panel brackets to walls using appropriate anchor devices.

F. Adjust for floor variations with screw jack integral in pilasters. Conceal floor fastenings with pilaster shoes.

G. Support pilasters from built-in framing using adjustable hanging studs providing vertical leveling. Conceal ceiling fastenings with pilaster shoes.

H. Equip doors with two hinges, door latch, door strike and keeper, and bumper/coat hook.

3.2 ADJUSTING

A. Adjust hardware for proper operation.

B. Adjust door hinges to hold door open 10 degrees when not latched.

END OF SECTION

SECTION 102813

TOILET ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Toilet accessories.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data:
a. Schedule accessories by room; show plans and elevations, and identify room name and number, type and quantity of accessories, and mounting heights.
b. Include manufacturer's brochures showing sizes, details of function, finishes, and attachment methods.
2. Samples: One of each accessory, if requested.
3. Warranty: Sample warranty form.

1.3 QUALITY ASSURANCE

A. Locate accessories at heights indicated in the Drawings.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by American Specialties. (www.americanspecialties.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Toilet Accessories: As scheduled at the end of the Section, or approved substitute. Refer to Drawings for locations.

B. Stainless Steel:
1. Sheet: ASTM A666, Type 304, rollable temper.
2. Tubing: ASTM A269.

C. Galvanized Steel: ASTM A1008/1008M.

2.3 ACCESSORIES

A. Fasteners: Stainless steel where exposed, hot dip galvanized where concealed; type best suited to substrate conditions.

2.4 FABRICATION

A. Use stainless steel for exposed surfaces; galvanized steel may be used in concealed locations.

B. Form exposed surfaces from single sheet of stock, free from joints, and flat, without distortion.

C. Weld joints of fabricated components and grind smooth.

D. Fabricate grab bars of tubing, free of visible joints, return to wall with end attachment flanges.

E. Fabricate soap dispensers to operate with less than 5 pound force.

F. Provide hangers, adapters, anchor plates, and accessories required for installation.

G. Key locks alike; furnish six keys.

H. Shop assemble units and package complete with anchors and fittings.

2.5 FINISHES

A. Stainless Steel: No. 4 satin.

B. Galvanizing: ASTM A123/A123M to 1.25 ounces per square foot.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Set plumb, level, square, and rigid.

3.2 SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	MODEL NO.
D	Surface Mounted Paper Towel Dispenser & Waste Receptacle	American Specialties	0467-9
G	Surface Mounted Paper Towel Dispenser	American Specialties	0210
A	Semi-Recessed Twin Hide-A-Roll Toilet Tissue Dispenser	American Specialties	0031
A	Surface Mounted Twin Hide-A-Roll Toilet Tissue Dispenser	American Specialties	0030
F	Inter-Lok Stainless Steel Framed Mirror	American Specialties	0600, 24" x 36"
P	Surface Mounted Vertical Soap Dispenser	American Specialties	0359
E	Surface Mounted Sanitary Napkin Receptacle	American Specialties	0852
B, C	1" Diameter Stainless Steel Grab Bars w/ Concealed Mounting	American Specialties	3000 Series x lengths indicated on the Drawings
J	Surface Mounted Stainless Steel Baby Changing Station	American Specialties	9013-9
I	Robe Hook (Single) - Surface Mounted	American Specialties	7340-S

END OF SECTION

SECTION 104413

FIRE EXTINGUISHERS AND CABINETS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Portable fire extinguishers.
2. Cabinets.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Indicate bracket locations and mounting heights.
2. Product Data: Include data on extinguishers, operational features, materials, finishes, and anchorage.

B. Closeout Submittals:
1. Maintenance Data: Include test, refill, or recharge schedules and re-certification requirements.

1.3 QUALITY ASSURANCE

A. Provide fire extinguishers complying with UL 711 and applicable code.

B. Conform to applicable accessibility code for locating extinguishers.

1.4 PROJECT CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by JL Industries. (www.jlindustries.com)

B. Other Acceptable Manufacturers:
1. Larsen's Manufacturing Company. (www.larsensmfg.com)
2. Potter Roemer. (www.potterroemer.com)

C. Substitutions: Under provisions of Division 01.

2.2 COMPONENTS

A. Extinguishers:
1. Kitchens: Wet chemical type, stainless steel tank, Class 2A-1B:C:K, 6 L nominal capacity.
2. Other Locations: Multi-purpose dry chemical type, UL 299, cast steel tank, Class 4A:60B:C, 10 pound nominal capacity.
3. Free from CFCs, HCFCs, and Halons.

B. Cabinets:
1. Product: JL Industries Ambassador Steel Fire Extinguisher Cabinet
2. Configuration: Semi-recessed cabinet, sized to accommodate extinguishers.
3. Trim: 1 1/2" square trim.

4. Door: Vertical duo panel with pull handle.

2.3 ACCESSORIES

A. Mounting Hardware: Type best suited to application.

2.4 FINISHES

A. Extinguishers: Baked enamel, red color.

B. Cabinets: White powder-coated finish.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install cabinets in accordance with manufacturer's instructions.

B. Set plumb, level, and rigid.

C. Place an extinguisher in each cabinet.

END OF SECTION

SECTION 107500

FLAGPOLES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Aluminum flagpole, ground set.
2. Concrete base.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 033000 - Cast-In-Place Concrete.
3. Section 079200 - Joint Sealants.

1.2 SYSTEM DESCRIPTION

A. Design Requirements: Design flagpole and anchorage devices in accordance with ANSI/NAAMM FP 100197.

B. Pole Description:
1. Type: Ground set, fixed.
2. Pole: Cone tapered.
3. Exposed height: 25 feet.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Include pole and base dimensions, materials, finishes, and accessories.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

1.5 DELIVERY, STORAGE AND HANDLING

A. Handle products in accordance with AAMA CW-10.

B. Wrap poles in heavy paper to prevent damage during shipping and handling.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Concord American Flagpole. (www.concordamericanflagpole.com)

B. Other Acceptable Manufacturers:
1. American Flagpole, Inc. (www.americanflagpole.com)
2. Ewing International Corp. (www.ewingflagpole.com)
3. Pole-Tech Co., Inc. (www.poletech.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Flag Pole: Concord American External Single Revolving Ground Set Flagpole, Estate Series Flagpoles – ESS-GS, 25', or approved substitute.

B. Aluminum: ASTM B241, seamless 6063-T6 aluminum alloy.

C. Concrete: ASTM C94; 3000 psi 28 day strength, 2 to 3 inch slump.

2.3 COMPONENTS

A. Poles: Seamless aluminum pipe, 6 inch diameter.

B. Fittings:
1. Ball: Spun aluminum.
2. Truck: Revolving, non fouling, cast aluminum.
3. Halyard: External type, 3/8 inch diameter braided nylon rope with two stainless steel swivel snap hooks.
4. Winch: Internally mounted, with removable crank handle and automatic brake allowing flag to be set at any position, with counterweight and beaded retainer ring.
5. Door: Flush with compression lock. Key locks alike; furnish four keys.
6. Cleat: 9 inch long cast aluminum.
7. Cleat box cover: Hinged cover with padlock provisions.
8. Collar: Cast aluminum, minimum 1 inch larger in diameter than foundation sleeve.
9. Foundation sleeve: 16 gage, 10 inch diameter, galvanized, corrugated steel with 3/8 inch base plate. Provide minimum 12 inch long lightning rod with setting plate and one set each steel and hardwood centering wedges.

2.4 ACCESSORIES

A. Grout: Cement based, non shrink.

B. Joint Sealant: Specified in Section 079200.

2.5 FINISHES

A. Aluminum: AAMA 611, Architectural Class I anodized to 0.0007 inch minimum thickness, clear.

B. Apply bituminous coating to that part of flagpole to be set in base, inside and out.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install flagpoles and accessories in accordance with manufacturer’s instructions and approved Shop Drawings.

B. Install foundation sleeve in concrete footing.

C. Center pole in sleeve using steel wedges; plumb with hardwood wedges. Fill sleeve with clean, dry sand; top off with grout.

D. Install collar to conceal sleeve.

E. Apply joint sealant around pole at top of grout and collar.

END OF SECTION

SECTION 121230

PICTURE HANGING SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included:

1. Provide hanging display system at the east and west walls of 5 Gallery. Locate track on wall tight to ceiling.
2. Provide labor, materials and equipment necessary to complete the work of this Section including the following.

a. Rail systems.
b. Hooks and cords for rail systems.
c. Related hanging systems.
d. Complimentary products.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 061000 - Rough Carpentry for blocking in walls.
2. Section 090391 – Gypsum Plaster Restoration.

1.2 SUBMITTALS

A. Product Data: Submit for each product indicating materials, dimensions, and profiles. Include installation instructions.

B. Shop Drawings: Submit shop drawings indicating plans, elevations, details of construction, and relationship with adjacent construction.

C. Schedule: Submit a written schedule with model numbers, colors, accessories and location of picture hanging systems.

D. Verification Samples: Submit representative sample of picture hanging systems specified.

1.3 QUALITY ASSURANCE

A. Manufacturer: Minimum of 5 years manufacturing similar products.

B. Installer: Minimum of 2 years installing similar products.

C. Mock-Up: Provide an in-place mock-up of first installation for each type for review of workmanship. Accepted mock-ups may remain in place.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.

B. Storage and Handling: Comply with manufacturer's recommendations for storage and handling. Protect from weather damage.

1.5 WARRANTY

A. Warranty: Provide manufacturer's standard limited warranty against defects in manufacturing.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis-of-Design Manufacturer: STAS picture hanging systems, Tel. 888-312-6971, Fax 508-556-0052 www.picturehangingsystems.com, or approved equal.

1. Materials: Aluminum and steel, as standard with manufacturer.

2.2 RAIL SYSTEMS

A. STAS cliprail max (Lengths TBD):

1. RC10215 cliprail max white 150 cm.
2. RC10220 cliprail max white 200 cm.
3. RC10230 cliprail max white 300 cm.
4. RD40100 railclip (metal, 3 per m1).
5. RD40200 rail connector (metal).
6. SR30600 screw torx.
7. SR50700 plug 6 x 30 mm hard / soft wall.

2.3 HOOKS AND CORDS FOR RAIL SYSTEMS

A. STAS hooks and cords (Lengths TBD):

1. HA30501 zipper (15 kg perlon + 20 kg steel).
2. SC10110 cobra + steelcable 100 cm.
3. SC10115 cobra + steelcable 150 cm.
4. SC10120 cobra + steelcable 200 cm.
5. SC10125 cobra + steelcable 250 cm.
6. SC10130 cobra + steelcable 300 cm.
7. SC10140 cobra + steelcable 400 cm.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine existing conditions to determine that they are suitable for installation. Proceed with installation only when unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install units in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.

3.3 ADJUSTING AND CLEANING

A. Adjust units for proper operation and uniform appearance.

B. Clean exposed and semi-exposed surfaces using materials acceptable to manufacturer.

END OF SECTION

SECTION 122113

HORIZONTAL LOUVER BLINDS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Horizontal slat louver blinds for installation at all exterior windows with the exception of windows in multi-use spaces.
2. Operating hardware.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Describe blind construction and finishes.
2. Samples: 3 inch long slat samples showing available colors. in each color.

1.3 PROJECT CONDITIONS

A. Do not install blinds until painting and finishing work is complete.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on Custom Real Wood Blinds by Levolor. (www.levolor.com)

B. Other Acceptable Manufacturers:
1. Hunter Douglas, Inc. (www.hunterdouglas.com)
2. Springs Window Fashions. (www.springswindowfashions.com)

C. Substitutions: Under provisions of Division 01.

2.2 COMPONENTS

A. Horizontal Louver Blinds: Type to be selected:
1. Wood Louver Slats: 2 inches wide, solid wood horizontal slats; North American hardwood, flame-retardant treated; with flat profile and radiused corners, beaded edges and double beaded edges.

B. Slat Support: Woven polypropylene ladders.

C. Head Rail: Prefinished, formed aluminum or steel box, internally fitted for hardware, pulleys, and bearings for blind operation. Provide snap-on hardwood valance to match slats.

D. Cord: Braided nylon or polypropylene.

E. Control Wand: 3/8" diameter hardwood to match slats, height of window opening less 12 inches.

F. Support Brackets: Suitable for wall or soffit mounting, formed metal to match head rail, allowing removal of head rail for maintenance without removing bracket.

G. Operation: Full range lift locking. Top locking only.

2.3 FABRICATION

A. Fabricate blinds to fit openings with uniform edge clearance of 1/4 inch.

B. At openings requiring multiple blind units, provide separate blind assemblies with space of 1/4 inch between assemblies, occurring at window mullion centers.

2.4 FINISHES

A. Slats:
   1. Color: To be selected by Architect from manfacturer’s full color range.

B. Head Rails and Brackets: Static-reducing Baked enamel, to be selected from manufacturer's full color range.

C. Ladders and cords: Dyed to closely match slats.

D. Control Wands: Color to be selected by Architect from manfacturer’s full color range.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install blinds in accordance with manufacturer's instructions.

B. Secure with concealed fasteners.

C. Place intermediate head supports at maximum 48 inches on center.

D. Installation Tolerances:
   1. Maximum gap at window opening perimeter: 1/4 inch.
   2. Maximum offset from level: 1/8 inch.

3.2 ADJUSTING

A. Adjust blinds for proper operation.

END OF SECTION

SECTION 122413

ROLLER WINDOW SHADES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Roller shades, manual operation and accessories.

B. Shade fabric.

1.2 RELATED SECTIONS

A. Section 061000 - Rough Carpentry: Wood blocking and grounds for mounting roller shades and accessories.

B. Section 092900 - Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.

C. Section 095100 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM G21 and E 2180 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. Cradle to Cradle Products Innovation Institute (C2C):
1. C2C (DIR) - C2C Certified Products Registry.

C. National Fire Protection Association (NFPA):
1. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

D. Window Covering Manufacturers Association (WCMA):
1. ANSI/WCMA A100.1-2022- Safety of Window Covering Products; 2022.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: One week prior to commencing work related to this section. Require attendance of all affected installers.

B. Sequencing:
1. Do not fabricate shades until field dimensions for each opening have been taken with finished conditions in place. "Hold to" dimensions are not acceptable.
2. Do not install shades until final surface finishes and painting are complete.

1.5 SUBMITTALS

A. See Section 013300 for submittal procedures.

B. Bid Submittal: Information Required with Submittal of Bid: In order to evaluate proposals for integrated lighting control and window shade systems, the Architect requires the following information be submitted prior to the award of the system.
   1. Bid proposal shall be accompanied with a document that notes all deviations from these specifications on a line-by-line basis.

C. Product Data: Manufacturer's catalog pages and data sheets for products specified including materials, finishes, dimensions, profiles, mountings, and accessories.
   1. Preparation instructions and recommendations.
   2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes , accessories, and operating instructions.
   3. Storage and handling requirements and recommendations.
   4. Mounting details and installation methods.
   5. Manufacturer's Instructions: Include storage, handling, protection, examination, preparation, and installation.
   6. Project Record Documents: Record actual locations of control system components and show interconnecting wiring.
   7. Operation and Maintenance Data: Component list with part numbers, and operation and maintenance instructions.

D. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, and relationship to adjacent work.
   1. Prepare shop drawings on AutoCad or MicroStation format using base sheets provided electronically by the Architect.
   2. Provide location plan showing all manual shade control locations. Cross-reference furniture plans for optimal positioning of chains.
   3. Provide elevation drawings showing shade band layout. Indicate any necessary seam or batten locations, and align with horizontal mullions where possible.

A. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.

B. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements.
   4. Shadecloth Sample: Mark face of material to indicate interior faces.
      a. Test reports indicating compliance with specified fabric properties.
      b. Verification Samples: 6 inches (150 mm) square, representing actual materials, color and pattern.

C. Maintenance Data: Bill of materials for all components with part numbers. Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

D. Warranty: Provide manufacturer's warranty documents as specified in this Section.

1.6 QUALITY ASSURANCE

A. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

B. Manufacturer Qualifications: Obtain roller shades system through one source from a single manufacturer with a minimum of ten years experience and minimum of five projects of similar scope and size in manufacturing products comparable to those specified in this section.

C. Installer for Roller Shade System - Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section.
   1. Requirements for Roller Shade Installer/Contractor:
      a. Roller Shade Hardware, shade fabric and all related controls shall be furnished and installed as a complete assembly.

D. Product Listing Organization Qualifications: Organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

E. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

F. ShadeCloth Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC9644 and ATCC9645, and E2180.

G. ShadeCloth Cleanability and Disinfecting: ShadeCloth must meet cleanability and disinfecting requirements via 3rd party testing to comply with BIFMA HCF 8.1-2014 standards using chemical solutions compliant with EPA guidelines for use against COVID-19.

H. Environmental Certification: Submit written certification from the manufacturer, including third party evaluation, recycling characteristics, and perpetual use certification as specified. Initial submittals, which do not include the Environmental Certification will be rejected. Materials that are simply 'PVC free' without identifying their inputs shall not qualify as meeting the intent of this specification and shall be rejected.

I. Third Party Evaluation: Provide documentation stating the shade cloth has undergone third party evaluation for all chemical inputs, down to a scale of 100 parts per million, that have been evaluated for human and environmental safety. Identify any and all inputs, which are known to be carcinogenic, mutagenic, teratogenic, reproductively toxic, or endocrine disrupting. Also identify items that are toxic to aquatic systems, contain heavy metals, or organohalogens. The material shall contain no inputs that are known problems to human or environmental health per the above major criteria, except for an input that is required to meet local fire codes.

J. Recycling Characteristics: Provide documentation that the shade cloth can, and is part of a closed loop of perpetual use and not be required to be down cycled, incinerated or otherwise thrown away. Scrap material can be sent back to the mill for reprocessing and

recycling into the same quality yarn and woven into new material, without down cycling. Certify that this process is currently underway and will be utilized for this project.

K. Perpetual Use Certification: Certify that at the end of the useful life of the shade cloth, that the material can be sent back to the manufacturer for recapture as part of a closed loop of perpetual use and that the material can and will be reconstituted into new yarn, for weaving into new shade cloth. Provide information on each shade band indicating that the shade band can be sent back to the manufacturer for this purpose.

1.7 MOCK-UP

A. Provide a mock-up of one roller shade assembly for evaluation of mounting, appearance and accessories.
   1. Locate mock-up in window designated by Architect.
   2. Mockup Size: Full size.
   3. Mockup Size (WxH): 3 x 3 feet minimum.
   4. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
   5. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
   6. Do not proceed with remaining work until, mock-up is accepted by Architect.
   7. Retain mock-up during construction as a standard for comparison with completed work.
   8. Do not alter or remove mock-up until work is completed or removal is authorized.
   9. Full-sized mock-up may become part of the final installation.
   10. Full-sized mock-up will become the property of the Owner to be used for spare parts.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in Window Treatment Schedule.

B. Store and handle products per manufacturer's recommendations.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.10 WARRANTY

A. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating, transferrable warranty for interior shading.
   1. Shade Hardware - 10 years unless otherwise indicated:
      a. Mecho/7 including bead chain with ThermoVeil, EuroTwill, Soho, Equinox, Midnite, Chelsea, or Classic Blackout shade fabric: 25-years.
   2. Standard Shadecloth: Manufacturer's standard 25-year warranty.
   3. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas, which are deemed owners responsibility.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer for Window Shade Control System as basis of design, performance and warranty: Mecho, which is located at: 42-03 35th St.; Long Island City, NY 11101; ASD Tel: 718-729-2020; Fax: 718-729-2941; Email: marketing@mechoshade.com; Web: www.mechoshade.com. For your local Mecho rep: https://www.mechoshade.com/find-a-rep/

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 APPLICATIONS/SCOPE

A. Roller Shade Schedule:
1. Shade Type: Manual operating, chain drive, sunscreen single roller shades and related mounting systems and accessories as indicated on Drawings.
2. ADA Compliance: All spaces requiring full ADA compliance to be motorized with an accessible wall switch.
3. CPSC Compliance: All manually operated window coverings with accessible cords, chains, continuous loop cords, etc. shall meet all current Federally mandated CPSC (Consumer Products Safety Commission) safety standards at time of manufacturing. Depending on the product type, additional hardware components may be required and added to meet new regulatory compliant anti-ligature requirements.
4. WCMA Compliance: Chain tensioning device complying with ANSI/WCMA A100.1-2022 manufacuted on every manual roller shade.

2.3 ROLLER SHADES, MANUAL OPERATION AND ACCESSORIES

A. Shade System; General:
1. Components capable of being removed or adjusted without removing mounted shade brackets, or cassette support channel.
2. Smoothly operation raising or lowering shades.
3. Cradle-to-Cradle certified and listed in C2C (DIR).
4. Environmental Product Declaration (EPD): Published disclosure of product's environmental impacts based on a full Life Cycle Assessment (LCA). Manufacturer must have EPD certification by independent 3rd party evaluation service.

B. Basis of Design: Mecho/7 System as manufactured by Mecho.
1. Description: Manually operated fabric window shades.
a. Shade Type: Single Roller.
b. Universal drive capability to offset drive chain for reverse or regular roll shades.
c. Drop Position: Regular roll.
d. Mounting: As indicated on Drawings.
l. Size: As indicated on Drawings.
m. Fabric: As indicated under Shade Fabric article.
2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting indicated and to accommodate shade fabric roll-up size and weight.
a. Material: Steel, 1/8 inch (3 mm) thick. Styrene based plastics, and /or polyester, or reinforced polyester shall not be accepted.
b. Single Shade Operation Width: Up to 180 inches (4572 mm) dependent on fabric.
c. Multiple Shade Band Operation: Provide hardware as necessary to operate a maximum of six shade bands, totaling up to 50lbs hanging weight or 360 inches (9144 mm) wide; depending on fabric weight whichever is greater, using a single clutch operator.
3. Roller Tubes:

a. Material: Extruded aluminum.
b. Size: As recommended by manufacturer; selected for suitability for installation conditions, span, and weight of shades.
c. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge. Shade band to be removable and replaceable without removing roller tube from brackets or inserting spline from the side of the roller tube.
d. Roller tubes to be capable of being removed and reinstalled without affecting roller shade limit adjustments.

4. Hembars: Designed to maintain bottom of shade straight and flat.
   a. Style: Full wrap fabric-covered bottom bar, flat profile with heat sealed closed ends.
   b. Style: Exposed aluminum bottom bar with matching finials.
      1) Profile: Rectangular.
      2) Color: To be selected by Architect from manufacturer's standard color selection.
   c. Room-Darkening Shades: Provide a slot in bottom bar with wool-pile light seal.
5. Clutch Operator: Manufacturer's standard material and design integrated with bracket/brake assembly.
   a. Heavy-duty, 1/8" steel mounting bracket and integrated steel brake, clutch and sprocket assembly rigidly affix the shade support and user control to the building structure fully independent of the roller tube components.
   b. Permanently lubricated maintenance-free brake assembly employs an oil-impregnated steel hub with wrapped spring clutch.
   c. Brake must withstand minimum pull force of 50 pounds (22.7 kg) in the stopped position.
   d. Direct drive clutch requires no interstitial gear stages or plastic parts between the building structure and clutch ensuring reliable operation across the full range of shade sizes.
   e. Urethane dampened clutch protects bead chain and clutch from failure due to high shock loads during shade operation minimizing down time.
   f. Maximum shade hanging weight of 50 pounds (22.7 kg).
   g. Clutch shall be upgradable to motorized drive on compatible tubes without requiring change in mounting attachment method/location, roller tube or fabric band.
   h. Motorized drive options available require no additional wiring to be added for power or communication capability for switch or automated operation.
6. Drive Chain: Continuous loop T304 stainless steel beaded ball chain, 100 pound (45 kg) minimum breaking strength warranted from breaking for the life of the shade system hardware under prescribed operation. Provide upper and lower limit stops.
   a. Chain Tensioner: Chain tensioning device complying with ANSI/WCMA A100.1-2022.
   b. Limit stops: Bead stops affixed to the chain maintain consistent shadeband alignment at the top and bottom of shade travel across multiple shades, and help prevent shade damage resulting from unmanaged user control.
7. Mecho/7, Managed Lift Force, Hardware: Lifts single band or multiband shade assemblies:
   a. Lifting Force: 5 pound max pull force to lift shade assemblies with a shade band hanging weight, not including mounting hardware, of up to 50 pounds (22.7 kg).
   b. Direct drive clutch with Managed Lift Force provides the best user experience by managing the user pull force while using the fewest number of chain pulls to

position a shade.

c. Backward compatible to Mecho/5 components including fascia, regular and reverse roll, pockets, and wall-mounting accessories.

d. Includes offset drive capability, left/right, front, or back to allow for utilization of blackout channels.

e. Allows for ease of operation when obstructions do not allow for direct drive chain access.

f. Offset chain drive shall not cause an increase of friction or pull force when operated up to a 26 degree angle from vertical.

8. Accessories:

a. Fascia: Removable extruded aluminum fascia, size as required to conceal shade mounting, attachable to brackets without exposed fasteners.

1) Finish: Baked enamel.

1) Shade Band: Removable and replaceable without removing roller tube from brackets or inserting spline from the side of the roller tube.

14. Hembars: Maintains bottom of shade straight and flat.

a. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.

b. Style: Exposed aluminum bottom bar with matching finials.

1) Profile: Rectangular.

2) Color: To be selected from manufacturer's standard color selection.

c. Room-Darkening Shades: Slotted bottom bar with wool-pile light seal.

15. Manual Operation:

a. Clutch Operator: Manufacturer's standard material and design integrated with brackeUbrake assembly.

1) Brake Assembly: Mounted on a low-friction plastic hub with wrapped spring clutch.

a) Brake must withstand minimum pull force of 25 lbs (12 kg) in stopped position.

2) Clutch/Brake Mounting: On support brackets, independent of roller tube components.

b. Drive Chain: Continuous loop beaded ball chain. Upper and lower limit stops.

1) Breaking Force: 45 lbf (200 N) minimum.

c. Chain Tensioner: Chain tensioning device complying with ANSI/WCMA A100.1-2022.

d. Lift Assist Mechanism: Contained in idler end of roller tube. When hanging weights exceed roller tube weight limits. Manufacturer's standard.

16. Accessories:

a. Fascia: Removable extruded aluminum. Size as required to conceal shade mounting. Attachable to brackets without exposed fasteners.

1) Finish: To be selected by Architect.

2) Can be installed across two or more shade bands in one piece.

3) Profile: To be selected by Architect.

4) Configuration: Captured, fascia stops at captured bracket end.

5) Configuration: Continuous, fascia extends past continuous bracket.

6) Configuration: Captured and continuous, as indicated on drawings.

b. Ceiling Pockets: Manual Premanufactured metal shade pocket with removable closure panel, for recess mounting in acoustical tile or drywall ceilings; size and configuration as indicated on drawings.

1) Removable closure panel.

2) 7/8" ceiling tile support.

3) Use 2" closure assembly by Mecho or 2" ceiling tile receiver by others in

lieu of 7/8" ceiling tile support where applicable by code (i.e.: projects in seismic zones).

2.4 ROLLER SHADE FABRICATION

A. Field measure finished openings prior to ordering or fabrication.

B. Dimensional Tolerances: Fabricate shades to fit openings within specified tolerances.
1. Horizontal Dimensions: Inside Mounting.
a. Symmetrical Light Gaps on Both Sides of Shade: Maximum 3/4 inch (19.05 mm) total.

C. Openings Requiring Continuous Multiple Shade Units with Separate Rollers: Locate roller joints at window mullion centers; butt rollers end-to-end.

2.5 SHADE FABRIC

A. Basis of Design: Shade fabric as manufactured by MechoShade Systems LLC.
1. Fabric: To be selected from manufacturer's standard solar shadecloths.
2. Color: Selected from manufacturer's standard colors.
3. Performance Requirements:
a. Flammability per NFPA 701: Pass. Large or small scale test.
b. Fungal Resistance: No growth when tested per ASTM G21.
c. Cleanability and Disinfecting: ShadeCloth must meet cleanability and disinfecting requirements via 3rd party testing to comply with BIFMA HCF 8.1- 2014 standards using chemical solutions compliant with EPA guidelines for use against COVID-19.
4. Fabrication:
a. Fabric Orientation: Railroaded, fabric is turned 90 degrees off the roll.
b. Battens: Manufacturer's standard material, full width of shade, and enclosed in welded shade fabric pocket; locate as indicated on drawings.
c. Seams for Railroaded Fabric: Manufacturer's standard seam; locate as indicated on drawings.
d. Welded Zipper Edge: Full height on both sides of fabric ensuring smooth operation within ShadeLoc channels.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Start of installation shall be considered acceptance of substrates.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.

C. Coordinate with window installation and placement of concealed blocking to support

shades.

3.3 INSTALLATION

A. Contractor Furnish and Install Responsibilities:
   1. Window Covering Contractor (WC) shall provide an on site, Project Manager, and shall be present for all related jobsite scheduling meetings.
   2. WC shall supervise the roller shade installation, and setting of intermediate stops of all shades.
   3. WC shall be responsible for field inspection on an area-by- area and floor-by-floor basis during construction to confirm proper mounting conditions per approved shop drawings.
   4. Verification of Conditions: examine the areas to receive the work and the conditions under which the work would be performed and notify General Contractor and Owner of conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected. Commencement of installation shall constitute acceptance of substrate conditions by the installer.
   5. WC shall provide accurate to 0.0625" inch; field measurements for custom shade fabrication on the Roller Shades manufacturers input forms.
   6. WC Installer shall install roller shades level, plumb, square, and true according to manufacturer's written instructions, and as specified here in. Blocking for roller shades installed under the contract of the interior General Contractor shall be installed plumb, level, and fitted to window mullion as per interior architect's design documents and in accordance with industry standard tolerances. The horizontal surface of the shade pocket shall not be out-of-level more than 0.625" (15.875mm) over 20 linear feet (6.096 meters)
   7. Shades shall be located so the shade band is not closer than 2 inches (50 mm) to the interior face of the glass. Allow proper clearances for window operation hardware.
   8. Adjust, align and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
   9. Installer shall set Upper and Lower limits of all manual shade bands, and assure alignment in accordance with the above requirements.
   10. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
   11. WC shall train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.
      a. Use operation and maintenance manual as a reference, supplemented with additional training materials as required.

1.2 PROTECTION AND CLEANING

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.
   1. Clean soiled shades and exposed components as recommended by manufacturer.
   2. Replace shades that cannot be cleaned to "like new" condition.

END OF SECTION

SECTION 123600

COUNTERTOPS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Countertops.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 064100 - Architectural Wood Casework.
3. Section 079200 - Joint Sealants.

1.2 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Indicate dimensions, component sizes, fabrication details, attachment provisions and coordination requirements with adjacent work.
2. Product Data: Indicate product description, fabrication information and compliance with specified performance requirements.
3. Samples: 2 x 2 inch samples in each color.

B. Closeout Submittals:
1. Maintenance Data: Include recommended cleaning materials and procedures and damage repair.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum 2 years experience in work of this Section.

B. Fire Hazard Classification: Class A flame spread/smoke developed rating, tested to ASTM E84.

PART 2 PRODUCTS

2.1 MATERIALS

A. Countertops:
1. Catering kitchen: Solid surface counter.
2. Office kitchenette: Solid surface counter.
3. BOD: Corian solid surface, Wilsonart solid surface.

2.2 ACCESSORIES

A. Adhesive:
1. Type recommended by solid surfacing manufacturer.
2. Maximum volatile organic compound (VOC) content: 70 grams per liter.

B. Joint Sealant: Specified in Section 079200.

2.3 FABRICATION

A. Solid Surfacing Countertops:
1. Fabricate components in shop to sizes and shapes indicated, in accordance with manufacturer's instructions and approved Shop Drawings.
2. Fabricate splashes and skirts from solid surfacing in color to match countertops.
3. Form joints to be inconspicuous in appearance and without voids. Join pieces with adhesive.

4. Provide holes and cutouts for mounting of sinks, trim, and accessories.
5. Finish exposed edges to smooth, uniform profile as selected by Architect.
6. Ease exposed edges.

B. Allowable Tolerances:
   a. Maximum variation in size: 1/8 inch.
   b. Maximum variation in location of openings: 1/8 inch from indicated location.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved Shop Drawings.

B. Set plumb, level, and rigid.

C. Adhere countertops, splashes, and skirts with beads of adhesive.

D. Seal perimeter with joint sealant as specified in Section 079200. Finish smooth and flush.

E. Allowable Tolerances:
1. Maximum variation from level and plumb: 1/8 inch in 10 feet, noncumulative.
2. Maximum variation in plane between adjacent pieces at joint: Plus or minus 1/32 inch.

3.2 ADJUSTING

A. Buff out minor scratches and abrasions.

3.3 PROTECTION

A. Protect surfaces from damage with nonstaining coverings.

END OF SECTION

SECTION 210055

BASIC FIRE SUPPRESSION MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following basic Fire Suppression materials and methods to complement other Fire Suppression Sections.
   1. Piping materials and installation
   2. Escutcheons.
   3. Sleeves.
   4. Mechanical sleeve seals.
   5. Installation requirements common to equipment specification sections.
   6. Fire Suppression Piping and Equipment Demolition.
   7. Painting and finishing.

B. Pipe and pipe fitting materials are specified in Plumbing piping system Sections, if applicable.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.3 SUBMITTALS

A. Product Data: For escutcheon, sleeves, and mechanical sleeve seals.

1.4 QUALITY ASSURANCE

A. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

B. Equipment Selection: Equipment of higher electrical characteristics, physical dimensions, capacities, and ratings may be furnished provided such proposed equipment is approved in writing and connecting mechanical and electrical services, circuit breakers, conduit, motors, bases, and equipment spaces are increased. Additional costs shall be approved in advance by appropriate Contract Modification for these increases. If minimum energy ratings or efficiencies of equipment are specified, equipment must meet design and commissioning requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and prevent entrance of dirt, debris, and moisture.

B. Protect stored pipes and tubes from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor, if stored inside.

C. Protect flanges, fittings, and piping specialties from moisture and dirt.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate Fire Suppression equipment installation with other building components.

B. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction to allow for plumbing installations.

C. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components, as they are constructed.

D. Sequence, coordinate, and integrate installations of plumbing materials and equipment for efficient flow of the Work. Coordinate installation of large equipment requiring positioning before closing in building.

E. Coordinate connection of Fire Suppression systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.

F. Coordinate installation of identifying devices after completing covering and painting, if devices are applied to surfaces. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Mechanical Sleeve Seals:
      a. Calpico, Inc.
      b. Metraflex Co.
      c. Thunderline/Link-Seal.

2.2 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, used to fill annular space between pipe and sleeve.

   1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe materials and size of pipe.
   2. Pressure Plates: Stainless steel.
   3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.3 PIPING SPECIALTIES

A. Sleeves: The following materials are for wall, floor, slab, and roof penetrations:
   1. Steel Sheet Metal: 16 gage, galvanized, round tube closed with welded longitudinal joint.
   2. Steel Pipe: ASTM A 53, Type E, Grade A, Schedule 40, galvanized, plain ends.

3. Sleeve Fasteners: Manufactured, steel clips for securement during pour. Equal to B-line, BD40, BE-5-8 or BE-9-12.

B. Escutcheons: Manufactured wall, ceiling, and floor plates; deep-pattern type if required to conceal protruding fittings and sleeves.
   1. ID: Closely fit around pipe, tube, and insulation of insulated piping.
   2. OD: Completely cover opening.
   3. Cast Brass: One piece, with set screw. (split face acceptable for existing piping)
      a. Finish: Polished chrome-plate.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS AND APPLICATIONS

A. General: Install piping as described below, unless piping Sections specify otherwise. Individual piping Sections specify unique piping installation requirements.

B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.

C. Install piping at indicated slope.

D. Install components with pressure rating equal to or greater than system operating pressure.

E. Install piping in concealed interior and exterior locations, except in equipment rooms and service areas.

F. Install piping free of sags and bends.

G. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, unless otherwise indicated.

H. Install piping tight to slabs, beams, joists, columns, walls, and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.

I. Install piping to allow application of insulation plus 1-inch clearance around insulation.

J. Locate groups of pipes parallel to each other, spaced to permit valve servicing.

K. Install fittings for changes in direction and branch connections.

L. Install couplings according to manufacturer's written instructions.

N. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements in Specification Section "Penetration Firestopping" for firestop materials and installations.
   1. Fire-stop all sleeves at floor penetrations of multistory buildings including underfloor penetrations.

3.2 ESCUTCHEON REQUIREMENTS

A. Install escutcheons at pipe penetrations of walls, ceilings, and floors in finished areas.
   1. Escutcheons for New Piping:
      a. Piping exposed through floors and walls in finished areas: One piece, cast brass with polished chrome-plated finish with set screw. Deep escutcheons to be provided where standard depth will not fit.

b. Escutcheons shall cover entire hole penetration.
c. Escutcheon to be appropriately sized for pipe.

2. Escutcheons for Existing piping:
   a. Piping exposed through floors and walls in finished areas: Split plate, cast brass with polished chrome-plated finish with set screw. Deep escutcheons to be provided where standard depth will not fit.
   b. Escutcheons shall cover entire hole penetration.
   c. Escutcheon to be appropriately sized for pipe.
3. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

3.3 PIPE SLEEVE INSTALLATION REQUIREMENTS

A. Sleeves are required for all through floor and wall penetrations. Sleeves to be set and poured in place (in slab applications), secure all sleeves with fasteners. Sleeves to extend 2 inches past face of floor or wall. Pipe sleeve in finished areas to be flush with wall or floor for installation of escutcheon. Install sleeves in new partitions, slabs, and walls as they are built.

B. Pipe sleeves are required at all through wall and floor penetrations.

C. Install sleeve materials according to the following applications:
   1. Sleeves for Piping Passing through Concrete Floor Slabs: galvanized steel pipe.
   2. Sleeves for Piping Passing through Concrete Floor Slabs of Mechanical Equipment Areas or Other Wet Areas: Galvanized-steel pipe sleeves.
      a. Extend sleeves 2 inches above finished floor level.
      b. For pipes penetrating floors with membrane waterproofing, extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Comply with requirements in Division 07 Section "Sheet Metal Flashing and Trim" for flashing.
      c. Sleeves for Piping Passing through Gypsum-Board Partitions:
         1) Galvanized-steel pipe sleeves, or galvanized-steel sheet metal sleeve.
         2) Exception: Sleeves are not required for water supply tubes and waste pipes for individual plumbing fixtures if escutcheons will cover openings.
      d. Sleeves for Piping Passing through Concrete Roof Slabs: Reference Structural/Architectural details.
      e. Sleeves for Piping Passing through Concrete Walls:
         1) Galvanized-steel pipe sleeves.
         2) Install sleeves that are large enough to provide 1-inch annular clear space between sleeve and pipe or pipe insulation when sleeve seals are used.

D. Ratproofing: The open space around all piping, ductwork, etc. passing through the ground floor and/or exterior walls shall be ratproofed in a manner acceptable to the Owner's Representative.

E. Mechanical sleeve seals
   1. Install sleeve seals in sleeves in exterior concrete walls at water-service piping entries into building. Sleeves must be poured in place. Installation of sleeves after wall is constructed is not acceptable.
   2. Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble sleeve seal components and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
   3. For exterior wall penetrations below grade, seal annular space between sleeve and pipe using sleeve seals specified in this Section.
      a. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation unless otherwise indicated. Seal annular space with

water tight sealant (equal to NP-1). All sleeves and penetrations to maintain rating of wall/floor. Seal pipe penetrations with fire-stopping materials.

F. Piping Connections: Make connections according to the following, unless otherwise indicated:
   1. Install unions, in piping 2-inch NPS and smaller, adjacent to each valve and at final connection to each piece of equipment with 2-inch NPS or smaller threaded pipe connection.
   2. Install flanges, in piping 2-1/2-inch NPS and larger, adjacent to flanged valves and at final connection to each piece of equipment with flanged pipe connection.

3.4 EQUIPMENT INSTALLATION – COMMON REQUIREMENTS

A. Install equipment to provide maximum possible headroom, if mounting heights are not indicated.

B. Install equipment according to approved submittal data. Portions of the Work are shown only in diagrammatic form. Refer conflicts to Architect.

C. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

D. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations.

E. Install equipment giving right of way to piping installed at required slope.

3.5 PAINTING AND FINISHING

A. Apply paint to exposed piping according to the following, unless otherwise indicated:
   1. Interior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
   2. Interior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over galvanized metal primer.
   3. Interior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
   4. Exterior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over rust-inhibitive metal primer.
   5. Exterior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over galvanized metal primer.
   6. Exterior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include two finish coats over rust-inhibitive metal primer.

B. Do not paint piping specialties with factory-applied finish.

C. Extend paint up to, not including, sprinkler heads.

D. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.6 DEMOLITION

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for Fire Suppression installations. Perform cutting by skilled mechanics of trades involved.

B. Repair cut surfaces to match adjacent surfaces.

3.7 CUTTING AND PATCHING

A. Disconnect, demolish, and remove Work specified in Fire Suppression Sections.

B. If pipe or equipment to remain is damaged or disturbed, remove damaged portions and install new products of equal capacity and quality.

C. Accessible Work: Remove indicated exposed pipe and ductwork in its entirety.

D. Work Abandoned in Place: Cut and remove underground pipe a minimum of 2 inches beyond face of adjacent construction. Cap and patch surface to match existing finish.

E. Removal: Remove indicated equipment from Project site.

F. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational equipment indicated for relocation.

END OF SECTION 210055

SECTION 210100

SPECIAL CONDITIONS FOR ALL FIRE SUPPRESSION WORK

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section covers the general provisions of the fire suppression specifications applicable to the following systems:
   1. Fire Protection.

1.2 DRAWINGS

A. These specifications are accompanied by drawings of the building and details of the installations showing the locations of equipment, piping, etc. The drawings and these specifications are complementary to each other; requirements described in one or the other shall be considered binding as if described in both.

B. If any departures from the drawings are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted to the Owner's Representative for approval. No departures shall be made without prior written approval by the Owner's Representative.

C. There are intricacies of construction which are impractical to specify or indicate in detail; means and methods for performing such work shall adhere to commonly accepted industry standards.

D. It is the Contractor's responsibility to properly use all information found on the Architectural, Structural, Mechanical and Electrical drawings and applicable shop drawings where such information affects his work.

E. For new buildings, all final dimensions shall be scaled from the drawings, unless otherwise noted. For work associated with existing buildings (renovations and additions), all final dimensions shall be field verified.

1.3 CONSTRUCTION REQUIREMENTS

A. The architectural, civil, structural, electrical, plumbing, fire protection and Fire Suppression drawings, and specifications are all part of the Contract Documents. In many instances there are details described another trade's drawings that are not necessarily included or referenced in the fire suppression drawings. It is the Contractor's responsibility to review in detail all parts of the Contract Documents prior to submitting a bid. Failure to comply with this requirement shall not relieve the Contractor of responsibility or be used as cause for additional compensation because architectural, structural, or electrical details were not included in the fire suppression drawings.

B. It is the intent of the Contract Documents to provide complete and fully functional installation in every respect. Material and/or construction details not specifically described in the Contract Documents, but commonly considered incidental to the industry, are required by the Contractor.

C. The Contractor shall be responsible for fitting his material and apparatus into the building and shall carefully lay out his work at the site to conform to the structural conditions, to avoid all obstructions, to comply with Codes, to facilitate the work of other trades, to conform to the details of the installation supplied by the manufacturer of the equipment to be installed, and thereby to provide an integrated satisfactory operating installation.

D. Final placement of serviceable equipment shall be carefully coordinated with all other trades to ensure sufficient clearance for maintenance according to manufacturer's recommendations. Lubricating orifices and adjustable components shall be easily accessible. Piping, conduit, valve stems, cabling and other building systems shall not interfere with service space.

E. Location of Exposed Devices

1. All exposed devices (sprinkler heads, fire risers, pumps, etcetera) shall be referenced to fixed data points that are coordinated with all trades; shall be located to present symmetrical arrangements with respect to the fixed data point; and shall facilitate the proper arrangements of acoustical ceiling tiles. Fixed data points shall include such features as wall and ceiling lines, soffits, balanced border widths, masonry joints, etc. Devices located in acoustical ceiling tiles shall occur symmetrically in tile joints or in the centers of whole tiles. The final determination of the exact location of each outlet and the arrangements to be followed shall be acceptable to the Owner's Representative.

1.4 QUALIFICATIONS

A. Contractor must have minimum of five years experience installing fire suppression systems similar to those described in these Contract Documents.

B. Contractor must be licensed and hold a current contracting license that has been valid for a minimum of five years in the State of Texas.

C. Contractor must be able to bond work for payment and performance of work being bid. Contractor's bonding agency shall have a Best's insurance rating of A or A+.

1.5 MATERIAL AND EQUIPMENT REQUIREMENTS

A. Manufacturer's Instructions: The manufacturer's published instructions shall be followed for preparing, assembling, installing, erecting, and cleaning manufacturer materials or equipment, unless otherwise indicated. The Contractor shall promptly notify the Owner's Representative in writing of any conflict between the requirements of the Contract Documents and the manufacturer's direction and shall obtain the clarification of the Owner's Representative before proceeding with the work. Should the Contractor perform any such work that does not comply with the manufacturer's directions or such clarification by the Owner's Representative, he shall bear all costs arising in connection with the correction of the deficiencies.

B. Storage at Site: The Contractor shall not receive material or equipment at the jobsite until there is suitable space provided to properly protect equipment from rust, drip, humidity, and dust damage and from surrounding work.

C. Capacities shall be not less than those indicated and shall be such that no component or system becomes inoperative or is damaged because of startup or other overload conditions.

D. Conformance to Agency Requirements: Where materials or equipment are specified to be approved, listed, tested, or labeled by the Underwriters Laboratories, Inc., or constructed and/or tested in accordance with the standards of the American Society of Mechanical Engineers, the Contractor shall submit proof that the items furnished under this section of the specifications conform to such requirements. The label of Underwriters Laboratories, Inc. applied to the item will be acceptable as sufficient evidence that the items conform to such requirements. The ASME stamp or the AMCA label will be acceptable as sufficient evidence that the items conform to the respective requirements.

E. Nameplates: Each major component of equipment shall have the manufacturer's name, address, and model-identification number on a plate securely attached to the item of equipment. All data on nameplates shall be legible at the time of Final Inspection.

F. Prevention of Rust: Standard factory finish will be acceptable on equipment specified by model number; otherwise surfaces of ferrous metal shall be given a rust-inhibiting coating. The treatment shall withstand 200 hours in salt-spray fog test, in accordance with Method 6061 of Federal Standard No. 141. Immediately after completion of the test, the specimen shall show no signs of wrinkling or cracking and no signs of rust creepage beyond 1/8 inch on either side of the scratch mark. Where rust inhibitor coating is specified hereinafter, any treatment that will pass the above test is acceptable unless a specific coating is specified, except that coal tar or asphalt-type coatings will not be acceptable unless so stated for a

specific item. Where steel is specified to be hot-dip galvanized, mill-galvanized sheet steel may be used provided all raw edges are painted with a zinc-pigmented paint conforming to Military Specification MIL-P-26915.

G. Protection from Moving Parts: Belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts located so that any person can come in close proximity thereto, shall be fully enclosed or properly guarded.

H. Drive Guards: For machinery and equipment, provide guards as shown in AMCA 410 for belts, chains, couplings, pulleys, sheaves, shafts, gears, and other moving parts regardless of height above the floor. Drive guards may be excluded where motors and drives are inside factory-fabricated air handling units casings. Guards shall be constructed of sheet steel, cast iron, expanded metal, or wire mesh rigidly secured so as to be removable without disassembling pipe duct or electrical connection to equipment. Provide a 1-inch diameter hole in each drive guard at each shaft center to allow access for speed measurement.

I. Verifications of Dimensions: The Contractor shall be responsible for the coordination and proper relation of his work to the building structure and to the work of all trades. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working conditions, to verify all dimensions in the field, and to advise the Owner's Representative of any discrepancy before performing any work. Adjustments to the work required in order to facilitate a coordinated installation shall be made at no additional cost to the Owner, Architect, or Engineer.

J. Standard Products: Materials and equipment to be provided shall be the standard catalog products of manufacturers regularly engaged in the manufacture of products conforming to these specifications, and shall essentially duplicate materials and equipment that have been in satisfactory use at least two years.

1.6 INSPECTION OF THE SITE

A. The Contractor shall visit the site, verifying all existing items indicated on drawings and/or specified, and familiarize himself with the existing work conditions, hazards, grades, actual formations, soil conditions, structures, utilities, equipment, systems, facilities, and local requirements. The submission of bids shall be deemed evidence of such visits. All proposals shall take these existing conditions into consideration, and the lack of specific information shall not relieve the Contractor of any responsibility.

1.7 UTILITY LOCATIONS AND ELEVATIONS

A. Locations and elevations of the various utilities included within the scope of this work have been obtained from substantially reliable sources and are offered separately from the Contract Documents, as a general guide only, without guarantee as to accuracy. Examine the site, the locations, and availability of all utilities and services required for their relation to the work. Verify the location of all existing site utilities with each responsible utility company or applicable party. The Contractor shall repair all damage to existing utilities, whether indicated on the drawings or not, at his sole expense.

1.8 PERMITS, UTILITY CONNECTIONS, AND INSPECTIONS

A. Permitting Fees: Contractor shall pay for all fees associated with permits required by municipal authorities having jurisdiction.

B. Tapping and Impact Fees: Contractor shall pay for all fees associated with tapping into municipal utility mains, including domestic water. Impact fees will be paid for by the Owner.

C. Compliance: The Contractor shall comply in every respect with all requirements of local authorities having jurisdiction, including building inspections, fire marshal, local ordinances and codes, and utility company requirements. In no case does this relieve the Contractor of the responsibility of complying with these specifications and drawings where specified conditions are of a higher quality than the requirements of the above-specified authorities. Where requirements of the specifications and drawings

are below the requirements of the above offices having jurisdiction, the Contractor shall make installations in compliance with the requirements of the above authorities.

D. Utilities: The Contractor shall coordinate with the various utility companies involved in this project and shall provide required utility relocations, extensions, modifications, and/or changes (complete in all respects) as described in the Contract Documents. Contractor shall verify the location of all existing utilities with the applicable Utility Company. The Contractor shall be responsible for all damages to existing utilities, whether indicated on drawings or not, and repair all damage to existing utilities as acceptable to the affected Utility Company.

E. Certification: Prior to final acceptance, the Contractor shall furnish a certificate of acceptance from the inspection departments having jurisdiction over the work for any and all work installed under this Contract. Any additional labor costs incurred as a result of a substitution shall be the Contractor's responsibility.

1.9 EXISTING FACILITIES

A. The Contractor shall be responsible for loss or damage to the existing facilities caused by him and his workmen, and shall be responsible for repairing or replacing such loss or damage. The Contractor shall send proper notices, make necessary arrangements, and perform other services required for the care, protection, and in-service maintenance of all plumbing, heating, air conditioning, and ventilating services for the new and existing facilities. The Contractor shall erect temporary barricades, with necessary safety devices, as required to protect personnel from injury, removing all such temporary protection upon completion of the work.

B. The Contractor shall provide temporary or new services to all existing facilities as required to maintain their proper operation when normal services are disrupted as a result of the work being performed under this project.

C. Outages of services as required by the new installation will be permitted but only at a time approved by the Owner. The Contractor shall allow the Owner two weeks in order to schedule required outages. The time allowed for outages will not be during normal working hours unless otherwise approved by the Owner. All costs of outages, including overtime charges, shall be included in the contract amount.

1.10 DEMOLITION AND RELOCATION

A. The Contractor shall modify, remove, and/or relocate all materials and items so indicated on the drawings or required by the installation of new facilities. All removals and/or dismantling shall be conducted in a manner as to produce maximum salvage. Salvage materials shall remain the property of the Owner, and shall be delivered to such destination or otherwise disposed of as directed by the Owner. Materials and/or items scheduled for relocation and which are damaged during dismantling or reassembly operations shall be repaired and restored to good operative condition. The Contractor may, at his discretion, and upon the approval of the Owner, substitute new materials and/or items of like design and quality in lieu of materials and/or items to be relocated.

B. All items which are to be relocated shall be carefully removed in reverse to original assembly or placement and protected until relocated. The Contractor shall clean and repair and provide all new materials, fittings, and appurtenances required to complete the relocations and to restore to good operative order. All relocations shall be performed by workmen skilled in the work and in accordance with standard practice of the trades involved.

C. When items scheduled for relocation and/or reuse are found to be in damaged condition before work has been started on dismantling, the Contractor shall call the attention of the Owner to such items and receive further instructions before removal. Items damaged in repositioning operations are the Contractor's responsibility and shall be repaired or replaced by the Contractor as approved by the Owner, at no additional cost to the Owner.

D. Service lines and wiring to items to be removed, salvaged, or relocated shall be removed to points indicated on the drawings, specified, or acceptable to the Owner. Service lines and wiring not scheduled

for reuse shall be removed to the points at which reuse is to be continued or service is to remain. Such services shall be sealed, capped, or otherwise tied off or disconnected in a safe manner acceptable to the Owner. All disconnections or connections into the existing facilities shall be done in such a manner as to result in minimum interruption of services to adjacent occupied areas. Services to existing areas or facilities which must remain in operation during the construction period shall not be interrupted without prior specific approval of the Owner as hereinbefore specified.

1.11 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. No substitution of materials or equipment herein specified or called for on the drawings will be permitted, except by written permission of the Owner's Representative. Where several makes of equipment or material are mentioned, any item named may be bid upon provided it meets space, capacity specifications, and other requirements.

1.12 SUBMITTALS

A. Submittals for Review:
   1. As soon as practical or within 30 days after the date of contract award or notice to proceed, and before purchasing or starting installation of any materials or equipment, the Contractor shall submit for review sufficient material and equipment data to indicate that all requirements of the specifications have been met and samples shall be furnished when requested. All manufacturer's data used as part of the submittal shall have all non-applicable features crossed out or deleted in a manner that will clearly indicate exactly what is to be furnished.
   2. Digital copies of the submittal list and detailed submittals (for the Owner's and A/E's use) shall be submitted to the Owner's Representative. The Contractor is requested to include three hard copies for insertion in the project's Owner's Manuals at the completion of the project, and the number of additional copies the Contractor requires for his and his subcontractor's use during the project's construction. The detailed submittals shall be accompanied by the same number of sets of pictorial and descriptive data derived from the manufacturer's catalogs and sales literature, or incorporated in the shop drawings. The Contractor may provide a detailed submittal on any item even though not required by the Owner's Representative.

B. Format
   1. Submittals shall in pdf format. The front sleeve shall have a cover sheet with the title "FIRE SUPPRESSION SUBMITTALS" centered in large print. Below the title shall be the name of the project, the date, the project location, the name and address of the contractor, the name and address of the subcontractor and the name and address of the engineer(s) in smaller print.
   2. Provide a Table of Contents that summarizes the information being submitted according to specification section.
   3. Submittals shall be tab divided by specification section; **all sections** identified in the project specifications shall have a tab. When no information is being provided concerning a particular specification section, insert a single dated sheet that explains the circumstances.

C. Content:
   1. The Contractor shall prepare or cause to be prepared shop drawings, product data, materials and equipment lists, diagrams, data, samples, and other submittals as required by the contract documents, hereinafter referred to as "Submittal Data." The Contractor shall review and approve all submittal data for compliance with the contract documents, manufacturer's recommendations, adequacy, clearances, code compliance, safety, and coordination with associated work.
   2. The Contractor shall submit approved submittal data to the Owner's Representative for review and comment as to general conformance with the design concept and general compliance with information given in the contract documents. Owner's Representative's review shall not include review of quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with other trades or work, or construction safety and precautions, all of which are the sole responsibility of the Contractor.

3. The Contractor shall clearly and specifically identify and call to the attention of the Owner's Representative any deviation from the contract documents for which Owner acceptance is desired. The responsibility for such a deviation accepted by the Owner shall remain with the Contractor.
4. Timeliness: The burden of timeliness in the complete cycle of submittal data is on the Contractor. The Contractor shall allow a minimum of two (2) weeks' time frame for review of each submission by the Owner's Representative. The Contractor is responsible for allowing sufficient time in the construction schedule to cover the a forementioned cycles of data processing, including time for all re-submission cycles on nonconforming materials, equipment, etc. covered by the data submitted. Construction delays and/or lack of timeliness in the above regard are the responsibility of the Contractor and will not justify any request for scheduled construction time extensions or extra compensation.
5. Work performed in accordance with approved submittal data that is not in accordance with the Contract Documents and did not have the specific acceptance of the Owner's Representative shall be replaced at Contractor's cost.

D. Re-submittals
1. Re-submit entire submittal in accordance with afore mentioned format and content requirements. **Loose-leaf or piecemeal re-submittals are not acceptable.** New and/or revised data for each section shall be prefaced with a colored (yellow, pink, orange, etc) cover sheet that identifies (in a word or two) the materials and/or equipment being re-submitted. Typeset the words "REVISED SUBMITTAL NO. 1 (or 2, 3 as applicable)" centered at the bottom of the cover sheet.
2. Subsequent re-submittals (second and third, if necessary) shall have different colored cover sheets to distinguish between the various re-submittals.
3. Include a cover letter at front of binder that specifically responds to each "REVISE AND RE-SUBMIT COMMENT" or "REJECTED" comment by number. Example responses would include the following:
   a. RESPONSE: "Please see attached re-submittal."
   b. RESPONSE: "Will be re-submitted at a later date."
   c. RESPONSE: "Requirement for (xxxxxx) was deleted in Addendum No. 2."
   d. RESPONSE: "Exception requested based on Section xx, Paragraph x.x.x.

E. These paragraphs related to Fire Suppression submittal data supersede any conflicting requirements contained in Division 01 sections.

1.13 ACCEPTANCE OF MATERIALS AND EQUIPMENT

A. All equipment installed on this project shall have **local (within 125 miles)** representation, local factory-authorized service, and a local stock of repair parts. This requirement is essential and will be strictly reviewed by the Owner's Representative prior to concurrence with the Contractor's approval for all submittals covered by Fire Suppression sections of this Specification.

B. NOTICE: The Contractor is responsible for providing materials and equipment that conform to the requirements of the project manual in every respect unless a deviation has been "accepted" in writing. Removal of any nonconforming materials and equipment and the replacement with conforming materials and equipment shall be at the Contractor's sole expense, regardless of when nonconformance was discovered.

C. Approval of materials and equipment shall be based on manufacturer's published data and shall be tentatively subject to the submission of complete shop drawings which comply with the contract documents. Approval is also dependent upon the existence of adequate and acceptable clearances for entry, servicing, and maintenance.

D. Approval of materials and equipment under this provision shall not be construed as authorizing any deviations from the specifications, unless the attention of the Owner's Representative has been directed in writing to the specific deviations. Data submitted shall not contain unrelated information unless all pertinent information is properly identified.

E. Physical Size of Equipment: Space is critical; therefore, equipment of larger sizes than shown, even though of approved manufacturer, will not be acceptable unless it can be demonstrated that ample space exists for proper installation, operation, and maintenance.

1.14 SHOP DRAWINGS

A. As soon as practicable after the award of contract and approval of materials and equipment, but prior to installation, complete and detailed shop drawings of the Fire Suppression System shall be submitted for review and comment. The following systems are to be coordinated on the Shop Drawings:
   1. Equipment arrangements.
   2. Duct layouts.
   3. Piping layouts.
   4. Cable Tray.
   5. Sprinkler locations.
   6. Other details as directed by the Owner's Representative. Composite drawings of areas requiring coordination between trades shall be provided and expedited to eliminate conflicts and to ensure maximum cooperation and work progress.

B. Work performed without benefit of reviewed and approved shop drawings **will not be recommended for payment by the Engineer** until such time as the shop drawings are submitted, reviewed, and approved. Any work performed without the benefit of reviewed and approved shop drawings may require removal, relocation, and/or replacement at the Contractor's sole expense in order to resolve conflicts between the various systems and provide the performance specified.

C. All installation of equipment, fixtures, terminal devices, etc. shall be made in accordance with approved composite shop drawings. The Contractor shall modify installation and relocate installed work to provide code clearances, service access, and eliminate conflict with other systems.

D. Submit approved shop drawings in pdf format.

1.15 SITE OBSERVATION

A. Site observation by the Architect, Engineer, and/or Owner's Representative is for the express purpose of verifying compliance by the Contractor with the contract documents, and shall not be construed as construction supervision nor indication of approval of the manner or location in which the work is being performed as being a safe practice or place.

1.16 SUPERVISION

A. In addition to the Superintendent required under the conditions of the contract, each subcontractor shall keep a competent superintendent or foreman on the job at all times.

B. It shall be the responsibility of each superintendent to study all plans and familiarize himself with the work to be done by other trades. He shall coordinate his work with other trades and, before material is fabricated or installed, make sure that his work will not cause an interference with another trade. Where interferences are encountered, they shall be resolved at the jobsite by the superintendents involved. Where interferences cannot be resolved without major changes to the plans, the matter shall be referred to the Owner's Representative for comments.

1.17 OPERATION PRIOR TO COMPLETION

A. When any piece of mechanical equipment is operable and it is to the advantage of the Contractor to operate the equipment, he may do so, providing that he properly supervises the operation and has the written permission of the Owner's Representative to do so. The warranty period shall not commence, however, until such time as the equipment is operated for the beneficial use of the Owner or date of substantial completion, whichever occurs first.

B. Regardless of whether the equipment has or has not been operated, the Contractor shall properly clean the equipment, properly adjust, and complete all deficiency list items before final acceptance by the Owner. The date of acceptance and the start of the warranty may not be the same date.

1.18 MANUFACTURER'S RECOMMENDATIONS

A. The manufacturer's published directions shall be followed in the delivery, storage, protection, installation, piping, and wiring of all equipment and material. The Contractor shall promptly notify the Owner's Representative, in writing, of any conflict between the requirements of the contract documents and the manufacturer's directions and shall obtain the Owner's Representative's comments before proceeding with the work. Should the Contractor perform any such work that does not comply with the manufacturer's directions or applicable comments from the Owner's Representative, he shall bear all costs arising in connection with the correction of such deficiencies.

1.19 CHECKING AND TESTING MATERIALS AND/OR EQUIPMENT

A. Before final acceptance of the work, an authorized representative of the manufacturer of the installed materials and/or equipment shall personally inspect the installation and operation of his materials and/or equipment to determine that it is properly installed and in proper operating order. Testing and checking shall be accomplished during the scope of the work where required by work being concealed, and at the completion of the work otherwise. In addition, the Contractor shall submit to the Owner's Representative a signed statement from each representative certifying as follows:
   1. "I certify that the materials and/or equipment listed below have been personally inspected by the undersigned authorized manufacturer's representative and is properly installed and operating in accordance with the manufacturer's recommendations and are asbestos free."

1.20 OPERATING AND MAINTENANCE INSTRUCTION

A. The Contractor shall prepare for the owner's manual hereinafter specified complete sets of operating and maintenance instructions, system piping, valving, control and interlock diagrams, manuals, parts lists, etc. for each item of equipment. These are to be assembled as hereinafter specified for owner's manual.

B. In addition, the Contractor shall provide the service of a competent engineer or a technician acceptable to the Owner's Representative to instruct a representative of the Owner in the complete and detailed operation of all equipment and systems. These instructions shall be provided for a period of sufficient duration to fully accomplish the desired results. Upon completion of these instructions, a letter of release will be required, acknowledged by the Owner, stating the dates of instruction and personnel to whom instructions were given.

C. Additional diagrams, operating instructions, etc. shall be provided as specified hereinafter in the other sections of these specifications.

1.21 MATERIAL AND EQUIPMENT SCHEDULES

A. Contractor shall refer to both drawings and specification for schedules. Where reference is made to items "scheduled on drawings" or "scheduled in specifications," same shall include schedules contained in both the drawings and the specifications. The Contractor's attention is directed to the various specification sections and drawings for schedules.

1.22 APPLICABLE CODES AND STANDARDS

A. The installation shall meet the minimum standards prescribed in the latest editions of the following listed codes and standards, which are made a part of these specifications, except as may be hereinafter specifically modified in these specifications and associated drawings.
   1. National Fire Protection Association Standards (NFPA):
      NFPA 10 - Portable Fire Extinguishers

NFPA 13 – Standard for the installation of sprinkler systems.
NFPA 14 – Standard for the installation of standpipe and hose systems.
NFPA 20 – Standard for installation of stationary pumps
NFPA 54 - National Fuel and Gas Code
NFPA 70 - National Electrical Code
NFPA 90A - Air Conditioning Systems
NFPA 101 - Life Safety Code
NFPA 255 - Method of Test of Surface Burning Characteristics of Building Materials

2. American National Standards Institute (ANSI):
   15-78 - Safety Code for Mechanical Refrigeration
   C.2 - 1984 National Electrical Safety Code
   A117.1 - Handicapped Code
3. American Society of Mechanical Engineers (ASME): Section IV, V, CSD-1
4. American Water Works Association (AWWA): All applicable manuals and standards.
5. American Society of Testing Materials (ASTM): All applicable manuals and standards.
6. National Electrical Manufacturers' Association (NEMA): All applicable manuals and standards.
7. Occupational Safety and Health ACT (OSHA):
   National Sanitation Foundation - Standard No. 2
8. American Society of Heating, Refrigeration, and Air conditioning Engineers (ASHRAE):
   90-80 Energy Conservation in New Building Design
   2001 ASHRAE Handbook of Fundamentals
9. Americans with Disabilities Act, 1990
10. American Gas Association (AGA)
11. Underwriters Laboratories, Inc. (UL)
12. Manufacturer's Standardization Society of the Valve and Fitting Industry (MSS)
13. Applicable State Building Codes (International Building Codes, as amended):
14. Applicable State Mechanical Code (International Mechanical Code, as amended).
15. Applicable State Plumbing Code (International Plumbing Code, as amended).
16. Applicable State Energy Code (International Energy Conservation Code, as amended).

B. All materials and workmanship shall comply with all applicable city, state, and national codes, specifications, and industry standards. All materials shall be listed by Underwriters Laboratories, Inc. as conforming to its standards and so labeled in every case where such a standard has been established for the particular type of material in question.

C. The contract documents are intended to comply with the aforementioned rules and regulations; however, some discrepancies may occur. Where such discrepancies occur, the Contractor shall immediately notify the Owner's Representative in writing of said discrepancies and apply for an interpretation. Should the discovery and notification occur after the execution of a contract, any additional work required for compliance with said regulations shall be paid for as covered by Division 1 of these contract documents, providing no work or fabrication of materials has been accomplished in a manner of noncompliance. Should the Contractor fabricate and/or install materials and/or workmanship in such a manner that does not comply with the applicable codes, rules, and regulations, the Contractor who performed such work shall bear all costs arising in correcting these deficiencies to comply with said rules and regulations.

1.23 DEFINITIONS

A. Refer to the condition of the contract for Division 1 for additional requirements regarding definitions.

B. Where "as required" or "as necessary" is used in these specifications or on the drawings, it shall mean "that situations exist that are not necessarily described in detail or indicated that may cause the Contractor certain complications in performing the work described or indicated. These complications entail the normal coordination activities expected of the Contractor where multiple trades are involved and new or existing construction causes deviations to otherwise simplistic approaches to the work to be performed. The term shall not be interpreted to permit an option on the part of the Contractor to achieve the end result."

C. Where “and/or” is used in these specifications or on the drawings, it shall mean “that situations exist where either one or both conditions occur or are required and shall not be interpreted to permit an option on the part of the Contractor.

1.24 FINAL INSPECTION

A. Refer to Division 1 for additional requirements for final inspection.

B. It shall be the responsibility of the Contractor to personally conduct a careful inspection, assuring himself that the work on the project is ready for final acceptance and developing his own “punch lists,” before calling upon the Owner’s Representative to make a final inspection. Failure of the Contractor to conduct such inspections and provide the Owner’s Representative with a copy of his “punch lists” prior to the final inspection shall be adequate cause for the Owner’s Representative to cancel any Contractor-requested final inspection.

C. In order not to delay final acceptance of the work, the Contractor shall conduct his own “final inspections” prior to requesting the Owner’s Representative to “final” the project; will have all necessary bonds, guarantees, receipts, affidavits, etc. called for in the various articles of this specification prepared and signed in advance; and together with a letter of transmittal listing each paper included, shall deliver the same to the Owner’s Representative at or before the time of said final inspection. The Contractor is cautioned to check over each bond, receipt, etc. before preparing same for submission to see that the terms check with the requirements of the specifications.

D. The final inspection will be made jointly by the Owner’s Representative and the Owner.

1.25 REQUIREMENTS FOR FINAL ACCEPTANCE

A. Requirements for final acceptance shall include but not be limited to the Contractor accomplishing the following:
   1. Construction: Complete all construction.
   2. Deficiency Lists: Correct all deficiencies listed at time of Substantial Completion.
   3. Owner’s Manual: Submit at least 30 days prior to final acceptance on (1) copy of the owner’s manual for the Owner’s Representative’s review and comments. Following acceptance, prepare three (3) copies of bound and indexed owner’s manual, to be delivered at the time of final acceptance, which shall include but not be limited to the following:
      a. System operating instructions.
      b. System control drawings.
      c. System interlock drawings.
      d. System maintenance instructions.
      e. Manufacturers’, suppliers’, and subcontractors’ names, addresses, and telephone numbers, both local representatives and manufacturers’ service headquarters.
      f. Equipment operating and maintenance instructions and parts lists.
      g. Manufacturer’s certifications (see Checking and Testing Materials and/or Equipment, this section).
      h. Contractor’s warranty.
      i. Acceptance certificates of authorities having jurisdiction.
      j. Log of all tests made during course of work.
      k. Owner’s acknowledgment of receipt of instruction, enumerating items in owner’s manual.
      l. List of manufacturers’ guarantees executed by the Contractor.
      m. Certified performance curves.
      n. Owner’s acknowledgment of items of equipment or accessories indicated or specified to be turned over to Owner.
   4. Instructions:
      a. Verbal, as herein specified.
      b. Posted, framed under glass or plastic laminated:
         1) System operating instructions.
         2) System control drawings.
         3) System interlock drawings.

5. Record Drawings: Deliver the specified record drawings to the Owner's Representative.

1.26 RECORD DRAWINGS

A. The Contractor shall maintain a set of contract drawings (black-line prints) at the jobsite on which he shall indicate the installed (as-built) locations.

B. Drawings shall be used for construction reference and shall not leave the field office of the jobsite.

C. Drawings shall include all addenda, ASI's, Change Orders, and existing conditions and equipment that are not reflected in the original contract drawings.

D. Upon completion of work, the Contractor shall obtain CAD files of the contract drawings from the Owner's Representative and transfer the above as-built information into these files. The as-built files shall be permanently marked "RECORD DRAWINGS" and printed on full-size Mylar sheets. Upon completion, the CAD files shall be transferred to CD in AutoCAD 2010 format. Both the CAD files CD and Mylar drawings shall be submitted to the Owner's Representative as part of the Close-out Submittals.

E. Refer to Division 1 paragraph entitled "Record Documents" for additional requirements.

1.27 ALTERNATE PROPOSALS

A. Alternate proposals are summarized in Division 1 and on the bid proposal form. Refer to all sections of the specifications and the drawings to determine the exact extent and scope of the various alternate proposals as each pertains to the work of the various trades.

1.28 WARRANTY

A. General: All work performed (including equipment and materials furnished) under the various sections of these specifications shall be 100% warranted, for a period of one (1) year from the date of final acceptance thereof, against defective materials, design, and unauthorized substitution. Upon receipt of note of failure of any part of the guaranteed equipment and/or facilities during the guaranty period, the affected part(s) or facilities shall be replaced promptly with new parts, etc. by and at the expense of the Contractor. Further, the Contractor shall properly obtain, execute, and forward any and all manufacturer's warranties on equipment furnished under the Contract. Refer to Division 1 for additional requirements.

B. Extended Period: The Contractor shall provide all extended time warranties available from the manufacturer of the equipment provided as standard at no additional cost. This includes all extended warranties where specified with certain equipment as directed in other sections of this Specification.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

A. All materials, unless otherwise specified, shall be current United States manufacture, new, free from all defects, and of the best quality. Foreign goods specifically approved for use by the Owner's Representative prior to bidding may be furnished.

B. Materials and equipment shall be installed in accordance with the manufacturer's recommendations and the best standard practice for the type of work involved. All work shall be executed by mechanics skilled in their respective trades, and the installations shall present a neat, precise appearance.

C. The responsibility for the furnishing and installation of the proper fire suppression equipment and/or material as intended rests entirely upon the Contractor. The Contractor shall request advice and supervisory assistance from the representative of specific manufacturers during the installation.

2.2 FLAME SPREAD AND SMOKE DEVELOPED PROPERTIES OF MATERIALS

A. All materials in concealed locations, including any above-ceiling area, shall have a flame spread rating not over 25 without evidence of continued progressive combustion and a smoke developed rating no higher than 50. Flame spread and smoke developed ratings shall be in accordance with NFPA Standard No. 255.

2.3 FIRE AND SMOKE PARTITION, WALL, AND/OR FLOOR PENETRATIONS

A. Pipe, conduit, etc. shall pass through fire- or smoke-rated floors, partitions, walls, or other barriers within a UL-listed assembly which shall maintain the rating of the applicable wall, floor, partition, or barrier.

B. The Contractor shall review the architectural and structural drawings and determine the location of the fire-rated building elements. Where these elements are penetrated, UL-listed fire-rated penetration assemblies approved by the local authority shall be provided in accordance with the manufacturer's instructions to obtain the required rating.

2.4 FOUNDATIONS / HOUSEKEEPING PADS

A. General: All special foundations and supports required for the proper installation of equipment and pipe shall be provided as hereinafter specified and under the section of the specifications covering the equipment, unless otherwise indicated on the drawings.

B. All equipment shall receive concrete housekeeping pads unless otherwise noted. Equipment to be receive pads are to include (but not limited to): air compressors, fire pumps, etc.

C. Concrete foundations for the support of equipment such as floor-mounted pumps, equipment, etc. shall be not less than 5 1/2 inches high and not less than 4 inches larger (in both directions) than supported unit, unless otherwise noted and shall be poured in forms built of new dressed lumber. All corners of the foundations shall be neatly chaffered by means of sheet metal or triangular wood strips nailed to the form. Pads shall not be laid out directly against walls or structures. 2 inches shall be left available for pad form work. Foundation bolts shall be placed in the forms when the concrete is poured, the bolts being correctly located by means of templates. Allow 1 inch below the equipment bases for alignment and grouting (where applicable). Foundations for equipment located on the exterior of the building shall be provided as indicated. Foundations shall be constructed in accordance with approved shop drawings and shall be reinforced with #4 bars at 12 inches on center both ways (minimum).

2.5 FLOOR AND CEILING PLATES

A. Except as otherwise noted, provide one-piece chrome-plated brass floor and ceiling plates (or escutcheons) around all pipes, conduits, etc. passing through walls, floors, or ceilings in any spaces, except underfloor and attic spaces. Plates shall be sized to fit snugly against the outside of the pipe or against the outside of insulation on lines which are insulated, and positively secured to such pipe or insulation. Plates will not be required for piping where pipe sleeves extend ¾ of an inch above finish floor and are concealed. Plates shall be one piece.

PART 3 - EXECUTION

3.1 SPACE AND EQUIPMENT ARRANGEMENT

A. The size of equipment indicated on the drawings is based on the dimensions of a particular manufacturer. While other manufacturers will be acceptable, it is the responsibility of the Contractor to determine whether the equipment he proposes to furnish will fit in the space. Shop drawings shall be prepared when required by the Owner's Representative to indicate a suitable arrangement.

B. All equipment shall be installed in a manner to permit access to all surfaces.

3.2 PROTECTION

A. The Contractor shall take such precautions as may be necessary to properly protect all materials and equipment from damage from the time of delivery until the completion of work. This shall include the erection of all required temporary shelters and supports to adequately protect any items stored in the open on the site from the weather, the ground and surrounding work; the cribbing of any items above the floor of the construction; and the covering of items in the uncompleted building with tarpaulins or other protective covering. Failure on the part of the Contractor to comply with the above will be sufficient cause for the rejection of the items in question.

B. The Contractor shall protect existing facilities, the work of others, and the premises from any and all damages that may be made possible by the execution of work.

C. Equipment and materials shall be protected from rust both before and after installation. Any equipment or materials found in a rusty condition at the time of final inspection must be cleaned of rust and repainted as specified elsewhere in these specifications.

3.3 COOPERATION BETWEEN TRADES AND WITH OTHER CONTRACTORS

A. Each trade, subcontractor, and/or Contractor must work in harmony with the various trades, subcontractors, and/or Contractors on the job as may be required to facilitate the progress to the best advantage of the job as a whole. Each trade, subcontractor, and/or Contractor must pursue its work promptly and carefully so as not to delay the general progress of the job. This Contractor shall work in harmony with Contractors working under other contracts on the premises.

B. It shall be the responsibility of each trade to cooperate fully with the other trades on the job to help keep the jobsite in a clean and safe condition. At the end of each day's work, each trade shall properly store all of its tools, equipment, and materials and shall clean its debris from the job. Upon the completion of the job, each trade shall immediately remove all of its tools, equipment, any surplus materials, and all debris caused by its portion of the work.

3.4 PRECEDENCE OF MATERIALS AND COORDINATION OF WORK

A. These specifications and the accompanying drawings are intended to cover systems which will not interfere with the structural design of the building, which will fit into the several available spaces, and which will ensure complete and satisfactory systems. Each subcontractor and/or trade shall be responsible for the proper fitting of his material and apparatus into the building.

B. The work of the various trades shall be performed in the most direct and workmanlike manner without hindering or handicapping the work of other trades. Piping interferences shall be handled by giving precedence to pipe lines which require a stated grade for proper operation. Where space requirements conflict, the following order or precedence shall, in general, be observed:
1. Building lines.
2. Structural members.
3. Light fixtures.
4. Soil and drain piping.
5. Condensate drains.
6. Vent piping.
7. Supply, return, and outside air ductwork.
8. Exhaust ductwork.
9. HVAC water and steam piping.
10. Steam condensate piping.
11. Fire protection piping.
12. Natural gas piping.
13. Domestic water (cold and hot).
14. Refrigerant piping.
15. Electrical conduit.

C. The light fixture grid layout as indicated on the drawings must be maintained. This Contractor shall refer to all light fixture plans and details indicated on the drawings and shall coordinate the location of dampers, supply grilles, return air grilles, sprinkler heads, etc. with the location of the light fixtures to assure proper access to all items in a manner acceptable to the Owner's Representative.

3.5 CONNECTIONS FOR OTHERS

A. After the equipment is set in place, this Contractor shall make all final connections and shall provide all required pipe, fittings, valves, traps, connectors, etc.

B. Provide all air gap fittings required, using materials hereinbefore specified. In each water line serving an item of equipment or piece of machinery, provide a shutoff valve.

C. Provide all transition pieces, etc. required for a complete installation of equipment provided by others.

3.6 INSTALLATION METHODS

A. Where to Conceal: All pipes and conduits shall be concealed in pipe chases, walls, furred spaces, below suspended floors, or above the ceilings of the building unless otherwise indicated.

B. Where to Expose: In mechanical rooms, janitor's closets tight against pan soffits in exposed Tee structures, or storage spaces, but only where necessary, piping and conduit may be run exposed. All exposed piping and conduit shall be run in the neatest, most inconspicuous manner, and parallel or perpendicular to the building lines. All exposed piping to be coordinated with Architect.

C. Support: All piping and conduit shall be adequately and properly supported from the building structure by means of hanger rods or clamps to walls as herein specified.

D. Maintaining Clearance: Where limited space is available above the ceilings and below concrete beams or other deep projections, pipe and conduit shall be sleeved through the projection where it crosses, rather than hung below them, in a manner to provide maximum above-floor clearance. Sleeves shall be as herein specified. Approval shall be obtained from the Owner's Representative for each penetration.

E. All pipe, conduits, etc. shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. All pipes, and conduits run exposed in machinery and equipment rooms shall be installed parallel to the building lines, except that they shall be sloped to obtain the proper pitch. Piping run in furred ceilings, etc. shall be similarly installed, except as otherwise shown. Conduits in furred ceilings and in other concealed spaces may be run at angles to the construction but shall be neatly grouped and racked indicating good workmanship. All conduit and pipe openings shall be kept closed until the systems are closed with final connections.

F. Special Requirements:
   1. There shall be no pipe joints nearer than 12 inches to a wall, ceiling, or floor penetration unless pipe joint is a welded or mechanically-coupled-type joint.
   2. The Contractor shall study all construction documents and carefully lay out all work in advance of fabrication and erection in order to meet the requirements of the extremely limited spaces. Where conflicts occur the Contractor shall meet with all involved trades and the Owner's Representative and resolve the conflict prior to erection of any work in the area involved.
   3. Prior to the installation of any ceiling material, gypsum, plaster, or acoustical board, the Contractor shall notify the Owner's Representative so that arrangements can be made for an inspection of the above-ceiling area about to be "sealed off." The Contractor shall give as much advance notice as possible up to five (5) working days, but in no case less than three (3) working days.
   4. The purpose of this inspection is to verify the completeness and quality of the installation of the air conditioning systems, the plumbing systems, and any other special above-ceiling systems such as pneumatic tube. The ceiling supports (tee bar or lath) should be in place so that access panel and light fixture locations are identifiable and so that clearances and access provisions may be evaluated.

5. No ceiling material shall be installed until the deficiencies listed from this inspection have been corrected to the satisfaction of the Owner's Representative.

3.7 TESTS AND INSPECTIONS

A. General: The Contractor shall make all tests deemed necessary by the inspection departments of the authority having jurisdiction, Board of Underwriters, etc. He shall provide all equipment, materials, and labor for making such tests. Fuel and electrical energy for system operational tests following beneficial occupancy by the Owner will be paid for by the Owner.

B. Other: Additional tests specified hereinafter under the various specifications sections shall be made.

C. Notification: The Owner's Representative shall be notified at his office 36 hours prior to each test and other specifications requirements requiring action on the part of the Owner, Architect, Engineer, and/or Owner's Representative.

D. Test Logs: All tests which the Contractor conducts shall have pertinent data logged by the Contractor at the time of testing. Data shall include date, time, personnel, description and extent of system tested, test conditions, test results, specified results, and any other pertinent data. Data shall be delivered to the Owner's Representative as specified under "Requirements for Final Acceptance.

E. Inspections: In general, an inspection by the Owner's Representative shall be required prior to closing up any work and prior to beneficial occupancy or final project completion. The closing up of work includes, but is not limited to, pipe and conduit installations prior to backfilling; mechanical, electrical, and fire protection work prior to placement of concrete; or closing up walls and overhead mechanical, electrical, and fire protection work prior to installation of the ceiling.

3.8 DISCHARGE OF WASTES FROM CONSTRUCTION SITE

A. The Contractor shall comply with all applicable provisions of local, state, and federal laws regarding the discharge of wastes into sewer and waterways. Special caution shall be exercised to prevent the discharge of wastes which contain oil, tar, asphalt, roofing compound, kerosene, gasoline, paint, mud, cement, lime, or other materials which would degrade the water quality of the receiving water course. The Contractor shall construct and maintain oil interceptors, settling basins, acid neutralization tanks, and/or other effective pollution countermeasures, as required by the Texas Water Quality Board.

END OF SECTION 210100

SECTION 210513

COMMON WORK RESULTS FOR FIRE SUPPRESSION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Piping materials and installation instructions.
2. Mechanical sleeve seals.
3. Sleeves.
4. Escutcheons.
5. Grout.
6. Fire-suppression equipment and piping demolition.
7. Equipment installation requirements common to equipment sections.
8. Painting and finishing.
9. Concrete bases.
10. Supports and anchorages.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:

1. CPVC: Chlorinated polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:

1. EPDM: Ethylene-propylene-diene terpolymer rubber.
2. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Mechanical sleeve seals.
2. Escutcheons.

B. Welding certificates.

1.5 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for Fire-Suppression Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

1.7 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for fire-suppression installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

C. Coordinate requirements for access panels and doors for fire-suppression items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section "Access Doors and Frames."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 PIPE, TUBE, AND FITTINGS

A. Refer to individual Fire Suppression Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Fire Suppression Sections for joining materials not listed below.

2.4 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
   1. Manufacturers:
      a. Advance Products & Systems, Inc.
      b. Calpico, Inc.
      c. Metraflex Co.
      d. Pipeline Seal and Insulator, Inc.
   2. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
   3. Pressure Plates: Carbon steel. Include two for each sealing element.
   4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.5 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
   1. Underdeck Clamp: Clamping ring with set screws.

E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.

F. PVC Pipe: ASTM D 1785, Schedule 40.

G. Molded PE: Reusable, PE, tapered-cup shaped and smooth-outer surface with nailing flange for attaching to wooden forms.

2.6 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.

C. One-Piece, Cast-Brass Type: With set screw.
   1. Finish: Polished chrome-plated.

D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
   1. Finish: Polished chrome-plated.

E. One-Piece, Stamped-Steel Type: With set screw and chrome-plated finish.

F. Split-Plate, Stamped-Steel Type: With concealed hinge, spring clips, and chrome-plated finish.

G. One-Piece, Floor-Plate Type: Cast-iron floor plate.

H. Split-Casting, Floor-Plate Type: Cast brass with concealed hinge and set screw.

2.7 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
   1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
   2. Design Mix: 5000-psi, 28-day compressive strength.
   3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 FIRE-SUPPRESSION DEMOLITION

A. Refer to Specification Section "Cutting and Patching" and Specification Section "Selective Structure Demolition" for general demolition requirements and procedures.

B. Disconnect, demolish, and remove fire-suppression systems, equipment, and components indicated to be removed.
   1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
   2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
   3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
   4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
   5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 21 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:

1. New Piping:
    a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
    b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.
    c. Insulated Piping: One-piece, stamped-steel type with spring clips.
    d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type.
    f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    g. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, stamped-steel type and set screw.
    h. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    i. Bare Piping in Unfinished Service Spaces: One-piece, stamped-steel type with concealed.
    j. Bare Piping in Equipment Rooms: One-piece, cast-brass type.
    k. Bare Piping in Equipment Rooms: One-piece, stamped-steel type with set screw.
    l. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.

M. Sleeves are not required for core-drilled holes.

N. Permanent sleeves are not required for holes formed by removable PE sleeves.

O. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.

P. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

1. Cut sleeves to length for mounting flush with both surfaces.
    a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
3. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
    a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
    b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.
    c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Specification Section "Sheet Metal Flashing and Trim" for flashing.

1) Seal space outside of sleeve fittings with grout.

4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Specification Section "Joint Sealants" for materials and installation.

Q. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Install steel pipe for sleeves smaller than 6 inches in diameter.
2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

R. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

S. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Specification Section "Penetration Firestopping" for materials.

T. Verify final equipment locations for roughing-in.

U. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PAINTING

A. Painting of fire-suppression systems, equipment, and components is specified in Specification Sections "Interior Painting" and "Exterior Painting."

B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

C. Sprinkler heads are **not** to be painted.

3.4 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 03.

3.5 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Specification Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor fire-suppression materials and equipment.

C. Field Welding: Comply with AWS D1.1.

3.6 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor fire-suppression materials and equipment.

B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

3.7 GROUTING

A. Mix and install grout for fire-suppression equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

END OF SECTION 210513

SECTION 211313

FIRE SUPPRESSION PIPING WET-PIPE SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provision of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following fire-suppression piping system(s) inside the building. See other specification sections for additional systems requirements.
   1. Wet-pipe sprinkler systems.

B. Related Sections include the following:
   1. Specification Section “Fire Alarm” for alarm devices not specified in this Section.
   2. Specification Section “Basic Fire Protection Materials and Methods.”
   3. Specification Section “Special Conditions for all Fire Suppression Work.”

C. Scope of Work: Install a complete wet-pipe fire sprinkler system **Per NFPA**.

1.3 DEFINITIONS

A. High-Pressure Piping System: Fire-suppression piping system designed to operate at working pressure high than standard 175 psig.

B. Underground Service-Entrance Piping: Underground service piping below the building.

1.4 SYSTEM DESCRIPTION

A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device. Hose connections are included if indicated.

1.5 PERFORMANCE REQUIREMENTS

A. Standard Piping System Component Working Pressure: Listed for at least 175 psig.

B. Fire-suppression sprinkler system design shall be approved for authorities having jurisdiction.
   1. Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping; valves, and backflow preventers.
   2. Sprinkler Occupancy Hazard Classifications:
      a. Building Service Areas: Ordinary Hazard, Group 1.
      b. Electrical Equipment Rooms: Ordinary Hazard, Group 1.
      c. General Storage Areas: Ordinary Hazard, Group 1.
      d. Mechanical Equipment Rooms: Ordinary Hazard, Group 1.
      e. Office and Public Areas: Light Hazard.
   3. Minimum Density for Automatic-Sprinkler Piping Design:
      a. Light-Hazard Occupancy: 0.10 gpm over 1500-sq.ft. (6.3 mL/s over 139-sq. m) area.
      b. Ordinary-hazard, Group 1 Occupancy: 0.15 gpm over 1500-sq. ft. (9.5 mL/s over 139-sq. m) area.

4. Total Combined Hose-Stream Demand Requirement: According to NFPA 13, unless otherwise indicated:
   a. Light-Hazard Occupancies: 100 gpm (6.3 L/s) for 30 minutes.
   b. Ordinary-Hazard Occupancies: 250 gpm (15.75 L/s) for 60 to 90 minutes.

1.6 SUBMITTALS

A. Product Data: For the following: **All products must be UL and/or FMG**
   1. Piping materials, including dielectric fittings and sprinkler specialty fittings.
   2. Pipe hangers and supports.
   3. Valves, including listed fire-protection valves, unlisted general-duty valves, and specialty valves and trim.
   4. Sprinklers, escutcheons, and guards. Include sprinkler flow characteristics, mounting, finish, and other pertinent data.
   5. Hose connections, including size, type, and finish.
   6. Hose stations, including size, type, and finish of hose connections; type and length of fire hoses; finish of fire hose couplings; type, material, and finish of nozzles; and finish of rack.
   7. Alarm devices, including electrical data.

B. Shop Drawings: Diagram power, signal, and control wiring.

C. Fire-hydrant flow test report.

D. Approved Sprinkler Piping Drawings: Working Plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations.

E. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include “Contractor’s Material and Test Certificate for Aboveground Piping” and “contractor’s Material and Test Certificate for Underground Piping.”

F. Welding certificates.

G. Field quality-control test reports.

H. Operation and Maintenance Data: For sprinkler specialties to include in emergency, operation and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Installer’s responsibilities include designing, fabricating, and installing fire-suppression systems and providing design services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test. All work is to be executed by an RME employed by the installing contractor.

B. Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX.

C. Steel Pipe Welding: Quality processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, “Welding and Brazing Qualifications.”
   1. Comply with provisions in ASME B31 Series, “Code for Pressure Piping.”
   2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

D. NFPA Standards: Fire-suppression-system equipment, specialties, accessories, installation, and testing shall comply with the following:

1. NFPA 13, “Installation of Sprinkler Systems.”
2. NFPA 230, “Fire Protection of Storage.”
3. NFPA 231, “Standard for General Storage.”

1.8 COORDINATION

A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Sprinkler Cabinets: Finished, wall-mounting, steel cabinet with hinged cover, with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler on Project.

1.10 STORAGE OF MATERIALS

A. Store all piping on site in a clean, dry, clear area on the jobsite – covered and protected from the elements. Pipe is not to be directly on the ground, support pipe off of ground by wood blocking or other material. All pipe ends are to be capped and protected from the elements until piping is ready for installation. Any piping not covered or protected will be required to be removed from the jobsite and replaced at no cost to the owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Provide products from one of the following manufacturers:
   1. Viking Corp.
   2. Anvil International, Inc.
   3. VGS by Viking
   4. Flex head
   5. ARGCO (Allied Rubber & Gasket Co.)
   6. Tyco
   7. Victaulic Co. of America
   8. Ward Manufacturing
   9. Milwaukee Valve Company
   10. Sigma Valve Co.
   11. Mueller Company
   12. NIBCO
   13. Reliable Automatic Sprinkler Co., Inc.
   14. Watts Industries, Inc.; Water Products Div.
   15. Guardian Fire Equipment Incorporated

2.2 DUCTILE-IRON PIPE AND FITTINGS

A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell end and plain end.
   1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern.
   2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron gland, rubber gasket, and steel bolts and nuts.

B. Push-on-Joint, Ductile-Iron Fittings: AWWA C151, with push-on-joint bell end and plain end.
   1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern.
   2. Gaskets: AWWA C111, rubber.

C. Corrosion-Protective Encasement for Piping
   1. Encasement for Underground Metal Piping: ASTM A674 or AWWA C105, PE film, 0.008-inch minimum thickness, tube or sheet.

2.3 STEEL PIPE AND FITTINGS

A. All steel pipe to be threaded end, grooved end or weld-thread/grooved-end only. Hex/ reducing bushing, locking lug or saddle fittings are NOT acceptable.

B. Threaded-End, Standard-Weight Schedule 40 Steel Pipe: ASTM 135 and with factory- or field-formed threaded ends.
   1. Cast-Iron Threaded: ASME B16.1, Class 125.
   2. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150.
   3. Steel Threaded Pipe Nipples: ASME A733, made of ASTM A 53/A 53M or ASTM A106, Schedule 40. Include ends matching joining method.

C. Grooved-End, Standard-Weight Schedule 10 Steel Pipe: ASTM A 135 and with factory- or field-formed, square-cut- or roll-grooved ends.
   1. Grooved-End Fittings: UL-listed, ASTM A 536, ductile-iron casting with OD matching steel-pipe OD.
   2. Grooved-End-Pipe Couplings: UL 213 and AWWA C606, rigid pattern, unless otherwise indicated; gasketed fitting matching steel-pipe OD. Include ductile-iron housing with keys matching steel-pipe and fitting grooves, pre-lubricated rubber gasket listed for use with housing, and steel bolts and nuts.

D. Welded-Threaded-End/Grooved-End, Schedule 40 Steel Fittings: ASTM A 53, Grade A (Weld-o-let).
   1. UL/FM approved.

2.4 SPRINKLER SPECIALTY FITTINGS

A. Sprinkler specialty fittings shall be UL listed or FMG approved, with 175-psig minimum working-pressure rating and made of materials compatible with piping.

B. Sprinkler Drain and Alarm Test Fittings: Cast- or ductile-iron body; with threaded inlet and outlet, test valve and orifice and sight glass.

C. Sprinkler Branch-Line Test Fittings: Brass body with threaded inlet, capped drain outlet, and threaded outlet for sprinkler.

D. Sprinkler Inspector’s Test Fitting: Cast- or ductile-iron housing with threaded inlet and drain outlet and sight glass.

E. Drop-Nipple Fittings: UL 1474, adjustable with threaded inlet and outlet and seals.

F. Flexible Drops: FMG approved Viking or equal.

2.5 LISTED FIRE-PROTECTION VALVES

A. Valves shall be UL listed or FMG approved, with 175-psig minimum pressure rating.

B. Ball Valves: Comply with UL 1091, except with ball instead of disc.
   1. NPS 1-1/2 and Smaller: Bronze body with threaded ends.

2. NPS 2 and NPS 2-1/2: Bronze body with threaded ends or ductile-iron body with grooved ends.
3. NPS 3: Ductile-iron body with grooved ends.

C. Butterfly Valves: UL 1091.
1. NPS 2 and Smaller: Bronze body with threaded ends.
2. NPS 2-1/2 and Larger: Bronze, cast-iron, or ductile-iron body; wafer type or with flanged or grooved ends.

D. Check Valves NPS 2 and Larger: UL 312, swing type, cast-iron body with flanged or grooved ends.

E. Gate Valves: UL 262, OS&Y type.
1. NPS 2 and Smaller: Bronze body with threaded ends.
2. NPS 2-1/2 and Larger: Cast-iron body with flanged ends.

2.6 UNLISTED GENERAL-DUTY VALVES

A. Ball Valves NPS 2 and Smaller: 2-piece copper-alloy body with stainless steel trim, 600-psig minimum CWP rating, blowout-proof stem, and threaded ends.

B. Check Valves NPS 2 and Smaller: Type 4, Class 125 minimum, swing type with bronze body, nonmetallic disc, and threaded ends.

C. Gate Valves NPS 2 and Smaller: Type 2, Class 125 minimum, with bronze body, solid wedge, and threaded ends.

D. Globe Valves NPS 2 and Smaller: Type 2, Class 125 minimum, with bronze body, nonmetallic disc, and threaded ends.

2.7 SPECIALTY VALVES

A. Sprinkler System Control Valves: UL listed or FMG approved, cast- or ductile-iron body with flanged or grooved ends, and 175-psig minimum pressure rating.
1. Alarm Check Valves: UL 193, designed for horizontal or vertical installation, with bronze grooved seat with O-ring seals, single-hinge pin, and latch design. Include trim sets for bypass, drain, electrical sprinkler alarm switch, pressure gages, retarding chamber and fill-line attachment with strainer.
a. Drip Cup Assembly: Pipe drain without valves and separate from main drain piping.
b. Drip Cup Assembly: Pipe drain with check valve to main drain piping.

B. Automatic Drain Valves: UL 1726, NPS 3/4, ball-check device with threaded ends.

2.8 SPRINKLERS

A. Sprinklers shall be UL listed or FMG approved, Viking or equal with 175-psig minimum pressure rating.

B. Automatic Sprinklers: With heat-responsive element complying with the following:
1. UL 199, for nonresidential applications.
2. UL 1767, for early-suppression, fast-response applications.

C. Sprinkler Types and Categories: Nominal 1/2-inch orifice for “Ordinary” temperature classification rating, unless otherwise indicated or required by application.
1. Open Sprinklers: UL 199, without heat-responsive element.
a. Orifice: 1/2 inch with discharge coefficient K between 5.3 and 5.8.
b. Orifice: 17/32 inch with discharge coefficient K between 7.4 and 8.2

D. Sprinkler types, features and options as follows: Viking or equal
   1. Concealed ceiling sprinklers, including cover plate.
   2. Extended-coverage sprinklers.
   3. Flow-control sprinklers, with automatic open and shutoff feature.
   4. Flush ceiling sprinklers, including escutcheon.
   5. High-pressure sprinklers.
   6. Institution sprinklers, made with a small, breakaway projection.
   7. Open sprinklers.
   8. Pendent sprinklers.
   9. Pendent, dry-type sprinklers.
   10. Quick-response sprinklers.
   11. Recessed sprinklers, including escutcheon.
   12. Sidewall sprinklers.
   13. Sidewall, dry-type sprinklers.
   14. Upright sprinklers.

E. Sprinkler Finishes: Chrome plated, bronze, and painted.

F. Special Coatings: Wax, lead, ENT and corrosion-resistant paint.

G. Sprinkler Escutcheons: Materials, types and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.
   1. Ceiling Mounting: Chrome-plated steel, one piece, flat.
   2. Sidewall Mounting: Chrome-plated steel, one piece, flat.

H. Sprinkler Guards: Viking or equal Wire-cage type, including fastening device for attaching to sprinkler.

2.9 HOSE CONNECTIONS

A. Description: UL 668, brass or bronze, 300-psig minimum pressure rating, hose valve for connecting fire hose. Include angle or gate pattern design, as indicated; female NPS inlet and male hose outlet; and lugged cap, gasket, and chain. Include NPS 1-1/2 or NPS 2-1/2 as indicated, and hose valve threaded according to NFPA 1963 and matching local fire department threads.
   1. Valve Operation: Nonadjustable type.
   2. Finish: Rough metal or chrome-plated, as indicated.

2.10 FIRE DEPARTMENT CONNECTIONS

A. Exposed, Freestanding-Type, Fire Department Connections: UL 405, 175-psig minimum pressure rating; with corrosion-resistant-metal body, brass inlets with threads according to NFPA 1963 and matching local fire department sizes and threads, and bottom outlet with pipe threads. Include brass lugged caps, gaskets, and brass chains; brass lugged swivel connection and drop clapper for each hose-connection inlet; 18-inch-high, brass sleeve; and round, floor, brass escutcheon plate with marking “AUTO SPKR & STANDPIPE.”
   1. Finish Including Sleeve: Polished brass.

B. Wall-Type, Fire Department Connection: UL 405, 175-psig minimum pressure rating, with corrosion-resistant-metal body with brass inlets, brass wall escutcheon plate, brass lugged caps with gaskets and brass chains, and brass lugged swivel connections. Include inlets with threads according to NFPA 1963 and matching local fire department sizes and threads, outlet with pipe threads, extension pipe nipples, check devices or clappers for inlets, and escutcheon plate with marking similar to “AUTO SPKR & STANDPIPE.”
   1. Type: Flush, with multiple inlets and square or rectangular escutcheon plate.
   2. Type: Exposed, projecting, with two inlets and round escutcheon plate.
   3. Finish: Polished brass.

2.11 ALARM DEVICES

A. Alarm-device types shall match piping and equipment connections.

B. Water-Motor-Operated Alarm: UL 753, mechanical-operation type with pelton-wheel operator with shaft length, bearings, and sleeve to suit wall construction and 10-inch diameter, cast-aluminum alarm gong with red-enamel factory finish. Include NPS 3/4 inlet and NPS 1 drain connections.

C. Water-Flow Indicator: UL 346, electrical-supervision, paddle-operated-type, water-flow detector with 250-psig pressure rating and designed for horizontal or vertical installation. Include two single pole, double-throw circuit switches for isolated alarm and auxiliary contacts, 7A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.

D. Pressure Switch: UL 753, electrical-supervision-type, water-flow switch with retard feature. Include single-pole, double-throw, normally closed contacts and design that operates on rising pressure and signals water flow.

E. Valve Supervisory Switch: UL 753, electrical, single-pole, double-throw switch with normally closed contacts. Include design that signals controlled valve is in other than fully open position.

2.12 PRESSURE GAGES

A. Description: UL 393, 3-1/2 to 4-1/2-inch diameter, dial pressure gage with range of 0 to 250 psig minimum.
   1. Water System Piping: Include caption “WATER” or “AIR/WATER” on dial face.
   2. Air System Piping: Include retard feature and caption “AIR” or “AIR/WATER” on dial face.

PART 3 - EXECUTION

3.1 PREPARATION

A. Perform fire-hydrant flow test according to NFPA 13, FMG and NFPA 291. Use results for system design calculations required in Part 1 “Quality Assurance” Article.

B. Report test results promptly and in writing.

3.2 EXAMINATION

A. Examine roughing-in for hose connections and stations to verify actual locations of piping connections before installation.

B. Examine walls and partitions for suitable thicknesses, fire- and smoke-rated construction, framing for hose-station cabinets, and other conditions where hose connections and stations are to be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PIPING APPLICATIONS, GENERAL

A. Shop weld pipe joints welded piping as indicated.

B. Flanges, flanged fittings, unions, nipples, and transition and special fittings with finish and pressure ratings same as or higher than system’s pressure rating may be used in aboveground applications, unless otherwise indicated.

C. Piping between Fire Department Connections and Check Valves: Galvanized, standard-weight Schedule 40 steel pipe with threaded ends; cast- or malleable-iron threaded fittings; and threaded joints.

D. Underground Service-Entrance Piping: Ductile-iron, mechanical-joint pipe and fittings and restrained joints. Include corrosion-protective encasement.

3.4 SPRINKLER SYSTEM PIPING APPLICATIONS

A. Standard-pressure, Wet-Pipe Sprinkler System, 175-psig Maximum Working Pressure;
   1. All piping NPS 2 and smaller shall be the following: Standard weight Schedule 40 threaded steel pipe, cast or malleable iron threaded fittings.
   2. All piping NPS 2-1/2 and larger shall be the following: Schedule 10 steel pipe, grooved fittings and welded fittings.

B. Water Service Pipe (up to Alarm Riser)
   1. Mechanical-Joint, Ductile Iron and fittings (above ground).
   2. Push-on-joint, Ductile Iron (underground).

3.5 VALVE APPLICATIONS

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
   1. Listed Fire-Protection Valves: UL listed and FMG approved for applications where required by NFPA 13.
      a. Shutoff Duty: Use ball, butterfly, or gate valves.
   2. Unlisted General-Duty Valves: For applications where UL-listed and FMG-approved valves are not required by NFPA 13.
      a. Shutoff Duty: Use ball, butterfly, or gate valves.

3.6 JOINT CONSTRUCTION

A. Refer to Specification Section “Basic Fire Suppression Materials and Methods” for basic piping joint construction.

B. Threaded Joints: Comply with NFPA 13 for pipe thickness and threads. Do not thread nipples shorter than 8 inches with wall thickness less than Schedule 40 unless approved by authorities having jurisdiction and threads are checked by a ring gage and comply with ASME B1.20.1.

C. Grooved Joints: Assemble joints with listed Viking or equal coupling and gasket, lubricant, and bolts.
   1. Steel Pipe: Square-cut or roll-groove piping. Use grooved-end fittings and rigid, grooved-end-pipe couplings, unless otherwise indicated.

D. Ductile Iron Joints:
   1. Locking-lug fittings UL 213, ductile iron body with retainer lugs that require one quarter turn to secure pipe in fitting.

3.7 SERVICE-ENTRANCE PIPING

A. Connect fire-suppression piping to water-service piping of size and in location indicated for service entrance to building. Refer to Specification Section “Water Distribution” for exterior piping.

B. Install shutoff valve, check valve, pressure gage and drain at connection to water service.

3.8 PIPING INSTALLATION

A. Refer to Specification Section “Basic Fire Suppression Materials and Methods” for basic piping installation.

B. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.
   1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.

C. Install underground ductile-iron service-entrance piping according to NFPA 24 and with restrained joints. Encase piping in corrosion-protective encasement.

D. Use approved fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes. Saddle fittings or saddle couplings are NOT approved.

E. Install unions adjacent to each valve in pipes NPS 2 and smaller. Unions are not required on flanged devices or in piping installations using grooved joints.

F. Install flanges or flange adapters on valves, apparatus, and equipment having NPS 2-1/2 and larger connections.

G. Install “Inspector’s Test Connections” in sprinkler system piping, complete with shutoff valve, sized and located according to NFPA 13.

H. Install sprinkler piping with drains for complete system drainage.

I. Install sprinkler zone control valves, test assemblies and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.

J. Install drain valves on standpipes.

K. Install ball drip valves to drain piping between fire department connections and check valves. Drain to floor drain or outside building.

L. Install alarm devices in piping systems.

M. Hangers and Supports: Comply with NFPA 13 for hanger materials.
   1. Install sprinkler system piping according to NFPA 13.
   2. All hangers and supports to be galvanized.
   3. All supports to be secured to building structure.
   4. All supports to be listed as a support system (pipe not acceptable as supports).
   5. Pipe Support: All pipes throughout the building, both horizontal and vertical, shall be adequately supported from the construction to line of grade, with proper provision for expansion, contraction, vibration elimination, and anchorage. Vertical pipe shall be supported from floor lines with riser clamps sized to fit the lines and to adequately support their weight. At the bases of lines, where required for proper support, provide anchor base fittings or other approved supports.

N. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

O. Fill wet-pipe sprinkler system piping with water.

3.9 VALVE INSTALLATION

A. Install listed fire-protection valves, unlisted general-duty valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.

B. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire department connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water supply sources.

D. Specialty Valves:
   1. Alarm Check Valves: Install in vertical position for proper direction of flow, including bypass check valve and retarding chamber drain-line connection.

3.10 SPRINKLER APPLICATIONS

A. Drawings indicate sprinkler types to be used. Where specific types are not indicated, use the following sprinkler types:
   1. Rooms without Ceilings: Upright sprinklers.
   2. Rooms with Suspended Ceilings: Recessed sprinklers.
   3. Platforms: Concealed sprinklers.
   4. Wall Mounting: Sidewall sprinklers.
   5. Spaces Subject to Freezing: Pendent, dry sprinklers; and sidewall, dry sprinklers as indicated.
   6. Special Applications: Quick-response sprinklers where indicated.
   7. Sprinkler Finishes:
      a. Upright, Pendent, and Sidewall Sprinklers: Chrome plated in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; wax coated where exposed to acids, chemicals, or other corrosive fumes.
      b. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.
      c. Recessed Sprinklers: Bright chrome, with bright chrome escutcheon.

3.11 SPRINKLER INSTALLATION

A. Install sprinklers in suspended ceilings in center of narrow dimension and at 1/4, 1/2, or 3/4 points of long dimension of acoustical ceiling panels and tiles.

B. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing. Use dry-type sprinklers with water supply from heated space.

C. Install sprinklers in storage rooms and/or closets to provide coverage without locating the deflectors directly above any wall shelving.

3.12 FIRE DEPARTMENT CONNECTION INSTALLATION

A. Install freestanding-type, fire department connection in level surface.
   1. Install protective pipe bollards on three sides of each fire department connection. Refer to Specification Section “Metal Fabrications” for pipe bollards.

B. Install wall-type, Fire Department connection in vertical wall (reference details).

C. Install ball drip valve at each check valve for fire department connection.

3.13 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Connect water-supply piping to fire-suppression piping. Include backflow preventer between potable-water piping and fire-suppression piping. Refer to Specification Section “Plumbing Specialties” for backflow preventers.

D. Install ball drip valves at each check valve for fire department connection. Drain to floor drain or outside building.

E. Connect piping to specialty valves, hose valves, specialties, fire department connections, and accessories.

F. Electrical Connections: Power wiring is specified in Electrical Specifications.

G. Connect alarm devices to fire alarm.

H. Ground equipment according to Specification Section “Grounding and Bonding.”

I. Connect wiring according to Specification Section “Conductors and Cables.”

J. Tighten electrical connectors and terminals according to manufacturer’s published torque-tightening values. If manufacturer’s torque valves are not indicated, use those specified in UL 486A and UL 486B.

3.14 LABELING AND IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

B. All pipe shall be clearly identified in mechanical rooms and congested areas.

3.15 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:
   1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
   2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
   3. Energize circuits to electrical equipment and devices.
   4. Start and run excess-pressure pumps.
   5. Flush, test, and inspect sprinkler systems according to NFPA 13, “Systems Acceptance” Chapter.
   6. Coordinate with fire alarm tests. Operate as required.
   7. Verify that equipment hose threads are same as local fire department equipment.

B. Report test results promptly and in writing to Architect and authorities having jurisdiction.

3.16 CLEANING AND PROTECTION

A. Clean dirt and debris from sprinklers.

B. Remove and replace sprinklers with paint or corrosion other than factory finish.

C. Protect sprinklers from damage until Substantial Completion.

D. All material to be protected from weather and shall not be installed rusted or weathered.

3.17 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain specialty valves. Refer to Specification Section "Demonstration and Testing."

END OF SECTION 211313

SECTION 220100

SPECIAL CONDITIONS FOR ALL PLUMBING WORK

PART 1- GENERAL

1.1 DESCRIPTION OF WORK

A. This section covers the general provisions of the plumbing specifications applicable to the following systems:
   1. Plumbing.

B. The use of the word plumbing in the body of the various specifications sections shall be interpreted to include all the aspects of all of the systems referenced in the Plumbing Specifications.

1.2 DRAWINGS

A. These specifications are accompanied by drawings of the building and details of the installations showing the locations of equipment, piping, etc. The drawings and these specifications are complementary to each other; requirements described in one or the other shall be considered binding as if described in both.

B. If any departures from the drawings are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted to the Owner's Representative for approval. No departures shall be made without prior written approval by the Owner's Representative.

C. There are intricacies of construction which are impractical to specify or indicate in detail; means and methods for performing such work shall adhere to commonly accepted industry standards.

D. It is the Contractor's responsibility to properly use all information found on the Architectural, Structural, Mechanical, Plumbing and Electrical drawings and applicable shop drawings where such information affects his work.

E. For new buildings, all final dimensions shall be scaled from the drawings, unless otherwise noted. For work associated with existing buildings (renovations and additions), all final dimensions shall be field verified.

1.3 CONSTRUCTION REQUIREMENTS

A. The architectural, civil, structural, mechanical, electrical, plumbing, and fire protection drawings, and specifications are all part of the Contract Documents. In many instances there are details described in another trade's drawings that are not necessarily included or referenced in the plumbing drawings. It is the Contractor's responsibility to review in detail all parts of the Contract Documents prior to submitting a bid. Failure to comply with this requirement shall not relieve the Contractor of responsibility or be used as cause for additional compensation because architectural, structural, or electrical details were not included in the plumbing drawings.

B. It is the intent of the Contract Documents to provide complete and fully functional installation in every respect. Material and/or construction details not specifically described in the Contract Documents, but commonly considered incidental to the industry, are required by the Contractor.

C. The Contractor shall be responsible for fitting his material and apparatus into the building and shall carefully lay out his work at the site to conform to the structural conditions, to avoid all obstructions, to comply with Codes, to facilitate the work of other trades, to conform to the details of the installation supplied by the manufacturer of the equipment to be installed, and thereby to provide an integrated satisfactory operating installation.

D. The plumbing, electrical and mechanical drawings are schematic in nature and do not show every connection in detail or every pipe or conduit in its exact location. These details are subject to the requirements of ordinances and structural and architectural conditions.

E. The Contractor shall carefully investigate structural and finish conditions and shall coordinate the separate trades in order to avoid interference between the various phases of work. Work shall be laid out so that it will be concealed in furred chases and above suspended ceilings, etc. in finished portions of the building, unless specifically noted to be exposed. Work shall be installed to avoid compromising structural members; therefore, inserts to accommodate hangers shall be set before concrete is poured, and proper openings through floor, walls, beams, etc. shall be provided as hereinafter specified or as otherwise indicated or required. All work shall be installed parallel or perpendicular to building lines unless otherwise noted.

F. When the plumbing drawings do not give exact details as to the elevation of pipe or equipment, physically arrange the systems to fit in the space available at the elevations intended with the proper grades for the functioning of the system involved. Piping and exposed conduit, are generally intended to be installed true and square to the building construction, and located as high as possible against the structure in a neat and workmanlike manner. The plans do not show all required offsets, control lines, pilot lines, and other location details. Work shall be concealed in all finished areas. Piping specified to be insulated shall be supported in a manner that will allow the insulation to be installed without gaps. Insulated piping in concealed areas shall be offset with fittings as necessary to permit installation of insulation. Bending of pipes or installing pipes in a strain to insulate will not be permitted.

G. Final placement of serviceable equipment shall be carefully coordinated with all other trades to ensure sufficient clearance for maintenance according to manufacturer's recommendations. Lubricating orifices and adjustable components shall be easily accessible. Piping, conduit, valve stems, cabling and other building systems shall not interfere with service space.

H. Location of Exposed Devices
   1. All exposed devices (sprinkler heads, medical gas outlets, plumbing rough-ins, lights, outlets, communication devices, etcetera) shall be referenced to fixed data points that are coordinated with all trades; shall be located to present symmetrical arrangements with respect to the fixed data point; and shall facilitate the proper arrangements of acoustical ceiling tiles. Fixed data points shall include such features as wall and ceiling lines, soffits, balanced border widths, masonry joints, etc. Devices located in acoustical ceiling tiles shall occur symmetrically in tile joints or in the centers of whole tiles. The final determination of the exact location of each outlet and the arrangements to be followed shall be acceptable to the Owner's Representative.
   2. The drawings schematically indicate locations of the exposed devices. Final locations shall be determined by carefully coordinating the drawings pertaining to each trade. Where conflicts are identified, Owner's Representative shall determine final location. The Owner reserves the right to make any reasonable change in location of any device before installation, without additional cost to the Owner or the Architect.

1.4 QUALIFICATIONS

A. Contractor must have minimum of five years experience installing commercial, plumbing and piping systems similar to those described in these Contract Documents.

B. Contractor must be licensed and hold a current contracting license that has been valid for a minimum of five years in the State of Texas.

C. Contractor must be able to bond work for payment and performance of work being bid. Contractor's bonding agency shall have a Best's insurance rating of A or A+.

1.5 MATERIAL AND EQUIPMENT REQUIREMENTS

A. Manufacturer's Instructions: The manufacturer's published instructions shall be followed for preparing, assembling, installing, erecting, and cleaning manufacturer materials or equipment, unless otherwise

indicated. The Contractor shall promptly notify the Owner's Representative in writing of any conflict between the requirements of the Contract Documents and the manufacturer's direction and shall obtain the clarification of the Owner's Representative before proceeding with the work. Should the Contractor perform any such work that does not comply with the manufacturer's directions or such clarification by the Owner's Representative, he shall bear all costs arising in connection with the correction of the deficiencies.

B. Storage at Site: The Contractor shall not receive material or equipment at the jobsite until there is suitable space provided to properly protect equipment from rust, drip, humidity, and dust damage and from surrounding work.

C. Capacities shall be not less than those indicated and shall be such that no component or system becomes inoperative or is damaged because of startup or other overload conditions.

D. Conformance to Agency Requirements: Where materials or equipment are specified to be approved, listed, tested, or labeled by the Underwriters Laboratories, Inc., or constructed and/or tested in accordance with the standards of the American Society of Mechanical Engineers, the Contractor shall submit proof that the items furnished under this section of the specifications conform to such requirements. The label of Underwriters Laboratories, Inc. applied to the item will be acceptable as sufficient evidence that the items conform to such requirements. The ASME stamp or the AMCA label will be acceptable as sufficient evidence that the items conform to the respective requirements.

E. Nameplates: Each major component of equipment shall have the manufacturer's name, address, and model-identification number on a plate securely attached to the item of equipment. All data on nameplates shall be legible at the time of Final Inspection.

F. Prevention of Rust: Standard factory finish will be acceptable on equipment specified by model number; otherwise surfaces of ferrous metal shall be given a rust-inhibiting coating. The treatment shall withstand 200 hours in salt-spray fog test, in accordance with Method 6061 of Federal Standard No. 141. Immediately after completion of the test, the specimen shall show no signs of wrinkling or cracking and no signs of rust creepage beyond 1/8 inch on either side of the scratch mark. Where rust inhibitor coating is specified hereinafter, any treatment that will pass the above test is acceptable unless a specific coating is specified, except that coal tar or asphalt-type coatings will not be acceptable unless so stated for a specific item. Where steel is specified to be hot-dip galvanized, mill-galvanized sheet steel may be used provided all raw edges are painted with a zinc-pigmented paint conforming to Military Specification MIL-P-26915.

G. Protection from Moving Parts: Belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts located so that any person can come in close proximity thereto, shall be fully enclosed or properly guarded.

H. Drive Guards: For machinery and equipment, provide guards as shown in AMCA 410 for belts, chains, couplings, pulleys, sheaves, shafts, gears, and other moving parts regardless of height above the floor. Drive guards may be excluded where motors and drives are inside factory-fabricated air handling units casings. Guards shall be constructed of sheet steel, cast iron, expanded metal, or wire mesh rigidly secured so as to be removable without disassembling pipe duct or electrical connection to equipment. Provide a 1-inch diameter hole in each drive guard at each shaft center to allow access for speed measurement.

I. Verifications of Dimensions: The Contractor shall be responsible for the coordination and proper relation of his work to the building structure and to the work of all trades. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working conditions, to verify all dimensions in the field, and to advise the Owner's Representative of any discrepancy before performing any work. Adjustments to the work required in order to facilitate a coordinated installation shall be made at no additional cost to the Owner, Architect, or Engineer.

J. Standard Products: Materials and equipment to be provided shall be the standard catalog products of manufacturers regularly engaged in the manufacture of products conforming to these specifications and shall essentially duplicate materials and equipment that have been in satisfactory use at least two years.

K. Spare Parts Data: As soon as practicable after approval of materials and equipment and, if possible, not later than four months prior to the date of beneficial occupancy, the Contractor shall furnish spare parts data for each different item of equipment listed. The data shall include a complete list of parts and supplies with current unit prices and sources of supply, a list of parts and supplies that are either normally furnished at no extra cost with the purchase of the equipment or specified hereinafter to be furnished as part of the Contract, and a list of additional items recommended by the manufacturer to assure efficient operation for a period of 120 days at the particular installation. The foregoing shall not relieve the Contractor of any responsibilities under the warranty specified.

1.6 INSPECTION OF THE SITE

A. The Contractor shall visit the site, verifying all existing items indicated on drawings and/or specified, and familiarize himself with the existing work conditions, hazards, grades, actual formations, soil conditions, structures, utilities, equipment, systems, facilities, and local requirements. The submission of bids shall be deemed evidence of such visits. All proposals shall take these existing conditions into consideration, and the lack of specific information shall not relieve the Contractor of any responsibility.

1.7 UTILITY LOCATIONS AND ELEVATIONS

A. Locations and elevations of the various utilities included within the scope of this work have been obtained from substantially reliable sources and are offered separately from the Contract Documents, as a general guide only, without guarantee as to accuracy. Examine the site, the locations, and availability of all utilities and services required for their relation to the work. Verify the location of all existing site utilities with each responsible utility company or applicable party. The Contractor shall repair all damage to existing utilities, whether indicated on the drawings or not, at his sole expense.

1.8 PERMITS, UTILITY CONNECTIONS, AND INSPECTIONS

A. Permitting Fees: Contractor shall pay for all fees associated with permits required by municipal authorities having jurisdiction.

B. Tapping and Impact Fees: Contractor shall pay for all fees associated with tapping into municipal utility mains, including sanitary sewer, natural gas and domestic water. Impact fees will be paid for by the Owner.

C. Compliance: The Contractor shall comply in every respect with all requirements of local authorities having jurisdiction, including building inspections, fire marshal, local ordinances and codes, and utility company requirements. In no case does this relieve the Contractor of the responsibility of complying with these specifications and drawings where specified conditions are of a higher quality than the requirements of the above-specified authorities. Where requirements of the specifications and drawings are below the requirements of the above offices having jurisdiction, the Contractor shall make installations in compliance with the requirements of the above authorities.

D. Utilities: The Contractor shall coordinate with the various utility companies involved in this project and shall provide required utility relocations, extensions, modifications, and/or changes (complete in all respects) as described in the Contract Documents. Contractor shall verify the location of all existing utilities with the applicable Utility Company. The Contractor shall be responsible for all damages to existing utilities, whether indicated on drawings or not, and repair all damage to existing utilities as acceptable to the affected Utility Company.

E. Certification: Prior to final acceptance, the Contractor shall furnish a certificate of acceptance from the inspection departments having jurisdiction over the work for any and all work installed under this Contract. Any additional labor costs incurred as a result of a substitution shall be the Contractor’s responsibility.

1.9 EXISTING FACILITIES

A. The Contractor shall be responsible for loss or damage to the existing facilities caused by him and his workmen and shall be responsible for repairing or replacing such loss or damage. The Contractor shall send proper notices, make necessary arrangements, and perform other services required for the care, protection, and in-service maintenance of all plumbing, heating, air conditioning, and ventilating services for the new and existing facilities. The Contractor shall erect temporary barricades, with necessary safety devices, as required to protect personnel from injury, removing all such temporary protection upon completion of the work.

B. The Contractor shall provide temporary or new services to all existing facilities as required to maintain their proper operation when normal services are disrupted as a result of the work being performed under this project.

C. Where existing construction is removed to provide working and extension access to existing utilities, Contractor shall remove doors, piping, conduit, outlet boxes, wiring, light fixtures, air conditioning ductwork and equipment, etc. to provide this access and shall reinstall same upon completion of work in the areas affected.

D. Where partitions, walls, floors, or ceilings of existing construction are indicated to be removed, all Contractors shall remove and reinstall in locations approved by the Architect/Engineer all devices required for the operation of the various systems installed in the existing construction. This is to include but is not limited to temperature controls system devices, electrical switches, relays, fixtures, piping, conduit, etc.

E. Outages of services as required by the new installation will be permitted but only at a time approved by the Owner. The Contractor shall allow the Owner two weeks in order to schedule required outages. The time allowed for outages will not be during normal working hours unless otherwise approved by the Owner. All costs of outages, including overtime charges, shall be included in the contract amount.

1.10 DEMOLITION AND RELOCATION

A. The Contractor shall modify, remove, and/or relocate all materials and items so indicated on the drawings or required by the installation of new facilities. All removals and/or dismantling shall be conducted in a manner as to produce maximum salvage. Salvage materials shall remain the property of the Owner and shall be delivered to such destination or otherwise disposed of as directed by the Owner. Materials and/or items scheduled for relocation and which are damaged during dismantling or reassembly operations shall be repaired and restored to good operative condition. The Contractor may, at his discretion, and upon the approval of the Owner, substitute new materials and/or items of like design and quality in lieu of materials and/or items to be relocated.

B. All items which are to be relocated shall be carefully removed in reverse to original assembly or placement and protected until relocated. The Contractor shall clean and repair and provide all new materials, fittings, and appurtenances required to complete the relocations and to restore to good operative order. All relocations shall be performed by workmen skilled in the work and in accordance with standard practice of the trades involved.

C. When items scheduled for relocation and/or reuse are found to be in damaged condition before work has been started on dismantling, the Contractor shall call the attention of the Owner to such items and receive further instructions before removal. Items damaged in repositioning operations are the Contractor's responsibility and shall be repaired or replaced by the Contractor as approved by the Owner, at no additional cost to the Owner.

D. Service lines and wiring to items to be removed, salvaged, or relocated shall be removed to points indicated on the drawings, specified, or acceptable to the Owner. Service lines and wiring not scheduled for reuse shall be removed to the points at which reuse is to be continued or service is to remain. Such services shall be sealed, capped, or otherwise tied off or disconnected in a safe manner acceptable to the Owner. All disconnections or connections into the existing facilities shall be done in such a manner as to result in minimum interruption of services to adjacent occupied areas. Services to existing areas or facilities which must remain in operation during the construction period shall not be interrupted without prior specific approval of the Owner as hereinbefore specified.

1.11 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. No substitution of materials or equipment herein specified or called for on the drawings will be permitted, except by written permission of the Owner's Representative. Where several makes of equipment or material are mentioned, any item named may be bid upon provided it meets space, capacity specifications, and other requirements.

1.12 SUBMITTALS

A. Submittals for Review:
   1. As soon as practical or within 30 days after the date of contract award or notice to proceed, and before purchasing or starting installation of any materials or equipment, the Contractor shall submit for review sufficient material and equipment data to indicate that all requirements of the specifications have been met and samples shall be furnished when requested. All manufacturer's data used as part of the submittal shall have all non-applicable features crossed out or deleted in a manner that will clearly indicate exactly what is to be furnished.
   2. Four (4) copies of the submittal list and detailed submittals (for the Owner's and A/E's use) shall be submitted to the Owner's Representative. The Contractor is requested to include a minimum of three (3) additional copies for insertion in the project's Owner's Manuals at the completion of the project, and the number of additional copies the Contractor requires for his and his subcontractor's use during the project's construction. The detailed submittals shall be accompanied by the same number of sets of pictorial and descriptive data derived from the manufacturer's catalogs and sales literature or incorporated in the shop drawings. The Contractor may provide a detailed submittal on any item even though not required by the Owner's Representative.

B. Format
   1. Submittals shall be in pdf format. The first page shall have a cover sheet inserted with the title "PLUMBING SUBMITTALS" centered in large print. Below the title shall be printed the name of the project, the date, the project location, the name and address of the contractor, the name and address of the subcontractor and the name and address of the engineer(s) in smaller print.
   2. Provide a Table of Contents at the beginning of the binder that summarizes the information being submitted according to specification section.
   3. Submittals shall be tab divided by specification section; all sections identified in the project specifications shall have a tab. When no information is being provided concerning a particular specification section, insert a single dated sheet that explains the circumstances.
   4. Loose-leaf or piecemeal submittals are not acceptable and subject to rejection unless prior approval has been granted by the Engineer.

C. Content:
   1. The Contractor shall prepare or cause to be prepared shop drawings, product data, materials and equipment lists, diagrams, data, samples, and other submittals as required by the contract documents, hereinafter referred to as "Submittal Data." The Contractor shall review and approve all submittal data for compliance with the contract documents, manufacturer's recommendations, adequacy, clearances, code compliance, safety, and coordination with associated work.
   2. The Contractor shall submit approved submittal data to the Owner's Representative for review and comment as to general conformance with the design concept and general compliance with information given in the contract documents. Owner's Representative's review shall not include review of quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with other trades or work, or construction safety and precautions, all of which are the sole responsibility of the Contractor.
   3. The Contractor shall clearly and specifically identify and call to the attention of the Owner's Representative any deviation from the contract documents for which Owner acceptance is desired. The responsibility for such a deviation accepted by the Owner shall remain with the Contractor.
   4. Timeliness: The burden of timeliness in the complete cycle of submittal data is on the Contractor. The Contractor shall allow a minimum of two (2) weeks' time frame for review of each submission by the Owner's Representative. The Contractor is responsible for allowing sufficient time in the construction schedule to cover the aforementioned cycles of data processing, including time for all re-submission cycles on nonconforming materials, equipment, etc. covered by the data submitted. Construction delays and/or lack of timeliness in the above regard are the responsibility of the

Contractor and will not justify any request for scheduled construction time extensions or extra compensation.

5. Work performed in accordance with approved submittal date that is not in accordance with the Contract Documents and did not have the specific acceptance of the Owner's Representative shall be replaced at Contractor's cost.

D. Re-submittals
   1. Re-submit entire submittal in accordance with afore mentioned format and content requirements. Loose-leaf or piecemeal re-submittals are not acceptable. New and/or revised data for each section shall be prefaced with a colored (yellow, pink, orange, etc) cover sheet that identifies (in a word or two) the materials and/or equipment being re-submitted. Typeset the words "REVISED SUBMITTAL NO. 1 (or 2, 3 as applicable)" centered at the bottom of the cover sheet.
   2. Subsequent re-submittals (second and third, if necessary) shall have different colored cover sheets to distinguish between the various re-submittals.
   3. Include a cover letter at front of binder that specifically responds to each "REVISE AND RE-SUBMIT COMMENT" or "REJECTED" comment by number. Example responses would include the following:
      a. RESPONSE: "Please see attached re-submittal."
      b. RESPONSE: "Will be re-submitted at a later date."
      c. RESPONSE: "Requirement for (xxxxxx) was deleted in Addendum No. 2."
      d. RESPONSE: "Exception requested based on Section xx, Paragraph x.x.x.

E. These paragraphs related to Plumbing submittal data supersede any conflicting requirements contained in Division 01 sections.

1.13 CONTRACTOR CERTIFICATION OF SUBMITTAL DATA

A. The Contractor shall provide the following certification with all submittal data furnished to the Owner's Representative for review and comment.

Project Title:

Description of Submittal Data:

This is to certify that the above-described submittal data has been reviewed and is approved for compliance with the Contract Documents, manufacturer's recommendation, adequacy, clearances, code compliance, safety, and coordination with other trades and/or work except as follows: (list "none" or itemize and explain). In addition, the Contractor shall submit to the Owner's Representative a signed statement from each representative certifying as follows:

"I certify that the materials and/or equipment listed below have been personally inspected by the undersigned authorized manufacturer's representative and is properly installed and operating in accordance with the manufacturer's recommendations and are asbestos free."

_____

Name and Company

1.14 ACCEPTANCE OF MATERIALS AND EQUIPMENT

A. All equipment installed on this project shall have local (within 125 miles) representation, local factory-authorized service, and a local stock of repair parts. This requirement is essential and will be strictly reviewed by the Owner's Representative prior to concurrence with the Contractor's approval for all submittals covered by Plumbing Division of this Specification.

B. NOTICE: The Contractor is responsible for providing materials and equipment that conform to the requirements of the project manual in every respect unless a deviation has been "accepted" in writing. Removal of any nonconforming materials and equipment and the replacement with conforming materials

and equipment shall be at the Contractor's sole expense, regardless of when nonconformance was discovered.

C. Approval of materials and equipment shall be based on manufacturer's published data and shall be tentatively subject to the submission of complete shop drawings which comply with the contract documents. Approval is also dependent upon the existence of adequate and acceptable clearances for entry, servicing, and maintenance.

D. Approval of materials and equipment under this provision shall not be construed as authorizing any deviations from the specifications, unless the attention of the Owner's Representative has been directed in writing to the specific deviations. Data submitted shall not contain unrelated information unless all pertinent information is properly identified.

E. Physical Size of Equipment: Space is critical; therefore, equipment of larger sizes than shown, even though of approved manufacturer, will not be acceptable unless it can be demonstrated that ample space exists for proper installation, operation, and maintenance.

1.15 SITE OBSERVATION

A. Site observation by the Architect, Engineer, and/or Owner's Representative is for the express purpose of verifying compliance by the Contractor with the contract documents, and shall not be construed as construction supervision nor indication of approval of the manner or location in which the work is being performed as being a safe practice or place.

1.16 SUPERVISION

A. In addition to the Superintendent required under the conditions of the contract, each subcontractor shall keep a competent superintendent or foreman on the job at all times.

B. It shall be the responsibility of each superintendent to study all plans and familiarize himself with the work to be done by other trades. He shall coordinate his work with other trades and, before material is fabricated or installed, make sure that his work will not cause an interference with another trade. Where interferences are encountered, they shall be resolved at the jobsite by the superintendents involved. Where interferences cannot be resolved without major changes to the plans, the matter shall be referred to the Owner's Representative for comments.

1.17 OPERATION PRIOR TO COMPLETION

A. When any piece of equipment is operable and it is to the advantage of the Contractor to operate the equipment, he may do so, providing that he properly supervises the operation and has the written permission of the Owner's Representative to do so. The warranty period shall not commence, however, until such time as the equipment is operated for the beneficial use of the Owner or date of substantial completion, whichever occurs first.

B. Regardless of whether or not the equipment has or has not been operated, the Contractor shall properly clean the equipment, install clean filter media, properly adjust, and complete all deficiency list items before final acceptance by the Owner. The date of acceptance and the start of the warranty may not be the same date.

1.18 MANUFACTURER'S RECOMMENDATIONS

A. The manufacturer's published directions shall be followed in the delivery, storage, protection, installation, piping, and wiring of all equipment and material. The Contractor shall promptly notify the Owner's Representative, in writing, of any conflict between the requirements of the contract documents and the manufacturer's directions and shall obtain the Owner's Representative's comments before proceeding with the work. Should the Contractor perform any such work that does not comply with the

manufacturer's directions or applicable comments from the Owner's Representative, he shall bear all costs arising in connection with the correction of such deficiencies.

1.19 CHECKING AND TESTING MATERIALS AND/OR EQUIPMENT

A. Before final acceptance of the work, an authorized representative of the manufacturer of the installed materials and/or equipment shall personally inspect the installation and operation of his materials and/or equipment to determine that it is properly installed and in proper operating order. Testing and checking shall be accomplished during the course of the work where required by work being concealed, and at the completion of the work otherwise. In addition, the Contractor shall submit to the Owner's Representative a signed statement from each representative certifying as follows:

"I certify that the materials and/or equipment listed below have been personally inspected by the undersigned authorized manufacturer's representative and is properly installed and operating in accordance with the manufacturer's recommendations and are asbestos free."

B. Check inspections shall include plumbing, heating, air conditioning, ventilating, mechanical control and electrical equipment, and such other items hereinafter specified or specifically designated by the Owner's Representative.

1.20 OPERATING AND MAINTENANCE INSTRUCTION

A. The Contractor shall prepare for the owner's manual hereinafter specified complete sets of operating and maintenance instructions, system piping, valving, control and interlock diagrams, manuals, parts lists, etc. for each item of equipment. These are to be assembled as hereinafter specified for owner's manual.

B. In addition, the Contractor shall provide the service of a competent engineer or a technician acceptable to the Owner's Representative to instruct a representative of the Owner in the complete and detailed operation of all equipment and systems. These instructions shall be provided for a period of sufficient duration to fully accomplish the desired results. Upon completion of these instructions, a letter of release will be required, acknowledged by the Owner, stating the dates of instruction and personnel to whom instructions were given.

C. Additional diagrams, operating instructions, etc. shall be provided as specified hereinafter in the other sections of these specifications.

1.21 MATERIAL AND EQUIPMENT SCHEDULES

A. Contractor shall refer to both drawings and specification for schedules. Where reference is made to items "scheduled on drawings" or "scheduled in specifications," same shall include schedules contained in both the drawings and the specifications. The Contractor's attention is directed to the various specification sections and drawings for schedules.

1.22 APPLICABLE CODES AND STANDARDS

A. The installation shall meet the minimum standards prescribed in the latest editions of the following listed codes and standards, which are made a part of these specifications, except as may be hereinafter specifically modified in these specifications and associated drawings.

1. National Fire Protection Association Standards (NFPA):
   NFPA 10 - Portable Fire Extinguishers
   NFPA 54 - National Fuel and Gas Code
   NFPA 70 - National Electrical Code
   NFPA 90A - Air Conditioning Systems
   NFPA 101 - Life Safety Code
   NFPA 255 - Method of Test of Surface Burning Characteristics of Building Materials
   Local and State Health Code (TDSH)
2. American National Standards Institute (ANSI):

15-78 - Safety Code for Mechanical Refrigeration
C.2 - 1984 National Electrical Safety Code
A117.1 - Handicapped Code

3. American Society of Mechanical Engineers (ASME): Section IV, V, CSD-1
4. Air Conditioning and Refrigeration Institute Standards (ARI): All standards related to refrigeration and air conditioning equipment and piping furnished under these specifications.
5. American Water Works Association (AWWA): All applicable manuals and standards.
6. Sheet Metal and Air Conditioning Contractors National Associate, Inc, (SMACNA): All applicable manuals and standards.
7. Air Moving and Conditioning Association (AMCA): All applicable manuals and standards.
8. American Society of Testing Materials (ASTM): All applicable manuals and standards.
9. National Electrical Manufacturers' Association (NEMA): All applicable manuals and standards.
10. Occupational Safety and Health ACT (OSHA):
    National Sanitation Foundation - Standard No. 2
11. American Society of Heating, Refrigeration, and Air conditioning Engineers (ASHRAE):
    90-80 Energy Conservation in New Building Design
    2001 ASHRAE Handbook of Fundamentals
12. Americans with Disabilities Act, 1990
13. American Gas Association (AGA)
14. Underwriters Laboratories, Inc. (UL)
15. Manufacturer's Standardization Society of the Valve and Fitting Industry (MSS)
16. Applicable State Building Codes (International Building Codes, as amended):
17. Applicable State Mechanical Code (International Mechanical Code, as amended).
18. Applicable State Plumbing Code (International Plumbing Code, as amended).
19. Applicable State Energy Code (International Energy Conservation Code, as amended).

B. All materials and workmanship shall comply with all applicable city, state, and national codes, specifications, and industry standards. All materials shall be listed by the Underwriters Laboratories, Inc. as conforming to its standards and so labeled in every case where such a standard has been established for the particular type of material in question.

C. The contract documents are intended to comply with the aforementioned rules and regulations; however, some discrepancies may occur. Where such discrepancies occur, the Contractor shall immediately notify the Owner's Representative in writing of said discrepancies and apply for an interpretation. Should the discovery and notification occur after the execution of a contract, any additional work required for compliance with said regulations shall be paid for as covered by Division 1 of these contract documents, providing no work or fabrication of materials has been accomplished in a manner of noncompliance. Should the Contractor fabricate and/or install materials and/or workmanship in such a manner that does not comply with the applicable codes, rules, and regulations, the Contractor who performed such work shall bear all costs arising in correcting these deficiencies to comply with said rules and regulations.

1.23 DEFINITIONS

A. Refer to the condition of the contract for Division 1 for additional requirements regarding definitions.

B. Where "as required" or "as necessary" is used in these specifications or on the drawings, it shall mean "that situations exist that are not necessarily described in detail or indicated that may cause the Contractor certain complications in performing the work described or indicated. These complications entail the normal coordination activities expected of the Contractor where multiple trades are involved and new or existing construction causes deviations to otherwise simplistic approaches to the work to be performed. The term shall not be interpreted to permit an option on the part of the Contractor to achieve the end result."

C. Where "and/or" is used in these specifications or on the drawings, it shall mean "that situations exist where either one or both conditions occur or are required and shall not be interpreted to permit an option on the part of the Contractor.

1.24 FINAL INSPECTION

A. Refer to Division 1 for additional requirements for final inspection.

B. It shall be the responsibility of the Contractor to personally conduct a careful inspection, assuring himself that the work on the project is ready for final acceptance and developing his own “punchlists,” before calling upon the Owner’s Representative to make a final inspection. Failure of the Contractor to conduct such inspections and provide the Owner’s Representative with a copy of his “punchlists” prior to the final inspection shall be adequate cause for the Owner’s Representative to cancel any Contractor-requested final inspection.

C. In order not to delay final acceptance of the work, the Contractor shall conduct his own “final inspections” prior to requesting the Owner’s Representative to “final” the project; will have all necessary bonds, guarantees, receipts, affidavits, etc. called for in the various articles of this specification prepared and signed in advance; and together with a letter of transmittal listing each paper included, shall deliver the same to the Owner’s Representative at or before the time of said final inspection. The Contractor is cautioned to check over each bond, receipt, etc. before preparing same for submission to see that the terms check with the requirements of the specifications.

D. The final inspection will be made jointly by the Owner’s Representative and the Owner.

1.25 REQUIREMENTS FOR FINAL ACCEPTANCE

A. Requirements for final acceptance shall include but not be limited to the Contractor accomplishing the following:
   1. Construction: Complete all construction.
   2. Deficiency Lists: Correct all deficiencies listed at time of Substantial Completion.
      a. Owner’s Manual: Submit at least 30 days prior to final acceptance on (1) copy of the owner’s manual for the Owner’s Representative’s review and comments. Following acceptance, prepare three (3) copies of bound and indexed owner’s manual, to be delivered System operating instructions.
      b. System control drawings.
      c. System interlock drawings.
      d. System maintenance instructions.
      e. Manufacturers’, suppliers’, and subcontractors’ names, addresses, and telephone numbers, both local representatives and manufacturers’ service headquarters.
      f. Equipment operating and maintenance instructions and parts lists.
      g. Manufacturer’s’ certifications (see Checking and Testing Materials and/or Equipment, this section).
      h. Contractor’s warranty.
      i. Acceptance certificates of authorities having jurisdiction.
      j. Log of all tests made during course of work.
      k. Owner’s acknowledgment of receipt of instruction, enumerating items in owner’s manual.
      l. List of manufacturers’ guarantees executed by the Contractor.
      m. Certified performance curves.
      n. Balance and performance test reports.
      o. Owner’s acknowledgment of items of equipment or accessories indicated or specified to be turned over to Owner.
      p. Verbal, as herein specified.
      q. Posted, framed under glass or plastic laminated:
   3. At the time of final acceptance, which shall include but not be limited to the following:
   4. Instructions:
      a. System operating instructions.
      b. System control drawings.
      c. System interlock drawings.
   5. Record Drawings: Deliver the specified record drawings to the Owner’s Representative.

1.26 RECORD DRAWINGS

A. The Contractor shall maintain a set of contract drawings (black-line prints) at the jobsite on which he shall indicate the installed (as-built) locations of the following:
   1. Equipment
   2. Main lines of piping and ductwork.
   3. Dimensional locations (including depth) of all underground piping, valves and conduits.

B. Drawings shall be used for construction reference and shall not leave the field office of the jobsite.

C. Drawings shall include all addenda, ASI's, Change Orders, and existing conditions and equipment that are not reflected in the original contract drawings.

D. Upon completion of work, the Contractor shall obtain CAD files of the contract drawings from the Owner's Representative and transfer the above as-built information into these files. The as-built files shall be permanently marked "RECORD DRAWINGS" and printed on full-size Mylar sheets. Upon completion, the CAD files shall be transferred to CD in AutoCAD 2007 format. Both the CAD files CD and Mylar drawings shall be submitted to the Owner's Representative as part of the Close-out Submittals.

E. Refer to Division 1 paragraph entitled "Record Documents" for additional requirements.

1.27 ALLOWANCES

A. Refer to Division 1 for allowances.

1.28 ALTERNATE PROPOSALS

A. Alternate proposals are summarized in Division 1 and on the bid proposal form. Refer to all sections of the specifications and the drawings to determine the exact extent and scope of the various alternate proposals as each pertains to the work of the various trades.

1.29 WARRANTY

A. General: All work performed (including equipment and materials furnished) under the various sections of these specifications shall be 100% warranted, for a period of one (1) year from the date of final acceptance thereof, against defective materials, design, and unauthorized substitution. Upon receipt of note of failure of any part of the guaranteed equipment and/or facilities during the guaranty period, the affected part(s) or facilities shall be replaced promptly with new parts, etc. by and at the expense of the Contractor. Further, the Contractor shall properly obtain, execute, and forward any and all manufacturer's warranties on equipment furnished under the Contract. Refer to Division 1 for additional requirements.

B. Extended Period: The Contractor shall provide all extended time warranties available from the manufacturer of the equipment provided as standard at no additional cost. This includes all extended warranties where specified with certain equipment as directed in other sections of this Specification.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

A. All materials, unless otherwise specified, shall be 51% manufactured in the United States, new, free from all defects, and of the best quality. Foreign goods specifically approved for use by the Owner's Representative prior to bidding may be furnished.

B. Materials and equipment shall be installed in accordance with the manufacturer's recommendations and the best standard practice for the type of work involved. All work shall be executed by mechanics skilled in their respective trades, and the installations shall present a neat, precise appearance.

C. The responsibility for the furnishing and installation of the proper plumbing equipment and/or material as intended rests entirely upon the Contractor. The Contractor shall request advice and supervisory assistance from the representative of specific manufacturers during the installation.

2.2 FLAME SPREAD AND SMOKE DEVELOPED PROPERTIES OF MATERIALS

A. Duct coverings, duct linings, vapor barrier facings, tapes, adhesives, core materials, insulation, jackets, piping (of any sort), and other materials in concealed locations, including any above-ceiling area, shall have a flame spread rating not over 25 without evidence of continued progressive combustion and a smoke developed rating no higher than 50. Flame spread and smoke developed ratings shall be in accordance with NFPA Standard No. 255.

2.3 BEARINGS

A. All ball bearings shall be of radial and/or thrust type and enclosed in a dust and moisture-proof housing.

2.4 MOTORS

A. The Contractor shall provide all motors required for equipment supplied under each portion of the work. Motors shall be built in accordance with the latest ANSI, IEE, and NEMA standards, shall be fully coordinated with the equipment served, shall be of sizes and electrical characteristics scheduled.

2.5 STARTING EQUIPMENT

A. Each motor shall be provided with proper starting equipment. This equipment, unless hereinafter specified or scheduled to the contrary, shall be provided by the trade furnishing the motor. All motor starting equipment provided by any one trade shall be of the same manufacture unless such starting equipment is an integral part of the equipment on which the motor is mounted.

2.6 FIRE AND SMOKE PARTITION, WALL, AND/OR FLOOR PENETRATIONS

A. Pipe, ductwork, conduit, etc. shall pass through fire- or smoke-rated floors, partitions, walls, or other barriers within a UL-listed assembly which shall maintain the rating of the applicable wall, floor, partition, or barrier.

B. The Contractor shall review the architectural and structural drawings and determine the location of the fire-rated building elements. Where these elements are penetrated, UL-listed fire-rated penetration assemblies approved by the local authority shall be provided in accordance with the manufacturer's instructions to obtain the required rating.

2.7 FOUNDATIONS / HOUSEKEEPING PADS

A. General: All special foundations and supports required for the proper installation of equipment and pipe shall be provided as hereinafter specified and under the section of the specifications covering the equipment, unless otherwise indicated on the drawings.

B. All equipment shall receive concrete housekeeping pads unless otherwise noted. Equipment to be receive pads are to include (but not limited to): boilers, water heaters, water softeners, expansion / compression tanks, filter feeders, water treatment equipment, air compressors, pumps (in addition to inertia bases where required), surge tanks, deareators, etc.

C. Concrete foundations for the support of equipment such as floor-mounted pumps, equipment, etc. shall be not less than 3 inches high and not less than 4 inches larger (in both directions) than supported unit, unless otherwise noted and shall be poured in forms built of new dressed lumber. All corners of the foundations shall be neatly chaffered by means of sheet metal or triangular wood strips nailed to the form. Pads shall not be laid out directly against walls or structures. 2 inches shall be left available for pad form

work. Foundation bolts shall be placed in the forms when the concrete is poured, the bolts being correctly located by means of templates. Allow 1 inch below the equipment bases for alignment and grouting (where applicable). Foundations for equipment located on the exterior of the building shall be provided as indicated. Foundations shall be constructed in accordance with approved shop drawings and shall be reinforced with #4 bars at 12 inches on center both ways (minimum).

D. Pipe and Conduit Support: All pipes and conduits throughout the building, both horizontal and vertical, shall be adequately supported from the construction to line of grade, with proper provision for expansion, contraction, vibration elimination, and anchorage. Vertical pipes and conduits shall be supported from floor lines with riser clamps sized to fit the lines and to adequately support their weight. At the bases of lines, where required for proper support, provide anchor base fittings or other approved supports.

PART 3 - EXECUTION

3.1 SPACE AND EQUIPMENT ARRANGEMENT

A. The size of equipment indicated on the drawings is based on the dimensions of a particular manufacturer. While other manufacturers will be acceptable, it is the responsibility of the Contractor to determine whether the equipment he proposes to furnish will fit in the space. Shop drawings shall be prepared when required by the Owner's Representative to indicate a suitable arrangement.

B. All equipment shall be installed in a manner to permit access to all surfaces. All valves, motors, drives, filters, and other accessory items shall be installed in a position to allow removal for service without disassembly of another part.

3.2 LARGE APPARATUS

A. Any large piece of apparatus which is to be installed in any space in the building, and which is too large to permit access through stairways, doorways, or shafts shall be brought to the job and placed in the space before the enclosing structure is completed. Following placement in the space, such apparatus shall be thoroughly, completely protected from damage as hereinafter specified.

3.3 PROTECTION

A. The Contractor shall take such precautions as may be necessary to properly protect all materials and equipment from damage from the time of delivery until the completion of work. This shall include the erection of all required temporary shelters and supports to adequately protect any items stored in the open on the site from the weather, the ground and surrounding work; the cribbing of any items above the floor of the construction; and the covering of items in the uncompleted building with tarpaulins or other protective covering. Failure on the part of the Contractor to comply with the above will be sufficient cause for the rejection of the items in question.

B. The Contractor shall protect existing facilities, the work of others, and the premises from any and all damages that may be made possible by the execution of work.

C. Equipment and materials shall be protected from rust both before and after installation. Any equipment or materials found in a rusty condition at the time of final inspection must be cleaned of rust and repainted as specified elsewhere in these specifications.

3.4 COOPERATION BETWEEN TRADES AND WITH OTHER CONTRACTORS

A. Each trade, subcontractor, and/or Contractor must work in harmony with the various trades, subcontractors, and/or Contractors on the job as may be required to facilitate the progress to the best advantage of the job as a whole. Each trade, subcontractor, and/or Contractor must pursue its work promptly and carefully so as not to delay the general progress of the job. This Contractor shall work in harmony with Contractors working under other contracts on the premises.

B. It shall be the responsibility of each trade to cooperate fully with the other trades on the job to help keep the jobsite in a clean and safe condition. At the end of each day's work, each trade shall properly store all of its tools, equipment, and materials and shall clean its debris from the job. Upon the completion of the job, each trade shall immediately remove all of its tools, equipment, any surplus materials, and all debris caused by its portion of the work.

3.5 PRECEDENCE OF MATERIALS AND COORINATION OF WORK

A. These specifications and the accompanying drawings are intended to cover systems which will not interfere with the structural design of the building, which will fit into the several available spaces, and which will ensure complete and satisfactory systems. Each subcontractor and/or trade shall be responsible for the proper fitting of his material and apparatus into the building.

B. The work of the various trades shall be performed in the most direct and workmanlike manner without hindering or handicapping the work of other trades. Piping interferences shall be handled by giving precedence to pipe lines which require a stated grade for proper operation. Where space requirements conflict, the following order or precedence shall, in general, be observed:
   1. Building lines.
   2. Structural members.
   3. Light fixtures.
   4. Soil and drain piping.
   5. Condensate drains.
   6. Vent piping.
   7. Supply, return, and outside air ductwork.
   8. Exhaust ductwork.
   9. HVAC water and steam piping.
   10. Steam condensate piping.
   11. Fire protection piping.
   12. Natural gas piping.
   13. Domestic water (cold and hot).
   14. Refrigerant piping.
   15. Electrical conduit.

C. Coordinate all major elements, components, and systems of plumbing equipment and materials in relationship with other systems, installations, and building components. Coordinate space requirements for installation and access. Verify the following:
   1. Clearance for servicing and maintaining equipment, accessories, and specialties, including space for disassembly required for periodic maintenance.
   2. Equipment and accessory service connections and support details.
   3. Fire-rated wall and floor penetrations.
   4. Scheduling, sequencing, movement and positioning of large equipment into building during construction.
   5. Access panel and door locations.
   6. Clearances between building openings and VTR's/Flues.

D. The light fixture grid layout as indicated on the drawings must be maintained. This Contractor shall refer to all light fixture plans and details indicated on the drawings and shall coordinate the location of dampers, supply grilles, return air grilles, sprinkler heads, etc. with the location of the light fixtures to assure proper access to all items in a manner acceptable to the Owner's Representative.

E. The electrical trades shall locate all junction boxes, pull boxes, conduits, etc. to avoid interference with the diffusers, dampers, grilles, etc. hereinbefore mentioned. The mechanical trades shall furnish to all other trades copies of approved ductwork shop drawings to assist in the coordination of the rough-in and installation of all items of work.

3.6 CONNECTIONS FOR OTHERS

A. This Contractor shall rough-in for and make all water, sewer, electrical, etc. connections to all fixtures, equipment, machinery, etc. provided by others in accordance with detailed roughing-in drawings provided by the equipment suppliers, by actual measurements of the equipment connections, or as detailed.

B. After the equipment is set in place, this Contractor shall make all final connections and shall provide all required pipe, fittings, valves, traps, connectors, etc.

C. Provide all air gap fittings required, using materials hereinbefore specified. In each water line serving an item of equipment or piece of machinery, provide a shutoff valve. On each drain without integral trap provide a suitable trap.

D. All pipe fittings, valves, traps, etc. exposed in finished areas and connected to chrome-plated lines provided by others shall be chrome-plated to match.

E. Provide all transition pieces, etc. required for a complete installation of equipment provided by others.

3.7 INSTALLATION METHODS

A. Where to Conceal: All pipes and conduits shall be concealed in pipe chases, walls, furred spaces, below suspended floors, or above the ceilings of the building unless otherwise indicated.

B. Where to Expose: In mechanical rooms, janitor's' closets tight against pan soffits in exposed Tee structures, or storage spaces, but only where necessary, piping and conduit may be run exposed. All exposed piping and conduit shall be run in the neatest, most inconspicuous manner, and parallel or perpendicular to the building lines.

C. Support: All piping and conduit shall be adequately and properly supported from the building structure by means of hanger rods or clamps to walls as herein specified.

D. Maintaining Clearance: Where limited space is available above the ceilings and below concrete beams or other deep projections, pipe and conduit shall be sleeved through the projection where it crosses, rather than hung below them, in a manner to provide maximum above-floor clearance. Sleeves shall be as herein specified. Approval shall be obtained from the Owner's Representative for each penetration.

E. All pipe, conduits, etc. shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. All ducts, pipes, and conduits run exposed in machinery and equipment rooms shall be installed parallel to the building lines, except that they shall be sloped to obtain the proper pitch. Piping and ducts run in furred ceilings, etc. shall be similarly installed, except as otherwise shown. Conduits in furred ceilings and in other concealed spaces may be run at angles to the construction but shall be neatly grouped and racked indicating good workmanship. All conduit and pipe openings shall be kept closed until the systems are closed with final connections.

F. Special Requirements:
   1. There shall be no pipe joints nearer than 12 inches to a wall, ceiling, or floor penetration unless pipe joint is a welded or mechanically-coupled-type joint.
   2. The Contractor shall study all construction documents and carefully lay out all work in advance of fabrication and erection in order to meet the requirements of the extremely limited spaces. Where conflicts occur, the Contractor shall meet with all involved trades and the Owner's Representative and resolve the conflict prior to erection of any work in the area involved.
   3. Prior to the installation of any ceiling material, gypsum, plaster, or acoustical board, the Contractor shall notify the Owner's Representative so that arrangements can be made for an inspection of the above-ceiling area about to be "sealed off." The Contractor shall give as much advance notice as possible up to ten (10) working days, but in no case less than five (5) working days.
   4. The purpose of this inspection is to verify the completeness and quality of the installation of the air conditioning systems, the plumbing systems, and any other special above-ceiling systems such as pneumatic tube. The ceiling supports (tee bar or lath) should be in place so that access panel and light fixture locations are identifiable and so that clearances and access provisions may be evaluated.

5. No ceiling material shall be installed until the deficiencies listed from this inspection have been corrected to the satisfaction of the Owner's Representative.

3.8 CUTTING AND PATCHING

A. General: Cut and patch walls, floors, etc. resulting from work in existing construction or where made necessary by failure to provide proper openings or recesses in new construction.

B. Methods of Cutting: Openings cut through concrete and masonry shall be made with masonry saws and/or core drills and at such locations acceptable to the Owner's Representative. Impact-type equipment will not be used except where specifically acceptable to the Owner's Representative. Openings in concrete for pipes, conduits, outlet boxes, etc. shall be core drilled to exact size. Determine location of embedded conduit and reinforcing bars prior to cutting.

C. Restoration: All openings shall be restored to "as-new" condition under the appropriate specification section for the materials involved, and shall match remaining surrounding materials and/or finishes.

D. Masonry: Where openings are cut through masonry walls, provide and install lintels or other structural supports to protect the remaining masonry. Adequate supports shall be provided during the cutting operation to prevent any damage to the masonry occasioned by the operation. All structural members, supports, etc. shall be of the proper size and shape, and shall be installed in a manner acceptable to the Owner's Representative.

E. Plaster: All plumbing work in area containing plaster shall be completed prior to the application of the finish plaster coat. Cutting of finish plaster coat will not be permitted.

F. Weakening: No cutting, boring, or excavating which will weaken the structure shall be undertaken.

3.9 ROOF PENETRATIONS AND FLASHING

A. Pipe and conduit ducts, pitch pockets, curb bases, and flashing compatible with the roofing installation shall be provided for roof penetrations. Provide framing or other support around all openings through roof as required to preserve the structural integrity of the roof system and make the penetration weathertight.

3.10 EXCAVATING AND BACKFILLING

A. Perform trenching, excavating, backfilling for plumbing work as set forth below.

B. Depth of excavation varies with invert of pipe. Excavation to be carried to a depth of at least 6 inches below bottom of pipe elevation. Fill below pipe (6 inches), around pipe, and a minimum of 12 inches above pipe with crushed stone tamped firm and even. Separate topsoil during excavation. Final layer of dirt for exterior installations to be (6 inches minimum) to be topsoil. Backfilling shall be done to exclude use of rock or stone above crushed stone.

3.11 TESTS AND INSPECTIONS

A. General: The Contractor shall make all tests deemed necessary by the inspection departments of the engineer and the authority having jurisdiction, Board of Underwriters, etc. He shall provide all equipment, materials, and labor for making such tests. Fuel and electrical energy for system operational tests following beneficial occupancy by the Owner will be paid for by the Owner.

B. Other: Additional tests specified hereinafter under the various specification sections shall be made.

C. Notification: The Owner's Representative shall be notified at his office 36 hours prior to each test and other specifications requirements requiring action on the part of the Owner, Architect, Engineer, and/or Owner's Representative.

D. Test Logs: All tests which the Contractor conducts shall have pertinent data logged by the Contractor at the time of testing. Data shall include date, time, personnel, description and extent of system tested, test conditions, test results, specified results, and any other pertinent data. Data shall be delivered to the Owner's Representative as specified under "Requirements for Final Acceptance.

E. Inspections: In general, an inspection by the Owner's Representative shall be required prior to closing up any work and prior to beneficial occupancy or final project completion. The closing up of work includes, but is not limited to, pipe and conduit installations prior to backfilling; mechanical, plumbing electrical, and fire protection work prior to placement of concrete; or closing up walls and overhead mechanical, plumbing, electrical and fire protection work prior to installation of the ceiling.

3.12 CLEANING AND PAINTING

A. Thoroughly clean and touch up the finish on all parts of the materials and equipment. Exposed parts in equipment rooms, and all other spaces except sealed chases and attics shall be thoroughly cleaned of cement, plaster, and other materials, and all oil and grease spots shall be removed. Such surfaces shall be carefully wiped and all cracks and corners scraped out.

B. All other painting shall be accomplished under the Painting Section of Division 9 of the specifications.

3.13 DISCHARGE OF WASTES FROM CONSTRUCTION SITE

A. The Contractor shall comply with all applicable provisions of local, state, and federal laws regarding the discharge of wastes into sewer and waterways. Special caution shall be exercised to prevent the discharge of wastes which contain oil, tar, asphalt, roofing compound, kerosene, gasoline, paint, mud, cement, lime, or other materials which would degrade the water quality of the receiving water course. The Contractor shall construct and maintain oil interceptors, settling basins, acid neutralization tanks, and/or other effective pollution countermeasures, as required by the Texas Water Quality Board.

B. On LEED and CHPS projects, contractor is responsible for tracking waste leaving the jobsite. All waste on these projects to be sorted and processed during construction.

END OF SECTION 220100

SECTION 220500

BASIC PLUMBING MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following basic plumbing materials and methods to complement other Plumbing Sections.
   1. Piping materials and installation instructions common to most piping systems.
   2. Concrete base construction requirements.
   3. Escutcheons.
   4. Dielectric fittings.
   5. Dielectric isolation tape
   6. Flexible connectors.
   7. Mechanical sleeve seals.
   8. Nonshrink grout for equipment installations.
   9. Field-fabricated metal and wood equipment supports.
   10. Installation requirements common to equipment specification sections.
   11. Mechanical demolition.
   12. Cutting and patching.
   13. Touchup painting and finishing.
   14. Access Doors

B. Pipe and pipe fitting materials are specified in Plumbing piping system Sections, if applicable.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:
   1. ABS: Acrylonitrile-butadiene-styrene plastic.
   2. CPVC: Chlorinated polyvinyl chloride plastic.
   3. NP: Nylon plastic.
   4. PE: Polyethylene plastic.
   5. PVC: Polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:
   1. CR: Chlorosulfonated polyethylene synthetic rubber.
   2. EPDM: Ethylene propylene diene terpolymer rubber.

1.3 SUBMITTALS

A. Product Data: For dielectric fittings, flexible connectors, access doors, solder/brazing material and mechanical sleeve seals.

B. Shop Drawings: Detail fabrication and installation for metal and wood supports and anchorage for mechanical materials and equipment.

C. Coordination Drawings: Detail major elements, components, and systems of plumbing equipment and materials in relationship with other systems, installations, and building components. Show space requirements for installation and access. Indicate if sequence and coordination of installations are important to efficient flow of the Work. Include the following:
   1. Clearances for servicing and maintaining equipment, accessories, and specialties, including space for disassembly required for periodic maintenance.
   2. Equipment and accessory service connections and support details.
   3. Fire-rated wall and floor penetrations.
   4. Scheduling, sequencing, movement, and positioning of large equipment into building during construction.
   5. Access panel and door locations

1.4 QUALITY ASSURANCE

A. All materials, unless otherwise specified, shall be 51% manufactured in the United States, new, free from all defects, and of the best quality. Foreign goods specifically approved for use by the Owner's Representative prior to bidding may be furnished.

B. Materials and equipment shall be installed in accordance with the manufacturer's recommendations and the best standard practice for the type of work involved. All work shall be executed by mechanics skilled in their respective trades, and the installations shall present a neat, precise appearance.

C. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

D. Equipment Selection: Equipment of higher electrical characteristics, physical dimensions, capacities, and ratings may be furnished provided such proposed equipment is approved in writing and connecting mechanical and electrical services, circuit breakers, conduit, motors, bases, and equipment spaces are increased. Additional costs shall be approved in advance by appropriate Contract Modification for these increases. If minimum energy ratings or efficiencies of equipment are specified, equipment must meet design and commissioning requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and prevent entrance of dirt, debris, and moisture.

B. Protect stored pipes and tubes from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor, if stored inside.

C. Protect flanges, fittings, and piping specialties from moisture and dirt.

D. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate plumbing equipment installation with other building components.

B. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction to allow for plumbing installations.

C. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components, as they are constructed.

D. Sequence, coordinate, and integrate installations of plumbing materials and equipment for efficient flow of the Work. Coordinate installation of large equipment requiring positioning before closing in building.

E. Coordinate connection of plumbing systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.

F. Coordinate requirements for access panels and doors if plumbing items requiring access are concealed behind finished surfaces.

G. Coordinate installation of identifying devices after completing covering and painting, if devices are applied to surfaces. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2- PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Dielectric Tape:
      a. Holdrite (#272-4).
   2. Metal, Flexible Connectors:
      a. Flexicraft Industries.
      b. Flex-Weld, Inc.
      c. Grinnell Corp.; Grinnell Supply Sales Co.
      d. Mercer Rubber Co.
      e. Metraflex Co.
      f. Uniflex, Inc.
   3. Rubber, Flexible Connectors:
      a. General Rubber Corp.
      b. Mercer Rubber Co.
      c. Metraflex Co.
      d. Red Valve Co., Inc.
      e. Uniflex, Inc.
   4. Mechanical Sleeve Seals:
      a. Calpico, Inc.
      b. Metraflex Co.
      c. Thunderline/Link-Seal.

2.2 PIPE AND PIPE FITTINGS

A. Refer to individual Specification piping Sections for pipe and fitting materials and joining methods, if applicable.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Specification piping Sections for special joining materials not listed below, if applicable.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness, unless thickness or specific material is indicated.
   a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
   b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

E. Solder Filler Metals: ASTM B 32.
1. ASTM B 32, 95/5 lead-free alloys. Include water –flushable and soluble flux according to ASTM B 813.

F. Brazing Filler Metals: AWS A5.8.
1. BCuP Series: Copper-phosphorus alloys.
2. BAg1: Silver alloy.

G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

H. Solvent Cements: Manufacturer's standard solvent cements for the following:
1. CPVC Piping: ASTM F 493.
2. PVC Piping: ASTM D 2564, medium bodied (bond). Include purple primer according to ASTM F 656.

I. Plastic Pipe Seals: ASTM F 477, elastomeric gasket.

J. Flanged, Ductile-Iron Pipe Gasket, Bolts, and Nuts: AWWA C110, rubber gasket, carbon-steel bolts and nuts.

K. Couplings: Iron-body sleeve assembly, fabricated to match OD of plain-end, pressure pipes.
1. Sleeve: ASTM A 126, Class B, gray iron.
2. Followers: ASTM A 47 malleable iron or ASTM A 536 ductile iron.
3. Gaskets: Rubber.
4. Bolts and Nuts: AWWA C111.
5. Finish: Enamel paint.

2.4 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials or ferrous material body with separating nonconductive insulating material suitable for system fluid, pressure, and temperature, to prevent galvanic action and stop corrosion. Unions in first paragraph below are available in at least NPS 1/2 to NPS 2.

B. Dielectric Unions:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Capitol Manufacturing Company.
   b. Central Plastics Company.
   c. EPCO Sales, Inc.
   d. Hart Industries International, Inc.
   e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
   f. Zurn Plumbing Products Group; Wilkins Water Control Products.
2. Description:
   a. Pressure Rating: 250 psig at 180 deg F.
   b. End Connections: Solder-joint copper alloy and threaded ferrous.

c. Flanges in first paragraph below are available in at least NPS 1-1/2 to NPS 4.

C. Dielectric Flanges:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Capitol Manufacturing Company.
b. Central Plastics Company.
c. EPCO Sales, Inc.
d. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
2. Description:
a. Factory-fabricated, bolted, companion-flange assembly.
b. Pressure Rating: 175 psig minimum.
c. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Kits:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Advance Products & Systems, Inc.
b. Calico, Inc.
c. Central Plastics Company.
d. Pipeline Seal and Insulator, Inc.
2. Description:
a. Nonconducting materials for field assembly of companion flanges.
b. Pressure Rating: 150 psig.
c. Gasket: Neoprene or phenolic.
d. Bolt Sleeves: Phenolic or polyethylene.
e. Washers: Phenolic with steel backing washers.

E. Dielectric Couplings:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Calpico, Inc.
b. Lochinvar Corporation.
2. Description:
a. Galvanized-steel coupling.
b. Pressure Rating: 300 psig at 225 deg F.
c. End Connections: Female threaded.
d. Lining: Inert and noncorrosive, thermoplastic.

F. Dielectric Nipples:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Perfection Corporation; a subsidiary of American Meter Company.
b. Precision Plumbing Products, Inc.
c. Victaulic Company.
2. Description:
a. Electroplated steel nipple complying with ASTM F 1545.
b. Pressure Rating: 300 psig at 225 deg F.
c. End Connections: Male threaded or grooved.
d. Lining: Inert and noncorrosive, propylene.

2.5 DIELECTRIC ISOLATION TAPE

A. Tape to eliminate dissimilar metal contact: (equal to Holdrite #272-4)
1. White Polyester Felt. Pressure sensitive adhesive rubber base (one side only).
2. 4” width.

2.6 FLEXIBLE CONNECTORS

A. General: Fabricated from materials suitable for system fluid and that will provide flexible pipe connections. Include 125-psig minimum working-pressure rating, unless higher working pressure is indicated, and ends according to the following:
   1. 2-Inch NPS and Smaller: Threaded.
   2. 2-1/2-Inch NPS and Larger: Flanged.
   3. Option for 2-1/2-Inch NPS and Larger: Grooved for use with keyed couplings.

B. Bronze-Hose, Flexible Connectors: Corrugated, bronze, inner tubing covered with bronze wire braid. Include copper-tube ends or bronze flanged ends, braze welded to hose.

C. Rubber, Flexible Connectors: CR or EPDM elastomer rubber construction, with multiple plies of NP fabric, molded and cured in hydraulic presses. Include 125-psig minimum working-pressure rating at 220 deg F. Units may be straight or elbow type, unless otherwise indicated.

2.7 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, used to fill annular space between pipe and sleeve.
   1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe materials and size of pipe.
   2. Pressure Plates: Stainless steel.
   3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.8 PIPING SPECIALTIES

A. Sleeves: The following materials are for wall, floor, slab, and roof penetrations:
   1. Steel Sheet Metal: 0.0239-inch minimum thickness, galvanized, round tube closed with welded longitudinal joint.
   2. Steel Pipe: ASTM A 53, Type E, Grade A, Schedule 40, galvanized, plain ends.
   3. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
   4. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
      a. Underdeck Clamp: Clamping ring with set screws.
   5. Sleeve Fasteners: Manufactured, steel clips for securement during pour. Equal to B-line, BD40, BE-5-8 or BE-9-12.

B. Escutcheons: Manufactured wall, ceiling, and floor plates; deep-pattern type if required to conceal protruding fittings and sleeves.
   1. ID: Closely fit around pipe, tube, and insulation of insulated piping.
   2. OD: Completely cover opening.
   3. Cast Brass: One piece, with set screw. (split face acceptable for existing piping)
      a. Finish: Polished chrome-plate.

2.9 GROUT

A. Nonshrink, Nonmetallic Grout: ASTM C 1107, Grade B.
   1. Characteristics: Post-hardening, volume-adjusting, dry, hydraulic-cement grout, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
   2. Design Mix: 5000-psig, 28-day compressive strength.
   3. Packaging: Premixed and factory packaged.

2.10 ACCESS DOORS

A. General: Provide access doors for all serviceable mechanical appurtenances (valves, trap primers, shock arresters, actuators, sensors, etcetera) in inaccessible locations. Such locations include gypsum, brick and CMU ceilings and walls.

B. Location of panels shall be carefully coordinated with other Exposed Devices as described in earlier paragraphs.

C. Manufacturers shall be Milcor, Mifab, or approved equal. Unless indicated otherwise, use panels equal to Milcor Style M for masonry and drywall construction, equal to Milcor Style K for plastered masonry walls and ceilings. Stainless steel panels shall be used in ceramic tile or glazed structural tile.

D. Minimum construction features include 16-gage frame and door, continuous hinges, cam-style latch and 10”x10" unobstructed opening size.

E. UL labeled when in fire-rated construction, one and one-half hour rating.

F. Access doors located outside, in restrooms or in a moisture-laden environment (dressing area, shower area, lockers, etcetera) shall be stainless steel construction.

G. Equipment access doors shall be of sufficient size to remove/replace equipment and provide routine maintenance as necessary, unless otherwise noted. Doors shall be set flush with adjacent finish surfaces. All access doors shall be provided with cylinder locks. All access doors (MEP) shall have one (1) common key.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS AND APPLICATIONS

A. General: Install piping as described below, unless piping Sections specify otherwise. Individual piping Sections specify unique piping installation requirements.

B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.

C. All piping to be installed in compliance with current NEC required clearances.

D. Install manufactured isolation clamps at all dissimilar metal pipe supports. Install dielectric isolation tape (engineer approved) only when a manufactured isolation clamp is not available.

E. Install piping at indicated slope.

F. Install components with pressure rating equal to or greater than system operating pressure.

G. Install piping in concealed interior and exterior locations, except in equipment rooms and service areas.

H. Install piping free of sags and bends.

I. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, unless otherwise indicated.

J. Install piping tight to slabs, beams, joists, columns, walls, and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.

K. Install piping to allow application of insulation plus 1-inch clearance around insulation.

L. Locate groups of pipes parallel to each other, spaced to permit valve servicing.

M. Install fittings for changes in direction and branch connections.

N. Install couplings according to manufacturer's written instructions.

O. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping" for firestop materials and installations.
   1. Fire-stop all sleeves at floor penetrations of multistory buildings including underfloor penetrations.

P. Verify final equipment locations for roughing-in.

Q. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

R. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping specification Sections:
   1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
   2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
   3. Soldered Joints: Construct joints according to AWS's "Soldering Manual," Chapter "The Soldering of Pipe and Tube"; or CDA's "Copper Tube Handbook."
   4. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
   5. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
      a. Note internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
      b. Apply appropriate tape or thread compound to external pipe threads, unless dry seal threading is specified.
      c. Align threads at point of assembly.
      d. Tighten joint with wrench. Apply wrench to valve end into which pipe is being threaded.
      e. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
   6. Welded Joints: Construct joints according to AWS D10.12, "Recommended Practices and Procedures for Welding Low Carbon Steel Pipe," using qualified processes and welding operators according to "Quality Assurance" Article.
   7. Flanged Joints: Align flange surfaces parallel. Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly using torque wrench.
   8. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join pipe and fittings according to the following:
      a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
      b. CPVC Piping: ASTM D 2846 and ASTM F 493.
      c. PVC Pressure Piping: ASTM D 2672.
      d. PVC Nonpressure Piping: ASTM D 2855.
   9. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657 procedures and manufacturer's written instructions.
      a. Plain-End Pipe and Fittings: Use butt fusion.
      b. Plain-End Pipe and Socket Fittings: Use socket fusion.

3.2 ESCUTCHEON REQUIREMENTS

A. Install escutcheons at pipe penetrations of walls, ceilings, and floors in finished areas.
   1. Escutcheons for New Piping:
      a. Piping exposed through floors and walls in finished areas: One piece, cast brass with polished chrome-plated finish with set screw. Deep escutcheons to be provided where standard depth will not fit.
      b. Escutcheons shall cover entire hole penetration.
      c. Escutcheon to be appropriately sized for pipe.
   2. Escutcheons for Existing piping:
      a. Piping exposed through floors and walls in finished areas: Split plate, cast brass with polished chrome-plated finish with set screw. Deep escutcheons to be provided where standard depth will not fit.
      b. Escutcheons shall cover entire hole penetration.
      c. Escutcheon to be appropriately sized for pipe.
   3. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

3.3 PIPE SLEEVE INSTALLATION REQUIREMENTS

A. Pipe sleeves are required at all through wall and floor penetrations.
   1. Sleeves are to be of the following material:
      a. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc-coated, with plain ends.
   2. Sleeves are required for all through floor and wall penetrations. Sleeves to be set and poured in place (in slab applications), secure all sleeves with fasteners.
   3. Sleeves to extend 2 inches past face of floor or wall. Pipe sleeve in finished areas to be flush with wall or floor for installation of escutcheon.
   4. Install sleeves in new partitions, slabs, and walls as they are built.
   5. For interior wall penetrations, seal annular space between sleeve and pipe or pipe insulation using joint sealants appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants" for joint sealants.
   6. For exterior wall penetrations above grade, seal annular space between sleeve and pipe using joint sealants appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants" for joint sealants.
   7. For exterior wall penetrations below grade, seal annular space between sleeve and pipe using sleeve seals specified in this Section.
   8. Install sleeves that are large enough to provide 1/4-inch (6.4-mm) annular clear space between sleeve and pipe or pipe insulation unless otherwise indicated. Seal annular space with water tight sealant. (equal to NP-1). All sleeves and penetrations to maintain rating of wall / floor. Seal pipe penetrations with fire-stopping materials.
   9. Install sleeve materials according to the following applications:
      a. Sleeves for Piping Passing through Concrete Floor Slabs: galvanized steel pipe.
      b. Sleeves for Piping Passing through Concrete Floor Slabs of Mechanical Equipment Areas or Other Wet Areas: Galvanized-steel pipe sleeves.
         1) Extend sleeves 2 inches above finished floor level.
         2) For pipes penetrating floors with membrane waterproofing, extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches (50 mm) above finished floor level. Comply with requirements in Division 07 Section "Sheet Metal Flashing and Trim" for flashing.
   10. Sleeves for Piping Passing through Gypsum-Board Partitions:
      a. Galvanized-steel pipe sleeves.
      b. Exception: Sleeves are not required for water supply tubes and waste pipes for individual plumbing fixtures if escutcheons will cover openings.
   11. Sleeves for Piping Passing through Concrete Roof Slabs: Reference details.
   12. Sleeves for Piping Passing through Exterior Concrete Walls:

a. Galvanized-steel pipe sleeves.
b. Install sleeves that are large enough to provide 1-inch annular clear space between sleeve and pipe or pipe insulation when sleeve seals are used.

13. Sleeves for Piping Passing through Interior Concrete Walls:
    a. Galvanized-steel pipe sleeves.
14. Mechanical sleeve seals
    a. Install sleeve seals in sleeves in exterior concrete walls at water-service piping entries into building. Sleeves must be poured in place. Installation of sleeves after wall is constructed is not acceptable.
    b. Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble sleeve seal components and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

B. Piping Connections: Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping 2-inch NPS and smaller, adjacent to each valve and at final connection to each piece of equipment with 2-inch NPS or smaller threaded pipe connection.
2. Install flanges, in piping 2-1/2-inch NPS and larger, adjacent to flanged valves and at final connection to each piece of equipment with flanged pipe connection.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.4 DIELECTRIC FITTING INSTALLATION

A. Install unions, in piping 2-inch NPS and smaller, adjacent to each valve and at final connection to each piece of equipment with 2-inch NPS or smaller threaded pipe connection.

B. Install flanges, in piping 2-1/2-inch NPS and larger, adjacent to flanged valves and at final connection to each piece of equipment with flanged pipe connection.

3.5 EQUIPMENT INSTALLATION – COMMON REQUIREMENTS

A. Install equipment to provide maximum possible headroom, if mounting heights are not indicated.

B. Install equipment according to approved submittal data. Portions of the Work are shown only in diagrammatic form. Refer conflicts to Architect.

C. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

D. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

E. Install equipment giving right of way to piping installed at required slope.

3.6 PAINTING AND FINISHING

A. Apply paint to exposed piping according to the following, unless otherwise indicated:
1. Interior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
2. Interior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over galvanized metal primer.
3. Interior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.

4. Exterior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over rust-inhibitive metal primer.
5. Exterior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over galvanized metal primer.
6. Exterior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include two finish coats over rust-inhibitive metal primer.

B. Do not paint piping specialties with factory-applied finish.

C. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.7 ERECTION OF METAL SUPPORTS AND ANCHORAGE

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.

B. Field Welding: Comply with AWS D1.1, "Structural Welding Code--Steel."

3.8 ERECTION OF WOOD SUPPORTS AND ANCHORAGE

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorage to support and anchor mechanical materials and equipment (not to be used at pipe supports).

B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

3.9 DEMOLITION

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for mechanical installations. Perform cutting by skilled mechanics of trades involved.

B. Repair cut surfaces to match adjacent surfaces.

3.10 CUTTING AND PATCHING

A. Disconnect, demolish, and remove Work specified in Plumbing Sections.

B. If pipe, ductwork, insulation, or equipment to remain is damaged or disturbed, remove damaged portions and install new products of equal capacity and quality.

C. Accessible Work: Remove indicated exposed pipe and ductwork in its entirety.

D. Work Abandoned in Place: Cut and remove underground pipe a minimum of 2 inches beyond face of adjacent construction. Cap and patch surface to match existing finish.

E. Removal: Remove indicated equipment from Project site.

F. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational equipment indicated for relocation.

3.11 GROUTING

A. Install nonmetallic, nonshrink, grout for plumbing equipment base bearing surfaces, pump and other equipment base plates, and anchors. Mix grout according to manufacturer's written instructions.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placing of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases to provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout according to manufacturer's written instructions.

END OF SECTION 220500

SECTION 220519

METERS AND GAGES FOR PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following meters and gages for plumbing systems:
   1. Thermometers.
   2. Gages.
   3. Test plugs
   4. Flow indicators.
   5. Temperature and Pressure Test Kit

B. Related Sections include the following:
   1. Specification Section "Domestic Water Piping" for domestic water appurtenances.

1.2 SUBMITTALS

A. Product Data: For each type of product to be installed.

B. Operation and Maintenance Data: For all products to be installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 METAL-CASE, LIQUID-IN-GLASS THERMOMETERS

A. Manufacturers:
   1. Palmer - Wahl Instruments Inc.
   2. Trerice, H. O. Co.
   3. Weiss Instruments, Inc.
   4. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.

B. Case: Black-finished Aluminum, 9 inches long.

C. Tube: Red or blue reading, organic-liquid filled, with magnifying lens.

D. Tube Background: Satin-faced, nonreflective aluminum with permanently baked on scale markings on lens (U.V. protected).

E. Window: Glass.

F. Connector: Adjustable type, 180 degrees in vertical plane, 360 degrees in horizontal plane, with locking device.

G. Stem: Brass for thermowell installation and of length to suit installation.

H. Accuracy: Plus or minus 1 percent of range or plus or minus 1 scale division to maximum of 1.5 percent of range.

2.3 THERMOWELLS

A. Manufacturers:
   1. Palmer – Wahl Instruments Inc.
   2. Trerice, H. O. Co.
   3. Weiss Instruments, Inc.
   4. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.

B. Manufacturers: Same as manufacturer of thermometer being used.

C. Description: Pressure-tight, socket-type metal fitting made for insertion into piping and of type, diameter, and length required to hold thermometer. Provide extended neck to accommodate insulation thickness.

2.4 PRESSURE GAGES

A. Manufacturers:
   1. Palmer – Wahl Instruments, Inc.
   2. Trerice, H. O. Co.
   3. Weiss Instruments, Inc.
   4. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.

B. Direct Mounting, Dial-type Dry or Liquid Filled Pressure Gages: Indicating-dial type complying with ASME B40.100.
   1. Case: Dry or Liquid-filled type, stainless steel, 4-inch diameter. Weatherproof.
   2. Pressure-Element Assembly: Bourdon tube, unless otherwise indicated.
   3. Pressure Connection: Brass, NPS 1/4, bottom-outlet type unless back-outlet type is indicated.
   4. Movement: Mechanical, with link to pressure element and connection to pointer.
   5. Dial: Satin-faced, nonreflective aluminum with baked on scale markings.
   6. Pointer: Red or other dark-color metal.
   7. Window: Glass
   8. Ring: Stainless
   9. Accuracy: Grade B, plus or minus 2 percent of middle half scale.
   10. Vacuum-Pressure Range: 30-in. Hg of vacuum to 15 psig of pressure.
   11. Range of Fluids under Pressure: Two times operating pressure.

C. Pressure-Gage Fittings:
   1. Valves: NPS ¼ brass or stainless-steel needle type.
   2. Syphons: NPS ¼ coil of brass tubing with threaded ends.
   3. Snubbers: ASME B40.5,NPS ¼ brass bushing with corrosion-resistant, porous-metal disc of material suitable for system fluid and working pressure.

2.5 TEST PLUGS (PT PORTS)

A. Manufacturers:
   1. Palmer – Wahl Instruments, Inc.
   2. Trerice, H. O. Co.
   3. Weiss Instruments, Inc.
   4. Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.

B. Description: Corrosion-resistant brass or stainless-steel body with core inserts and gasketed and threaded cap, with extended stem for units to be installed in insulated piping.

C. Minimum Pressure and Temperature Rating: 500 psig at 200 deg F

D. Core Inserts: One or two self-sealing rubber valves.
   1. Insert material for air, water, oil, or gas service at 20 to 200 deg F shall be CR.
   2. Insert material for air or water service at minus 30 to plus 275 deg F shall be EPDM.

2.6 FLOW INDICATORS

A. Manufacturers:
   1. Dwyer Instruments, Inc. (Series SFI-800 ONLY)

B. Description: Instrument for installation in piping systems for visual verification of flow. Rated for potable water applications.

C. Construction: Polysulfone body; with polysulfone sight glass and white polysulfone paddle-wheel indicator, and threaded ends.

D. Pressure Rating: 150 psig.

E. Temperature Rating: 212 deg F.

F. End Connections for NPS 3/4 and Smaller: Threaded.

2.7 TEMPERATURE AND PRESSURE TEST KIT

A. Test Kit: Furnish (1) test kit containing one pressure gage and adaptor, two (2) thermometers, and carrying case. Pressure gage, adapter probes, and thermometer sensing elements shall be of diameter to fit test plugs and of length to project into piping.
   1. Pressure Gage: Small bourdon-tube insertion type with 2- to 3-inch diameter dial and probe. Dial range shall be 0 to 200 psig.
   2. Low-Range Thermometer: Small bimetallic insertion type with 1- to 2-inch diameter dial and tapered-end sensing element. Dial ranges shall be 25 to 125 deg F.
   3. High-Range Thermometer: Small bimetallic insertion type with 1- to 2-inch diameter dial and tapered-end sensing element. Dial ranges shall be 0 to 220 deg F.
   4. Carrying case shall have formed instrument padding.

PART 3 - EXECUTION

3.1 THERMOMETER APPLICATIONS

A. Install liquid-in-glass thermometers in the following locations:
   1. Inlet and outlet of each storage tank.
   2. Outlet of all domestic water heaters or boilers.
   3. On hot water return line after circulation pump.
   4. At the following locations for mixing valves:
      a. HW (inlet to valve).
      b. HWR (inlet to valve).
      c. Tempered (outlet of valve).

B. Provide the following temperature ranges for thermometers:
   1. Domestic Hot Water: 30 to 180 deg F, with 2-degree scale divisions.
   2. Domestic Cold Water: 0 to 100 deg F, with 2-degree scale divisions.

3.2 PRESSURE GAGE APPLICATIONS

A. Install dry-case-type pressure gages for discharge of each pressure-reducing valve and inlet and outlet of all backflow preventers (Domestic water).

B. Dry type pressure gages to be used on domestic water systems (inlet and outlets of heaters mixing valves, booster pumps and water softeners).

3.3 FLOW INDICATOR APPLICATION

A. Install wheel type indicator on outlet side of each domestic pump (recirculation or booster).

3.4 INSTALLATIONS

A. Install direct-mounting thermometers and adjust vertical and tilted positions.

B. Install thermowells with socket extending to center of pipe and in vertical position in piping tees where thermometers are indicated.

C. Install direct-mounting pressure gages in piping tees with pressure gage located on pipe at most readable position.

D. Install ¼" NPT, ¼ turn ball-valve and snubber fitting in piping for each pressure gage for fluids.

E. Install test plugs in tees in piping.

F. Install flow indicators, in accessible positions for easy viewing, in piping systems.

3.5 CONNECTIONS

A. Install meters and gages adjacent to machines and equipment to allow service and maintenance for meters, gages, machines, and equipment.

3.6 ADJUSTING

A. Calibrate meters according to manufacturer's written instructions, after installation.

B. Adjust faces of meters and gages to proper angle for best visibility.

END OF SECTION 220519

SECTION 220523

GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Bronze ball valves.
2. Ductile iron Butterfly valves.
3. Bronze swing check valves.
4. Iron swing check valves.
5. Bronze globe valves.
6. Ductile iron globe valves.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene copolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

D. NRS: Nonrising stem.

E. OS&Y: Outside screw and yoke.

F. RS: Rising stem.

G. SWP: Steam working pressure.

1.4 SUBMITTALS

A. Product Data: For each type of valve indicated and required accessories (chains, extensions, etc.).

1.5 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:
1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61 for valve materials for potable-water service.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:
   1. Protect internal parts against rust and corrosion.
   2. Protect threads, flange faces, grooves, and weld ends.
   3. Set globe valves closed to prevent rattling.
   4. Set ball and plug valves open to minimize exposure of functional surfaces.
   5. Set butterfly valves closed or slightly open.
   6. Block check valves in either closed or open position.

B. Use the following precautions during storage:
   1. Maintain valve end protection.
   2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

C. Valve Sizes: Same as upstream piping unless otherwise indicated.

D. Valve Actuator Types:
   1. Gear Actuator: For quarter-turn valves NPS 8 and larger.
   2. Handwheel: For valves other than quarter-turn types.
   3. Handlever: For quarter-turn valves NPS 6 and smaller.
   4. Chainwheel: Device for attachment to valve handwheel, stem, or other actuator; of size and with chain for mounting height, as indicated in the "Valve Installation" Article.

E. Valve Action: Close rotation shall be clockwise.

F. Valves in Insulated Piping: With 2-inch stem extensions and the following features:
   1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation. Extension to be provided by valve manufacturer to match specific product.
   2. Butterfly Valves: With extended neck.

G. Valve-End Connections:
   1. Flanged: With flanges according to ASME B16.1 for iron valves (with 316 stainless steel bolts).
   2. Threaded: With threads according to ASME B1.20.1.

2.2 BRONZE BALL VALVES

A. Two-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Conbraco Industries, Inc.; Apollo Valves.
      b. Milwaukee Valve Company.
      c. Mueller Steam Specialty; a division of SPX Corporation.
      d. NIBCO INC.

e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:
   a. Standard: MSS SP-110.
   b. SWP Rating: 150 psig.
   c. CWP Rating: 600 psig.
   d. Body Design: Two piece.
   e. Body Material: Bronze.
   f. Ends: Threaded.
   g. Seats: PTFE or TFE.
   h. Stem: Stainless steel, blowout-proof.
   i. Ball: Stainless steel, vented.
   j. Port: Full.

2.3 BUTTERFLY VALVES

A. 200 CWP, Ductile Iron, Lug Style-Flanged Butterfly Valves, potable rated:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Conbraco Industries, Inc.; Apollo Valves.
      b. Milwaukee Valve Company.
      c. Mueller Steam Specialty; a division of SPX Corporation.
      d. NIBCO INC.
      e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
   2. Description:
      a. Standard: MSS SP-67, Type I.
      b. CWP Rating: 200 psig.
      c. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
      d. Body Material: ASTM A 536, ductile iron.
      e. Seat: EPDM.
      f. Stem: One- or two-piece stainless steel.
      g. Disc: Aluminum Bronze
      h. Flange bolts to be 316 stainless steel.

2.4 BRONZE SWING CHECK VALVES

A. Class 150, Bronze Swing Check Valves with Bronze Disc:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Conbraco Industries, Inc.; Apollo Valves.
      b. Milwaukee Valve Company.
      c. Mueller Steam Specialty; a division of SPX Corporation.
      d. NIBCO INC.
      e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
   2. Description:
      a. Standard: MSS SP-80, Type 3.
      b. CWP Rating: 300 psig.
      c. Body Design: Horizontal flow.
      d. Body Material: ASTM B 62, bronze.
      e. Ends: Threaded.
      f. Disc: Bronze.

2.5 IRON SWING CHECK VALVES

A. Class 250, Iron Swing Check Valves with Metal Seats, potable rated:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Conbraco Industries, Inc.; Apollo Valves.
b. Milwaukee Valve Company.
c. Mueller Steam Specialty; a division of SPX Corporation.
d. NIBCO INC.
e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:
a. Standard: MSS SP-71, Type I.
b. CWP Rating: 500 psig.
c. Body Design: Clear or full waterway.
d. Body Material: ASTM A 126, gray iron with bolted bonnet.
e. Ends: Flanged.
f. Trim: Bronze.
g. Gasket: Asbestos free.
h. Flange bolts to be 316 stainless steel.

2.6 BRONZE GLOBE VALVES

A. Class 150, Bronze Globe Valves with Nonmetallic Disc:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Conbraco Industries, Inc.; Apollo Valves.
b. Milwaukee Valve Company.
c. Mueller Steam Specialty; a division of SPX Corporation.
d. NIBCO INC.
e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
2. Description:
a. Standard: MSS SP-80, Type 2.
b. CWP Rating: 300 psig.
c. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
d. Ends: Threaded.
e. Stem: Bronze.
f. Disc: PTFE or TFE.
g. Packing: Asbestos free.
h. Handwheel: Malleable iron, bronze, or aluminum.

2.7 DUCTILE IRON GLOBE VALVES

A. Class 150, Ductile Iron Globe Valves, potable rated:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Conbraco Industries, Inc.; Apollo Valves.
b. Milwaukee Valve Company.
c. Mueller Steam Specialty; a division of SPX Corporation.
d. NIBCO INC.
e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
2. Description:
a. Standard: MSS SP-85, Type I.
b. CWP Rating: 200 psig.
c. Body Material: ASTM A395, ductile iron.
d. Ends: Flanged.
e. Trim: Bronze.
f. Packing and Gasket: PTFE.
g. Flange bolts to be 316 stainless steel.

2.8 CHAINWHEELS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Babbitt Steam Specialty Co.
2. Roto Hammer Industries.
3. Trumbull Industries.

B. Description: Valve actuation assembly with sprocket rim, brackets, and chain.
   1. Brackets: Type, number, size, and fasteners required to mount actuator on valve.
   2. Attachment: For connection to butterfly valve stems.
   3. Sprocket Rim with Chain Guides: Ductile iron, of type and size required for valve.
   4. Chain: Hot-dip, galvanized steel, of size required to fit sprocket rim.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Install valves with brass short nipples and brass unions at downstream side (outlet) of ball and globe valves (NPS 2 and smaller).

C. Locate valves for easy access and provide separate support where necessary.

D. Install valves in horizontal piping with stem at or above center of pipe.

E. Install valves in position to allow full stem and handle movement. Valve handle to have ample clearance to be fully exercised without interference (full open and full closed) with no modifications to handle.

F. Install chainwheels on operators for butterfly valves NPS 4 and larger and more than 120 inches above finished floor. Extend chains to 96 inches above finished floor.

G. All valves NPS 3 and smaller shall be installed within 120 inches above finished floor.

H. Install check valves for proper direction of flow and as follows:
   1. Swing Check Valves: In horizontal position with hinge pin level.

I. For all valves on insulated piping, provide insulated stem extension.

J. Install shutoff valves immediately upstream of each dielectric fitting.

K. Provide and install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops.

L. Provide and install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping.
   1. Drain Valves (At low points in water mains, risers, and branches): Ball valves

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

B. Perform the following adjustments before operation:
   1. Open shutoff valves to fully open position.
   2. Remove and clean strainer screens. Close drain valves and replace drain plugs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. Valve applications, use the following:
   1. Shutoff Service: Ball, butterfly valves.
   2. Butterfly Valve Dead-End Service: Flange (lug) type.
   3. Throttling Service: Globe valves.
   4. Pump-Discharge Check Valves:
      a. NPS 2 and Smaller: Bronze swing check valves with bronze disc.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:
   1. For Copper Tubing, NPS 2 and Smaller: Threaded ends.
   2. For Copper Tubing, NPS 2-1/2 and larger: Flanged ends except where threaded valve-end option is indicated in valve schedules below.
   3. For Steel Piping, NPS 2 and Smaller: Threaded ends.
   4. For Steel Piping, NPS 2-1/2 and larger: Flanged ends.

3.5 VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:
   1. Ball Valves: Two piece, full port, bronze with stainless-steel trim; with brass short nipple and brass union connection at downstream side (outlet).
   2. Bronze Swing Check Valves.
   3. Bronze Globe Valves: With brass short nipple and brass union connection at downstream side (outlet).

B. Pipe NPS 2-1/2 and Larger:
   1. Ductile Iron, Butterfly Valves.
   2. Iron Swing Check Valves.
   3. Ductile Iron Globe Valves.

END OF SECTION 220523

SECTION 220529

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following hangers and supports for plumbing system piping and equipment.
   1. Steel pipe hangers, supports and riser clamps
   2. Thermal-hanger shield inserts and saddles.
   3. Fastener systems.
   4. Pipe positioning systems.
   5. Equipment supports.

B. Related Sections include the following:
   1. All plumbing specification sections.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.

B. Terminology: As defined in MSS SP-90, “Guidelines on Terminology for Pipe Hangers and Supports.”

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents and test water.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Weight loading for supports and hangers shall not exceed manufacturers recommended tolerances and limits.

1.5 SUBMITTALS

A. Product Data: For the following:
   1. Steel pipe hangers and supports.
   2. Thermal-hanger shield inserts and saddles.
   3. Fastener systems.
   4. Pipe positioning systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
   1. Trapeze pipe hangers. Include Product Data for components.
   2. Metal framing systems. Include Product Data for components.
   3. Equipment supports.

C. Welding certificates.

1.6 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1, “Structural Welding Code-steel.”

B. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1. “Structural Welding Code-Steel”.

PART 2 – PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

A. All materials, unless otherwise specified, shall be 51% manufactured in the United States, new, free from all defects, and of the best quality. Foreign goods specifically approved for use by the Owner’s Representative prior to bidding may be furnished.

B. Materials and equipment shall be installed in accordance with the manufacturer’s recommendations and the best standard practice for the type of work involved. All work shall be executed by mechanics skilled in their respective trades, and the installations shall present a neat, precise appearance.

2.2 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.3 METAL COATING REQUIREMENTS:

A. All metal products shall have the following coatings:
   1. Wet/damp areas: hot dipped galvanized.
   2. Dry or conditioned areas: pre-galvanized.

2.4 STEEL PIPE HANGERS, SUPPORTS AND RISER CLAMPS

A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 “Hangers and Support Applications” Article for where to use specific hanger and support types.

B. Manufacturers:
   1. B-Line Systems, Inc.; a division of Cooper Industries.
   2. ERICO/Michigan Hanger Co.
   3. Grinnell Corp.

C. Galvanized, Metallic Coatings: Pre-galvanized (minimum thickness of 0.5 mils) or hot dipped (1.4 to 3.9 thickness).

D. Nonmetallic Coatings: Plastic coating, jacket or liner.

E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

F. Epoxy Coatings: Copper colored epoxy coating on carbon steel hangers and supports for use on noninsulated copper piping only.

G. Channel, rod and securement hardware:
   1. Channel: 12-ga.
   2. Rod: Sized as scheduled.

3. Hardware (clamps, bolts, washers, etc): coating per area indication.

2.5 THERMAL-HANGER SHIELD INSERTS

A. Description: 100-psig minimum, compressive-strength insulation insert with a sheet metal shield.

B. Manufactures:
   1. B-line
   2. ERICO / Michigan Hanger CO
   3. Grinnell Corp
   4. Buckaroos

C. Insulation –Insert Material for Cold Piping: ASTM C 552, Type II cellular glass with vapor barrier. Wood inserts are not acceptable.

D. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type 1 calcium silicate or ASTM C 552, Type II cellular glass.

E. Insulation-Insert Material for Cold and Hot Piping, up to 3" diameter: Molded fiberglass block, 20 lbs/ft^3 density, thermal conductivity of 0.30.

2.6 FASTENER SYSTEMS

A. Mechanical-Expansion Anchors: Insert-wedge-type stainless steel, for use in hardened Portland cement concrete with pull-out, tension and shear capacities appropriate for supported loads and building materials where used.
   1. Manufacturers:
      a. B-Line Systems, Inc.; a division of Cooper Industries.
      b. Hilti, Inc.
      c. Powers Fasteners.

B. Concrete Insert: electroplated steel finish, for embedding in concrete. Steel insert nut for rod attachment.
   1. Manufacturers:
      a. B-Line Systems, Inc.; a division of Cooper Industries.
      b. Hilti, Inc.
      c. Powers Fasteners.

2.7 PIPE POSITIONING SYSTEMS

A. Description: IAPMO PS 42, system of metal brackets, clips and straps for positioning piping in pipe spaces for plumbing fixtures for commercial applications.

B. Manufacturers:
   1. C&S Mfg. Corp.
   2. HOLDRITE Corp.; Hubbard Enterprises.
   3. Samco Stamping Inc.

2.8 EQUIPMENT SUPPORTS

A. Description: Welded, shop or field-fabricated equipment support made from structural-steel shapes.

2.9 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes and bars. Galvanized only. Painted steel not acceptable.

PART 3 - EXECUTION

3.1 HANGERS AND SUPPORTS APPLICATIONS AND INSTALLATION

A. Specific hanger and support requirements are specified in Hanger Application Schedule below.

B. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps and attachments as required to properly support piping form building structure; attaching to metal roof decks is not permissible.

C. Use hangers and supports with galvanized, metallic coatings for piping. Field applied finish is not acceptable.

D. Use nonmetallic plastic or epoxy coating, jacket or liner coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use padded hangers for piping that is subject to scratching.

F. Rod to be installed plumb. Bending rod is not acceptable. Provide and install required attachments.

G. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Adjustable, Heavy Duty Steel Clevis Hangers: For suspension of non-insulated or insulated stationary pipes, NPS 1/2 to NPS 30.
   2. Strut System Clamps: For attachment of piping to channel. NPS ½ to NPS 2.
      a. Noninsulated copper piping to have dielectric insert. (dielectric tape not acceptable).
   3. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.
      a. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
      b. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1.
   4. Install hangers for piping with the following maximum horizontal spacing and minimum rod diameters (hangers shall be spaced to prevent sagging):
      a. NPS 2 and Smaller: 60 inches with 3/8-inch rod.
      b. NPS 2-1/2 to 5: 60 inches with 1/2-inch rod.
      c. NPS 6 to 8: 60 inches with 3/4-inch rod.

H. Vertical-Piping Riser Clamps: Unless otherwise indicated and except as specified in piping system Section, install the following types:
   1. Required at all risers from under-floor or through floors from floor below. Risers clamps to be installed every 10 ft max. Coordinate installation with sleeves.

I. Building and Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Wide Jaw C-Clamps: For structural shapes, with retaining clip.
   2. NPS 2 and smaller: mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
   3. NPS 2 ½ and larger: Concrete spot insert. Install building attachments within concrete slabs. Install additional attachments at concentrate loads, including valves, flanges and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

J. Insulation Piping Installation:
   1. Provide manufacture galvanized metal shield with locking tabs or securement band.
   2. For Trapeze or Clamped Systems: Thermal insert and shield shall cover entire circumference of pipe.

3. For Clevis or Band Hangers: Thermal insert and shield shall cover lower 180 degrees of pipe.
4. Thermal Insert Length: Extend 4 inches beyond sheet metal shield for piping operating below ambient air temperature.

K. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures; minimum three (3) for vertical pipe sections.

L. Pipe Positioning System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture. Refer Specification Section “Plumbing Fixtures” for plumbing fixtures.

M. Install hangers and supports complete with necessary inserts, bolts, rods, nuts washers and other accessories.

N. Load Distribution: Install hangers and supports so piping live and dead loads and stressed from movement will not be transmitted to connected equipment.

O. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9 (for building services piping) are not exceeded.

3.2 EQUIPMENT SUPPORTS

A. Manufacturer’s structural-steel system to suspend equipment from structure overhead or to support equipment above floor.

3.3 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1 inch.

3.4 PAINTING

A. Repair Galvanized Surfaces: Clean welds, bolted connections and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 220529

SECTION 220553

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Equipment labels.
   2. Warning signs and labels
   3. Pipe labels.
   4. Valve tags.
   5. Warning tags.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to include in maintenance manuals.

1.4 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:
   1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
   2. Letter Color: White.
   3. Background Color: Black.
   4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
   5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
7. Fasteners: Stainless-steel rivets or self-tapping screws.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details and schedules), plus the Specification Section number and title where equipment is specified.

C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2 by 11 inch (A4) bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: White.

C. Background Color: Red.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

G. Fasteners: Stainless-Steel self-tapping screws.

H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

I. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pre-tensioned Pipe Labels: Pre-coiled, semi-rigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size and an arrow indicating flow direction.
1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each label to indicate flow direction.
2. Lettering Size: At least 1-1/2 inches high.

2.4 VALVE TAGS

A. Valve Tags: Stamped or engrave with ¼ inch letters piping system abbreviation and ½ inch numbers.

B. Valve Schedules: For each piping system, on 8-1/2 by 11-inch (A4) bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of a valve (room or space), normal-operating position (open, closed or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
   1. Valve-tag schedule shall be included in operation and maintenance date.

2.5 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, or plasticized card stock with matte finish suitable for writing.
   1. Size: Approximately 4 by 7 inches.
   2. Fasteners: Brass grommet and wire.
   3. Nomenclature: Large-size primary caption such as “DANGER”, “CAUTION”, OR “DO NOT OPERATE”.
   4. Color: yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces or substances that could impair band of identification devices, including dirt, oil, grease, release agents and incompatible primers, paints and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

A. Piping Color-Coding: Painting of piping is specified in Specification Section “Interior Painting”.

B. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels and plenums; and exterior exposed locations as follows:
   1. Near each valve and control device.
   2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
   3. Near penetrations through walls, floors, ceilings and inaccessible enclosures.
   4. At access doors, manholes and similar access points that permit view of concealed piping.
   5. Near major equipment items and other points of origination and termination.
   6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
   7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

C. Pipe Label Color Schedule:
   1. Domestic Water Piping:
      a. Background Color: Blue.
      b. Letter Color: White.
   2. Domestic Hot Water Piping:
      a. Background Color: Red.
      b. Letter Color: White.
   3. Sanitary Waste and Vent and Storm Drainage Piping:
      a. Background Color: Green.
      b. Letter Color: White

3.4 VALVE-TAG INSTALLATION

A. Install tags on valves and controls devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:
   1. Valve-Tag Size and Shape:
      a. Cold Water: 1-1/2 inches round.
      b. Hot Water: 1-1/2 inches square.
   2. Valve-Tag Color:
      a. Cold Water: Blue.
      b. Hot Water: Orange.
   3. Letter Color:
      a. Cold Water: Black.
      b. Hot Water: Black

3.5 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 220553

SECTION 220716

PLUMBING INSULATION

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes plumbing insulation for equipment and pipe, including the following:
   1. Insulation Materials:
      a. Cellular glass.
      b. Flexible Elastomeric.
      c. Mineral fiber.
      d. Phenolic
   2. Adhesives.
   3. Mastics.
   4. Sealants.
   5. Factory-applied jackets.
   6. Field-applied tape.
   7. Field-applied jackets.
   8. Securements.

B. Related Sections include the following:
   1. Specification Section “Hangers and Supports” for high-density inserts at hangers; wood inserts at hangers are not acceptable.
   2. Specification Section “Special Conditions for All Plumbing Work”.
   3. Specification Section “Basic Plumbing Materials and Methods”.

C. Not all items listed within this specification are used. Use only items applicable per application schedule.

1.3 DEFINITIONS

A. ASJ: All-service jacket.

B. CONCEALED: Covered or concealed by a ceiling (gypsum or lay-in acoustical tile) or wall.

C. EXPOSED: Open to view; not concealed by a ceiling or wall of any sort.

D. FSK: Foil, scrim, kraft paper.

E. UNDERFLOOR: Accessible crawl space beneath lowest floor level (considered “outdoors”).

1.4 SUBMITTALS

A. Product Data: For each type of product indicated, identify thermal conductivity, thickness, and jackets (both factory and field applied, if any). Provide submittal data on all products to be used.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, and cement material containers, with appropriate markings of applicable testing and inspecting agency.
   1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

B. All products to be stored in a dry location, protected from the elements. All damaged insulation to be replaced.

1.7 COORDINATION

A. Coordinate size and location of supports, hangers, and high-density insulation inserts and shields specified in Specification Section "Hangers and Supports." Coordinate with drawing details where applicable; wood inserts at hangers are not acceptable.

B. Coordinate clearance requirements with piping Installer for piping insulation application, and equipment Installer for equipment insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

C. Insulation not to be installed until building is dried in.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 INSULATION MATERIALS

A. Refer to Part 3 schedule articles for requirements about where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Phenolic:
   1. Products
      a. Insul-phen
   2. 100% CFC-free, HCFC-free, and halogen-free, closed cell rigid phenolic foam insulation.
   3. Minimal thermal conductivity @ 75˚ F.
      a. Green, 2.5 lb/ft³. 0.15 (Btu.in/hr.ft².F)
      b. Pink, 5.0 lb/ft³. 0.21 (Btu.in/hr.ft². F)

G. Cellular Glass:
   1. Products:
      a. Pittsburgh Corning Corporation; Foamglas Super K.
   2. Block Insulation: ASTM C 552, Type I.
   3. Special-Shaped Insulation: ASTM C 552, Type III.
   4. Board Insulation: ASTM C 552, Type IV.
   5. Preformed Pipe Insulation with Factory-Applied ASJ: Comply with ASTM C 552, Type II, Class 2.
   6. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
   7. Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Minimal thermal conductivity at 75˚ F of 0.29 (Btu.in/hr.ft². F) (R-value of 10.34@ 3 inches thickness). Factory-applied jacket requirements are specified in Part 2 “Factory-Applied Jackets” Article.

H. Flexible Elastomeric:
   1. Products:
      a. Aeroflex USA Inc.; Aerocel.
      b. Armacel LLC; AP Armaflex.
   2. Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.
   3. Minimal thermal conductivity at 75˚ F of 0.25 (Btu.in/hr.ft². F.)

I. Mineral-Fiber Blanket Insulation:
   1. Products:
      a. Johns Manville; Microlite.
      b. Knauf Insulation; Duct Wrap
      c. Owens-Corning; All-Service Duct Wrap.
   2. Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSP jacket. Factory-applied jacket requirements are specified in Part 2 “Factory-Applied jackets” Article.

J. Mineral-Fiber, Preformed Pipe Insulation:
   1. Products:
      a. Johns Manville; Micro-Lok.
      b. Knauf Insulation; 1000° Pipe Insulation.
      c. Owens Corning; Fiberglas Pipe Insulation.
   2. Type I, 850 deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in Part 2 "Factory-Applied Jackets" Article.

K. Fire Rated Wrap
   1. Manufacturers:
      a. 3M
      b. Specialty Products and Insulation Co.
   2. Insulation Materials: Fire rated fiber wrap insulation: 1-1/2 inch thick low bio-persistent Alka-line Earth Silicate fiber with melting point at 2200 degrees F. jacket shall be foil faced (one side)

Kraft fiber paper with a concealed reinforcing scrim. (FSK) One hour rating with 1-layer of wrap, 3 inches to combustibles. Two hour rating with 2 layers of wrap, 0 inch to combustibles.

3. Accessories and Attachments:
   a. Glass Cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8 oz./sq.yd.
      1) Tape Width: 4 inches.
   b. Bands: 3/4 inch wide, in one of the following materials compatible with jacket.
      1) Stainless Steel: ASTM A 666, Type 304; 0.020 inch thick.
   c. Insulation Anchor Pings and Speed Washers: Galvanized steel plate, pin and washer manufactured for attachment to duct by weld. Pin length sufficient for insulation thickness indicated.
   d. Vapor Retarders: Mastics: Materials recommended by insulation material manufacturers that are compatible with insulation materials, jackets, and substrates.
4. Secured per manufacturer's requirements and AHJ.

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated. All products are to contain low V.O.C. as defined/governed by LEED IEQ 4.1 and 4.2 (Regardless of project type).

B. Cellular-Glass, Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F.
   1. Products:
      a. Foamglas: Pittseal 444N or equal

C. Flexible Elastomeric: Comply with MIL-A-24179A, Type II, Class I.
   1. Products:
      a. K-Flex: 720 LVOC or equal

D. Phenolic: Water based adhesive with a service temp of minus 20°F to 700°F.
   1. Products:
      a. Foster 97-15

E. Metal Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
   1. Products:
      a. Design Polymerics, DP2502 (or approved equal).

2.4 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C, Type II. All products are to contain low V.O.C. as defined/governed by LEED IEQ 4.1 and 4.2 (Regardless of project type).

B. Vapor-Barrier Mastic: Water based; suitable for outdoor use on below ambient services, or indoor vapor barrier use.
   1. Products:
      a. Childers Products, Division of ITW; CP-35.
   2. Water-Vapor Permeance: ASTM F 1249, 0.09 perm at 55-mils film thickness.
   3. Service Temperature Range: Minus 20 to plus 190 deg F.
   4. Solids Content: ASTM D 1644, 60 percent by volume and 73 percent by weight.
   5. Color: White.
   6. VOC: 36 g/l.

2.5 SEALANTS

A. Joint Sealants:
   1. Joint Sealants for Cellular-Glass Products:

a. Pittsburgh Corning Corporation; Pittseal 444N.
2. Joint Sealant for Phenolic Products
a. Foster 95-50

B. Metal Jacket:
1. Products:
a. Foster 95-44 or equal.
b. Childers Products, Division of ITW; CP-76.

C. Mineral Fiber:
1. Design Polymerics DP 2502.
2. Childers Products, Division of ITW; CP-35.

D. PVC Jacket:
1. Childers Products, Division of ITW; CP-35.

2.6 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.7 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, 25/50 ASTM-F 84, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
1. Products:
a. Johns Manville; Zeston.
b. Proto PVC Corporation; LoSmoke.
2. Adhesive: As recommended by jacket material manufacturer.
3. Color: White:
4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.
5. Factory-fabricated tank heads and tank side panels.

C. Metal Jacket:
1. Products:
a. Childers Products, Division of ITW; Metal Jacketing Systems.
b. PABCO Metals Corporation; Surefit.
c. RPR Products, Inc.; Insul-Mate.
2. Aluminum Jacket: Comply with ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105 or 5005, Temper H-14.
a. Factory cut and rolled to size.
b. Finish and thickness are indicated in field-applied jacket schedules.

2.8 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136 and UL listed.
   1. Width: 3 inches.
   2. Thickness: 14.0 mils.
   3. Adhesion: 73 ounces force/inch in width.
   4. Elongation: 2 percent.
   5. Tensile Strength: 55 lbf/inch in width.
   6. Color: White

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136 and UL listed.
   1. Width: 3 inches.
   2. Thickness: 13 mils.
   3. Adhesion: 73 ounces force/inch in width.
   4. Elongation: 2 percent.
   5. Tensile Strength: 40 lbf/inch in width.
   6. Color: Silver

2.9 SECUREMENTS

A. Bands:
   1. Products:
      a. Childers Products; Bands.
   2. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 316; 0.015 inch thick, 3/4 inch wide with wing or closed seal.
   3. Aluminum: ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch with wing or closed seal.
   4. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

B. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.
   1. Verify that systems and equipment to be insulated have been tested and are free of defects.
   2. Verify that surfaces to be insulated are clean and dry.
   3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application. For Stainless Steel; apply a corrosion coating to insulated surfaces with an epoxy primer and an epoxy finish 5 mils thick.

B. Verify and coordinate insulation installation with the systems and trades installing heat tracing. Comply with requirements for heat tracing that applies to insulation.

3.3 COMMON INSTALLATION REQUIREMENTS

A. Requirements in this Article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment, ducts and fittings, and piping including fittings, valves, and specialties

C. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment, and pipe system as specified in insulation system schedules.

D. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

E. Install high-density inserts at hanger locations prior to insulating; wood or block inserts are not acceptable

F. Do not weld brackets, clips, pins or other attachment devices to piping, fittings, tanks, coils, equipment, vessel, and specialties.

G. Keep insulation materials clean and dry before, during application, and finishing.

H. Install insulation with tight longitudinal seams and end joints, with least number of joints practical.

I. Install insulation so that material is not over compressed.

J. Seal all joints, and seams, including penetrations in insulation, at supports, and other projections with insulation of same material overlapped by 2”. Secure strips with outward clinching staples along both edges of strip, (spaced 1 inch on center) and seal entire joint or seam with mastic.

K. Do not insulate, conceal, or enclose pipe hangers, channel and steel supports, etc. not directly fasten to duct.

L. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

M. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses. Do not water down products unless directed by manufacture. Use clean potable demineralized water when required.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair all damage insulation prior to concealment as noted above.

P. Do not insulation or conceal vibration-control devices, labels, stamps, nameplates, data plates, manholes, cleanouts, etc. require for maintenances.

Q. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarded integrity, unless otherwise indicated.

R. Insulate pipe elbows, tees, valves, strainers, flanges, etc., using preformed fitting insulation, mitered fittings or oversized preformed pipe insulation made from same material thickness and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, voids, and irregular surfaces with insulating mastic finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation. Provide a removable reusable insulation cover; design that maintains vapor barrier. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts.

S. Cover segmented insulated surfaces with a layer of finishing mastic prior to jacket installation.

T. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions.

Terminate ends with PVC end caps. Secure PVC covers to adjoining insulation facing using staples and ASJ tape. Seal PVC fitting covers with mastic.

U. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes, vessels, and equipment. Shape insulation at these connections by tapering it to and around the connection with insulating adhesive and finish with finishing mastic. All connections are to be accessible.

V. Install removable insulation segment and covers at flanges, valves, controls, unions, equipment access doors, manholes, hand holes, and other elements that require frequent removal for service and inspection. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.4 PENETRATIONS

A. Install insulation continuously through all walls, floors, and partitions penetrations and sleeves.

B. Extend jacket of outdoor installation into wall and roof jacks by 2 inches. Seal jacket to roof flashing with approved flashing sealant.

C. Insulation Installation at Below-Grade Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with approved flashing sealant.

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Preformed Pipe Insulation Installation on Pipe, Fittings, Valves, Flanges, Tanks, Elbows, and Appurtenances for Cellular- Glass, Mineral- Fiber, Flexible Elastomeric, and Phenolic insulations:
   1. Install insulation in a manner that secures material to system being insulated with staples, tape and mastic.
   2. When insulation with preformed pipe insulation, seal all longitudinal seams, end joints, and protrusions with manufacturers recommended tape matching jacket, vapor-barrier mastic, joint sealant, and adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
   3. Secure fittings, jacket, cover, etc. with tape matching jacket and secure with outward clinched staples 1 inch on center. Apply vapor-barrier mastic over staples.
   4. Arrange insulation to permit access to valves packing, flanges, unions, etc. and valve operation for maintenance without disturbing insulation. Install insulation so that it can be removed without damage to surrounding insulation or access enclosure.
   5. Pipe hangers are not to be concealed in insulation.
   6. Seal all exposed insulation ends with mastic.
   7. Seal all mitered joints prior to installing covers with vapor-barrier mastic.
   8. Install preformed pipe insulation to outer diameter of pipe flange.
   9. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
   10. Fill voids between inner circumference of valves, flange, elbows, and bolts insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
   11. Install preformed sections of same material insulation when available. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Install PVC cover over fitting or mitered section.
   12. Arrange insulation to permit access to valves packing, flanges, unions, etc. and valve operation for maintenance without disturbing insulation. Install insulation so that it can be removed without damage to surrounding insulation or access enclosure.

3.6 GENERAL BLANKET INSULATION INSTALLATION (IN ADDITION TO COMMON REQUIREMENTS)

A. Blanket Insulation Installation on Pipes, Drains, Tanks, Vessels, Elbows, and Appurtenances:
   1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for a minimum of 50 percent coverage of insulated surface and 100 percent coverage of equipment, tanks, etc.; to secure insulation to surfaces. Apply adhesive to entire circumference of all surfaces; including fittings and transitions.
   2. Install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from 1 edge and 1 end of insulation segment. Secure laps to adjacent insulation section with 3/4-inch outward-clinching staples, 1 inch on center. Coat all seams/joints with mastic.
   3. Repair punctures, tears, penetrations and protrusions with 6-inch-wide strips of same material used to insulate duct. Seal all seams with staples, cover with mastic and cover with embedded fiberglass reinforced mesh, cover mesh with finish coat of mastic.
   4. Do not conceal hangers beneath/under insulation.
   5. Insulation termination: Butt insulation up to termination point. Apply mastic no less than 3" overlap on insulation, and 3" on metal surface.

3.7 FIELD-APPLIED JACKET INSTALLATION

A. Install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Apply two continuous beads of sealant to seams and joints, one bead under lap and the finish bead along seam and joint edge. Secure metal jacket with stainless-steel bands 12 inches on center and at end joints.

3.8 FINISHES

A. Equipment, and Pipe Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in painting Sections (if applicable).
   1. Flat Acrylic Finish: Two (2) finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
      a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

C. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:
   1. Inspect insulated pipe, and equipment, randomly selected by Engineer, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to two (3) location(s) for each system.
   2. All insulation applications will be considered defective work if sample inspection reveals noncompliance with requirements.
   3. Remove all defective work and install new insulation and jackets to replace insulation and jackets removed for inspection. Repeat inspection procedures as needed.

3.10 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor’s option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
   1. Fire-suppression piping.
   2. Drainage piping located in crawl spaces.

3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.11 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Hot and Recirculated Hot Water:
   1. Concealed Locations:
      a. 0 through 1-1/4" Pipe Size: Insulation shall be any of the following:
         1) Mineral Fiber Preformed: Type 1: 1-inch thick.
         2) Phenolic (2.5 lb/ft³), 1-inch thick.
         3) Cellular Glass: 1-1/2 inches thick.
      b. 1-1/2" and Larger Pipe Size: Insulation shall be any of the following:
         4) Mineral Fiber Preformed: Type 1: 1-1/2"-inch thick.
         5) Phenolic (2.5 lb/ft³), 1-1/2"-inch thick.
         6) Cellular Glass: 1-1/2 inches thick.

   2. Exposed Locations: (including inside mechanical rooms):
      a. 0 through 1-1/4" Pipe Size: Insulation shall be any of the following:
         1) Phenolic (3.5 lb/ft³), 1-inch thick.
         2) Cellular Glass: 1-1/2 inches thick.
         3) Mineral Fiber Preformed: Type 1: 1-inch thick.
      b. 1-1/2" and Larger Pipe Size: Insulation shall be any of the following:
         4) Phenolic (3.5 lb/ft³), 1-1/2-inch thick.
         5) Cellular Glass: 1-1/2 inches thick.
         6) Mineral Fiber Preformed: Type 1: 1-1/2"-inch thick.

B. Condensate, Equipment Drain, Floor Drains, Traps and Waste Water below 60 Deg F:
   1. All PVC Piping exposed to and in a Return Air Plenum: Insulation shall be any of the following:
      a. Fire rated wrap.
   2. All Other Pipe: Insulation shall be any of the following:
      a. Cellular Glass: 1-1/2 inches thick.
      b. Phenolic (2.5 lb/ft³): 1-1/2 inches thick.

C. Horizontal Storm Water Piping (continuous from roof drain body to first vertical drop):
   1. All PVC Piping exposed to and in a Return Air Plenum: Insulation shall be any of the following:
      a. Fire rated wrap.
   2. All Other Pipe: Insulation shall be any of the following:
      a. Cellular Glass: 1-1/2 inches thick.
      b. Phenolic (2.5 lb/ft³): 1-1/2 inches thick.
      c. Mineral Fiber, Preformed, Type 1: 1-inch thick.

D. Roof Drain Body:
   1. PVC Roof Drain Body exposed to and in a Return Air Plenum: Insulation shall be any of the following:
      a. Fire rated wrap.
   2. All Other Roof Drain Bodies: Insulation shall be any of the following:
      a. Mineral-Fiber Blanket Insulation: 1-1/2 inch thick.

E. Sanitary Waste & Vent; Domestic Water piping:
   1. All PVC Piping exposed to and in a Return Air Plenum: Insulation shall be any of the following:
      a. Fire rated wrap.

3.12 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE (ATTIC AND CRAWL SPACE INCLUDED)

A. Domestic Cold, Hot and Recirculated Hot Water:
   1. All Pipe Sizes: Insulation shall be any of the following:
      a. Pre-insulated Pipe: 1-1/2" thick (underfloor, outdoors and buried)
      b. Cellular Glass: 2 inches thick (outdoors, not acceptable indoors)

c. Phenolic (5 lb/ft³): 2 inches thick (outdoors, not acceptable indoors)
d. Mineral Fiber Preformed, Type 1: 1-1/2 inch thick (uninsulated Attic space)

B. Condensate, Equipment Drain, Floor Drains, Traps and Waste Water below 60 Deg. F:
1. All Pipe Sizes: Insulation shall be any of the following:
a. Cellular Glass: 1-1/2 inches thick
b. Phenolic (5 lb/ft³): 1-1/2 inches thick
2. Insulation shall be continuous until the connection to the sanitary system.

C. Fire Protection:
1. All Pipe Sizes: Insulation shall be any of the following:
a. Cellular Glass: 1-1/2 inches thick
b. Phenolic (5 lb/ft³): 1-1/2 inches thick

3.13 INSIDE EXTERIOR WALL PIPING INSULATION SCHEDULE

A. Domestic Cold, Hot and Recirculated Hot Water:
1. All Pipe Sizes: Insulation shall be any of the following:
a. Cellular Glass: 1-1/2 inches thick
b. Phenolic (2.5 lb/ft³): 1 inch thick
c. Mineral Fiber Preformed, Type 1: 1 inch thick, coat entire ASJ jacket with vapor mastic

B. Condensate, Equipment Drain, Floor Drains, Traps and Waste Water below 60 Deg. F:
1. All Pipe Sizes: Insulation shall be any of the following:
a. Cellular Glass: 1-1/2 inches thick
b. Phenolic (2.5 lb/ft³): 1-1/2 inches thick

C. Fire Protection:
1. All Pipe Sizes: Insulation shall be any of the following:
a. Cellular Glass: 1-1/2 inches thick
b. Phenolic (2.5 lb/ft³): 1-1/2 inches thick

3.14 FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. Piping exposed in finish interior areas, outdoors, in underfloor, mechanical rooms:
1. Aluminum, Stucco Embossed: 0.016 inch thick.

C. Indoor piping fitting or elbows:
1. PVC: (0.015 inch thick).

END OF SECTION 220716

SECTION 221116

DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Under-building slab and aboveground domestic water pipes, tubes, fittings, and specialties inside the building.
   2. Encasement for piping.

1.3 SUBMITTALS

A. Product Data: For the following products:
   1. Piping and fittings.

B. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency. Origin of product to be domestic. No imported product will be acceptable.

B. Comply with NSF 14 for plastic, potable domestic water piping and components. Include marking "NSF-pw" on piping.

C. Comply with NSF 61 for potable domestic water piping and components.

1.5 PROJECT CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
   1. Notify Owner no fewer than two days in advance of proposed interruption of water service.
   2. Do not proceed with interruption of water service without Owner's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L or K water tube, drawn temper.

1. Copper Pressure Fittings: ASME B16.18, cast copper-alloy or ASME B16.22, wrought-copper, solder fittings.

B. Soft Copper Tube: ASTM B 88, Type L or K water tube, annealed temper.
1. Copper Pressure Fittings: ASME B16.18, cast copper-alloy or ASME B16.22, wrought-copper, solder fittings.

C. Copper Pipe, Pre-insulated:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Insul-Pipe Systems, Inc.
b. Insul-tek
c. Thermal Pipe Systems, Inc.
d. Thermacor Process L.P.
2. Description: Factory pre-insulated double-wall pipe system.
3. Carrier Pipe: Drawn-Temper Copper Tubing: ASTM B 88, Type L (ASTM B 88M, Type B).
4. Wrought-Copper Fittings: ASME B16.22.
5. Pipe Insulation: Foamed-in-place polyurethane, 90% closed cell, poured in place, "K" = 0.14 per inch @ 75 degrees F, with a density of not less than 2.5 lbs. per cubic foot. Insulation shall be completely encased within a seamless jacket.
a. Insulation at each end of each length of pipe shall be protected with an end seal bonded both to the carrier pipe and the outer jacket. Piping cuts made in the field must be provided with end-seals equal to factory type.
b. Insulation thickness, minimum: 1.12-inches for NPS 2 and smaller; 1.67-inches for NPS 2-1/2; 1.42-inches for NPS 3; 1.93-inches for NPS 4; and 1.93-inches for NPS 6.
6. Jacket: PVC; ASTM D-1784, Class 12454-B, of not less than .060 inches thick and able to withstand H-20 highway loading.
7. Fitting insulation: Coupling joints on straight runs shall be field wrapped with a mold/jacket of roll PVC, sealed with self seal tape and filled with field mixed pour poly-urethane foam. Fittings shall be field insulated using a field mixed polyurethane poured between the fitting and a PVC fitting cover supplied by the manufacturer that is sealed with self seal tape. Vapor barrier jacketing material for fittings and joints shall be of the same material as the pipe jacketing. Installation shall be as per manufacturer's instructions.

2.3 NIPPLES

A. Brass Nipple: ASTM B687-88
1. Threads: NPT (Federal Services Handbook H-28)
2. Potable use.

2.4 UNIONS

A. Factory-fabricated, brass or bronze union assembly, for 150-psig minimum working pressure at 180 deg F, ASTM B687-88

B. End Connections: Solder-joint copper alloy and / or threaded ferrous.

C. Potable use.

2.5 FLANGES

A. Factory-fabricated, bronze union assembly, for 150-psig minimum working pressure at 180 deg F, ASME B16.24, Class 150.

B. End Connections: Solder-joint copper alloy and / or threaded ferrous.

C. Potable use.

D. All bolts to be 316 stainless steel (Class 150).

2.6 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free, unless otherwise indicated; full-face or ring type unless otherwise indicated.

B. Solder Filler Metals: ASTM B 32, 95/5 lead-free alloys. Include water-flushable and soluble flux according to ASTM B 813.

C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.7 ENCASEMENT FOR PIPING

A. Standard: ASTM A 674 or AWWA C105.

B. Form: Tube.

C. Material: LLDPE film of 0.008-inch minimum thickness or high-density, cross-laminated PE film of 0.004-inch minimum thickness.

D. Color: Black or blue.

2.8 TRANSITION FITTINGS

A. General Requirements:
   1. Same size as pipes to be joined.
   2. Pressure rating at least equal to pipes to be joined.
   3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Sleeve-Type Transition Coupling: AWWA C219.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Cascade Waterworks Manufacturing.
      b. Dresser, Inc.; Dresser Piping Specialties.
      c. Ford Meter Box Company, Inc. (The).
      d. JCM Industries.
      e. Romac Industries, Inc.
      f. Smith-Blair, Inc; a Sensus company.
      g. Viking Johnson; c/o Mueller Co.

D. Plastic-to-Metal Transition Fittings:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Charlotte Pipe and Foundry Company.
      b. Harvel Plastics, Inc.
      c. Spears Manufacturing Company.
   2. Description: CPVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert and one solvent-cement-socket end.

E. Plastic-to-Metal Transition Unions:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Colonial Engineering, Inc.

b. NIBCO INC.
c. Spears Manufacturing Company.

2. Description: CPVC four-part union. Include brass threaded end, solvent-cement-joint plastic end, rubber O-ring, and union nut.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105.

D. Provide and install shutoff valve, strainer, pressure reducing valve, hose-end drain valve, pressure gage, and test tee with valve, inside the building at each domestic water service entrance. Comply with requirements in Section "Meters and Gages" for pressure gages and Section "Domestic Water Piping Specialties" for drain valves and strainers.

E. Install domestic water piping level and plumb.

F. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

G. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

H. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

I. Install piping adjacent to equipment and specialties to allow service and maintenance.

J. Install piping to permit valve servicing.

K. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than system pressure rating used in applications below unless otherwise indicated.

L. Install piping free of sags and bends.

M. Install fittings for changes in direction and branch connections.

N. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty valves.

O. All pipe nipples to be brass.

3.2 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Brazed Joints: Join copper tube and fittings according to CDA's "Copper Tube Handbook," "Brazed Joints" Chapter.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux to end of tube. Join and prepare/clean copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

E. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.

F. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

G. All piping is to be cleaned prior to concealment.

3.3 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Underground Domestic Water Piping:
   1. NPS 2 and Smaller: Fitting-type coupling.
   2. NPS 2-1/2 and Larger: mechanical joint-type coupling.

C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition unions.

3.4 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment and machines to allow service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to all equipment.

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Piping Inspections:
   1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by engineer and authorities having jurisdiction
   2. During installation, notify engineer and authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of engineer and authority having jurisdiction:
      a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
      b. Final Inspection: Arrange final inspection for engineer and authority having jurisdiction to observe tests specified below and to ensure compliance with requirements.
   3. Reinspection: If the engineer or authority having jurisdiction finds that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
   4. Reports: Prepare inspection reports and have them signed by engineer and authority having jurisdiction.

C. Piping Tests:

1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
4. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
6. Prepare reports for tests and for corrective action required.

D. Domestic water piping will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.6 CLEANING

A. Clean and disinfect potable domestic water piping as follows:
1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:
a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
b. Fill and isolate system according to either of the following:
1) Fill system or part thereof with water/chlorine solution with at least 50 ppm (50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm (200 mg/L) of chlorine. Isolate and allow to stand for three hours.
c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.

B. Clean non-potable domestic water piping as follows:
1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging procedures prescribed by authorities having jurisdiction or; if methods are not prescribed, follow procedures described below:
a. Flush piping system with clean, potable water until dirty water does not appear at outlets.

C. Prepare and submit reports of purging and disinfecting activities.

D. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.7 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions to be provided and installed at all equipment connections and appurtenances.

C. Under-building-slab, domestic water, building service and distribution piping, NPS 2 and smaller, shall be the following:
1. Soft copper tube, ASTM B 88, Type K; (continuous, no joints under slab.)

D. Under-building-slab, domestic water, building-service piping, NPS 2-1/2 and larger, shall be the following (see detail for additional requirements):
   1. Hard copper tube, ASTM B 88, Type K; wrought- copper brazed-joint fittings and joints.
   2. Mechanical-joint, ductile iron pipe; standard-pattern mechanical-joint fittings; and mechanical joints.

E. Aboveground domestic water piping, all sizes, shall be the following:
   1. Hard copper tube, ASTM B 88, Type L; cast- or wrought- copper solder-joint fittings; and soldered joints.

F. Underfloor domestic water piping shall be the following:
   1. Hard copper tube, ASTM B 88, Type L; cast- or wrought- copper solder-joint fittings; and soldered joints.
   2. Pre-insulated copper pipe. (Hot and Recirculated water only)

END OF SECTION 221116

SECTION 224100

PLUMBING FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following conventional plumbing fixtures and related components:
   1. Faucets for lavatories.
   2. Flushometers.
   3. Toilet seats.
   4. Protective shielding guards.
   5. Fixture supports.
   6. Dishwasher air-gap fittings.
   7. Disposers.
   8. Water closets.
   9. Urinals.
   10. Lavatories.
   11. Commercial sinks.
   12. Kitchen sinks.
   13. Service basins.
   14. Utility Boxes

B. Related Sections include the following:
   1. Specification Section "Water Distribution" for exterior plumbing fixtures and hydrants.
   2. Specification Section "Toilet and Bath Accessories."
   3. Specification Section "Emergency Plumbing Fixtures."
   4. Specification Section "Security Plumbing Fixtures."
   5. Specification Section "Drinking Fountains and Water Coolers."
   6. Specification Section "Plumbing Specialties" for backflow preventers, floor drains, and specialty fixtures not included in this Section.

1.3 DEFINITIONS

A. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities; and is compliant with the Texas Accessibility Standards (TAS), Article 9102, Texas Civil Statutes.

B. Fitting: Device that controls the flow of water into or out of the plumbing fixture. Fittings specified in this Section include supplies and stops, faucets and spouts, shower heads and tub spouts, drains and tailpieces, and traps and waste pipes. Piping and general-duty valves are included where indicated.

1.4 SUBMITTALS

A. Product Data: For each type of plumbing fixture indicated. Include selected fixture and trim, fittings, accessories, appliances, appurtenances, equipment, and supports. Indicate materials and finishes, dimensions, construction details, and flow-control rates.

B. Shop Drawings: Diagram power, signal, and control wiring.

C. Operation and Maintenance Data: For plumbing fixtures to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.
   1. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities" Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act" for plumbing fixtures for people with disabilities.

D. Regulatory Requirements: Comply with requirements in the Texas Accessibility Standards (TAS), Architectural Barriers Act, Article 9102, Texas Civil Statutes.

E. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.

F. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.

G. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.

H. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
   1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
   2. Water-Closet, Flushometer Tank Trim: ASSE 1037.

I. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
   1. Backflow Protection Devices for Faucets with Hose-Thread Outlet: ASME A112.18.3M.
   2. Faucets: ASME A112.18.1.
   3. Hose-Connection Vacuum Breakers: ASSE 1011.
   4. Hose-Coupling Threads: ASME B1.20.7.
   5. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
   6. NSF Potable-Water Materials: NSF 61.
   7. Pipe Threads: ASME B1.20.1.
   8. Supply Fittings: ASME A112.18.1.
   9. Brass Waste Fittings: ASME A112.18.2.

J. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
   1. Atmospheric Vacuum Breakers: ASSE 1001.
   2. Brass and Copper Supplies: ASME A112.18.1.
   3. Dishwasher Air-Gap Fittings: ASSE 1021.
   4. Manual-Operation Flushometers: ASSE 1037.
   5. Plastic Tubular Fittings: ASTM F 409.
   6. Brass Waste Fittings: ASME A112.18.2.

K. Comply with the following applicable standards and other requirements specified for miscellaneous components:
   1. Disposers: ASSE 1008 and UL 430.
   2. Dishwasher Air-Gap Fittings: ASSE 1021.

3. Flexible Water Connectors: ASME A112.18.6.
4. Hose-Coupling Threads: ASME B1.20.7.
5. Off-Floor Fixture Supports: ASME A112.6.1M.
6. Pipe Threads: ASME B1.20.1.
7. Plastic Toilet Seats: ANSI Z124.5.
8. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 WARRANTY

A. Warranty Period: Two (2) years from dated of Substantial Completion.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Faucet Cartridge, Assembly and Associated O-Rings: Equal to 2 or 5 percent of amount of each type and size installed (whichever is greater).
   2. Flushometer Valve, Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than 12 of each type.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Product descriptions hereinafter represent minimum requirements for each fixture; refer to Basis-of-Design manufacturer and model number listed on the drawing “Plumbing Fixture Schedule” for additional features, construction details, accessories and/or options.

2.2 MATERIALS AND WORKMANSHIP

A. All materials, unless otherwise specified, shall be 51% manufactured in the United States, new, free from all defects, and of the best quality. Foreign goods specifically approved for use by the Owner’s Representative prior to bidding may be furnished.

B. Materials and equipment shall be installed in accordance with the manufacturer’s recommendations and the best standard practice for the type of work involved. All work shall be executed by mechanics skilled in their respective trades, and the installations shall present a neat, precise appearance.

2.3 STOPS

A. Angle Stops:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following: (unless noted otherwise on drawings or on schedule).
      a. Chicago Faucets.
      b. McGuire Manufacturing Co., Inc.
      c. T & S Brass and Bronze Works, Inc.
   2. Description: Heavy duty cast brass with compression cartridge.
      a. Finish: Chrome plated.
      b. Stem: Brass, full turn.
      c. Operation: Loose Key, unless otherwise indicated.
      d. Outlet: NPS 3/8, compression
      e. Inlet Size: NPS 1/2, female thread.

2.4 LAVATORY FAUCETS

A. Lavatory Faucets, Manual:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing “Plumbing Fixture Schedule” or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule)
      a. Chicago Faucets.
      b. T & S Brass and Bronze Works, Inc.
   2. Description: Two-handle mixing valve. Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
      a. Body Material: Commercial, solid brass.
      b. Finish: Polished chrome plate.
      c. Maximum Flow Rate: 0.5 gpm. (unless noted otherwise on drawings or within Schedule)
      d. Valve Handle(s): Wrist blade, 4 inches.
      e. Spout Outlet: Aerator.
      f. Operation/Cartridge: Ceramic disk, manual.

2.5 SINK FAUCETS

A. Sink Faucets, Manual, Single Hole:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing “Plumbing Fixture Schedule” or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule)
      a. Chicago Faucets.
      b. T & S Brass and Bronze Works, Inc.
   2. Description: One or two-handle valve. Include cold and hot-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
      a. Body Material: Commercial, solid brass.
      b. Finish: Polished chrome plate.
      c. Maximum Flow Rate: 2.2 gpm, (unless noted otherwise on drawings or within Scheduled)
      d. Mixing Valve: None.
      e. Handle: Wrist blade, 4 inches; coordinate single handle (CW only) units with floor plans such that lever is always located on front side of counter/sink.
      f. Spout Outlet: Aerator.
      g. Operation: Compression, manual.

B. Sink Faucets, Manual:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing “Plumbing Fixture Schedule” or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule).
      a. Chicago Faucets.
      b. T & S Brass and Bronze Works, Inc.
   2. Description: Two-handle mixing. Include cold and hot-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
      a. Body Material: Commercial, solid brass.
      b. Finish: Polished chrome plate.
      c. Maximum Flow Rate: 2.2 gpm, (unless noted otherwise on drawings or within Schedule)
      d. Mixing Valve: None.
      e. Handles: Wrist blade, 4 inches.
      f. Spout Outlet: Aerator.
      g. Operation: Compression, manual.

C. Sink Faucets, Kitchen:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing “Plumbing Fixture Schedule” or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule)
      a. Chicago Faucets.

b. T & S Brass and Bronze Works, Inc.

2. Description: Kitchen faucet without spray, single-handle mixing. Coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
   a. Body Material: Commercial, solid brass.
   b. Finish: Polished chrome plate.
   c. Maximum Flow Rate: 2.2 gpm, (unless noted otherwise on drawings or within Schedule).
   d. Mixing Valve: Integral to cartridge.
   e. Handle: Lever, minimum 4 inches;
   f. Spout Outlet: Aerator.
   g. Operation/Cartridge: Manual, ceramic disk mixing.

2.6 TOILET SEATS

A. Toilet Seats:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. American Standard Companies, Inc.
      b. Bemis Manufacturing Company.
      c. Church Seats.
      d. Kohler Co.
   2. Description: Toilet seat for water-closet-type fixture.
      a. Material: Molded, solid plastic.
      b. Configuration: Open front without cover.
      c. Size: Elongated.
      d. Hinge Type: SC, self-sustaining, check.
      e. Class: Heavy-duty commercial.
      f. Color: White.

2.7 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following: (unless noted otherwise on drawings or within Schedule)
      a. McGuire Manufacturing Co., Inc.
      b. TRUEBRO, Inc.
   2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

2.8 FIXTURE SUPPORTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Josam Company.
   2. MIFAB Manufacturing Inc.
   3. Smith, Jay R. Mfg. Co.
   4. Tyler Pipe; Wade Div.
   5. Zurn Plumbing Products Group; Specification Drainage Operation.

B. Water-Closet Supports:
   1. Description: Combination carrier designed for mounting height of wall-mounting, water-closet-type fixture. Include single or double, vertical or horizontal, hub-and-spigot or hubless waste fitting as required for piping arrangement; faceplates; couplings with gaskets; feet; and fixture bolts and hardware matching fixture. Include additional extension coupling, faceplate, and feet for installation in wide pipe space. Factory painted.

C. Urinal Supports:

1. Description: Type I, manufactured urinal carrier with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture for wall-mounting, urinal-type fixture. Include steel uprights with feet. Factory painted.
2. Accessible-Fixture Support: Include rectangular steel uprights.

D. Lavatory Supports:
1. Description: Type II, manufactured lavatory carrier with concealed arms and tie rod for wall-mounting, lavatory-type fixture. Include steel uprights with feet. Factory painted.
2. Accessible-Fixture Support: Include rectangular steel uprights.

E. Securements
1. Stainless Steel drop in anchors with heavy-duty class stainless steel bolts. All-threaded is not acceptable.

2.9 DISHWASHER AIR-GAP FITTINGS

A. Dishwasher Air-Gap Fittings:
1. Manufacturers: Subject to compliance with requirements, provide product (or provide Dishwasher loop where local jurisdiction allows):
a. Watts Brass & Tubular; a division of Watts Regulator Co.
2. Description: Fitting suitable for use with domestic dishwashers and for deck mounting; with plastic body chrome-plated brass cover; and capacity of at least 5 gpm; and inlet pressure of at least 5 psig at a temperature of at least 140 deg F. Include 5/8-inch ID inlet and 7/8-inch ID outlet hose connections.
3. Hoses: Rubber and suitable for temperature of at least 140 deg F.
a. Inlet Hose: 5/8-inch ID and 48 inches long.
b. Outlet Hose: 7/8-inch ID and 48 inches long.

2.10 DISPOSERS

A. Disposers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following: (unless noted otherwise on drawings or within Schedule).
a. In-Sink-Erator; a div. of Emerson Electric Co.
b. KitchenAid.
2. Description: Batch-feed household, food-waste disposer. Include reset button; switch; corrosion-resistant chamber with jam-resistant, cutlery- or stainless-steel grinder or shredder; NPS 1-1/2 outlet; quick-mounting, stainless-steel sink flange; antisplash guard; and combination cover/stopper.
a. Type: Batch-feed household.
b. Model: Sound-insulated chamber.
c. Motor: 115-V ac.
d. Minimum 1/2 HP motor

2.11 WATER CLOSETS

A. Water Closets, Floor Mounted, ADA-Compliant:
1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing “Plumbing Fixture Schedule” or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule)
a. American Standard Companies, Inc.
b. Kohler Co.
c. Sloan (Water Closets/Flush Valve combo)
2. Description: Accessible, floor-mounting, floor-outlet, vitreous-china fixture designed for flush tank operation.
a. Style: two piece.
1) Bowl Type: Elongated with siphon-jet design; include bolt caps matching fixture.

2) Design Consumption: 1.28 gal./flush (unless noted otherwise on drawings or within Schedule).
3) Color: White.
4) Toilet Seat: Required; see other paragraph.
5) Flush tank: Required; see other paragraph.

3. Description: Accessible, floor-mounting, floor-outlet, vitreous-china fixture designed for flushometer valve operation.
   a. Style: Flush tank valve.
      1) Bowl Type: Elongated with siphon-jet design; include bolt caps matching fixture.
      2) Height: Accessible, 16-3/4".
      3) Design Consumption: 1.28 gal./flush (unless noted otherwise or within Schedule).
      4) Color: White.
      5) Toilet Seat: Required; see other paragraph.
      6) Flush tank: Required; see other paragraph.

2.12 URINALS

A. Urinals:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing "Plumbing Fixture Schedule" or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule).
      a. American Standard Companies, Inc.
      b. Kohler Co.
      c. Sloan (Urinals/Flush Valve combo)
   2. Description: Accessible, wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.
      a. Type: Siphon jet.
      b. Design Consumption: 0.5 gal./flush (unless noted otherwise on drawings or within Schedule).
      c. Color: White.
      d. Supply Spud Size: NPS 3/4.
      e. Outlet Size: NPS 2.

2.13 LAVATORIES

A. Lavatories:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing "Plumbing Fixture Schedule" or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule).
      a. American Standard Companies, Inc.
      b. Kohler Co.
   2. Description: Accessible, wall-mounting, vitreous-china fixture.
      a. Type: With back Ledge back Shelf back Slab Pedestal.
      b. Faucet Hole Punching: Coordinate with faucet.
      c. Color: White.
      d. Supplies: NPS 3/8 chrome-plated copper with stops.
      e. Drain: Grid.
      f. Drain Piping: NPS 1-1/4 chrome-plated, cast-brass 17-ga. P-trap; NPS 1-1/4 0.045-inch thick tubular brass waste to wall (trap arm); and wall escutcheon.

2.14 COMMERCIAL SINKS

A. Commercial Sinks:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing "Plumbing Fixture Schedule" or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule).
      a. Elkay Manufacturing Co.

b. Just Manufacturing Company.

2. Description: Counter-mounting, seamless commercial sink, self-rimming, fully undercoated for sound attenuation, with 1-3/4" radius coved corners.
   a. Metal: 304 stainless steel, 18 gauge.
   b. Finish: Satin.
   c. Drain: 3" Grid, chrome-plated brass, with vandal resistant strainer and NPS 1-1/2 tailpiece; unless otherwise indicated.
   d. Supplies: NPS 1/2 chrome-plated copper with stops.
   e. Drain Piping: NPS 1-1/2 chrome-plated, cast-brass P-trap; 0.045-inch- thick tubular brass waste to wall (trap arm); and wall escutcheon(s).

2.15 KITCHEN SINKS

A. Kitchen Sinks, Barrier Free:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing "Plumbing Fixture Schedule" or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule).
      a. Kohler Co.
      b. American Standard Companies, Inc.
   2. Description: Two-compartment (high/low), accessible, built into counter, enameled, cast-iron kitchen sink.
      a. Overall Dimensions:
      b. Metal Thickness: 0.038 inch 0.050 inch.
      c. Left Compartment:
         1) Dimensions: 7 x 9-inches.
         2) Drain: 3-1/2-inch outlet for disposer.
            a) Location: Near back of compartment.
      d. Right Compartment:
         1) Dimensions: 21 x 16-inches.
         2) Drain: 3-1/2-inch crumb cup.
            a) Location: Near back of compartment on left side.
      e. Supplies: NPS 1/2 chrome-plated copper with stops.
      f. Drain Piping: Drain Piping: NPS 1-1/2 chrome-plated, cast-brass P-trap; 0.045-inch thick tubular brass waste to wall (trap arm); and wall escutcheon(s).
      g. Color: White.
      h. Barrier-free Shroud: Required.
      i. Disposer: Required for left compartment.
      j. Dishwasher Air-Gap Fitting: Required.

2.16 SERVICE BASINS

A. Service Basins:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing "Plumbing Fixture Schedule" or a comparable product by one of the following: (unless noted otherwise on drawings or within Schedule).
      a. Crane Plumbing, L.L.C./Fiat Products.
      b. Stern-Williams Co., Inc.
   2. Description: Flush-to-wall, floor-mounting, pre-cast terrazzo fixture with rim guard.
      a. Rim Guard: On front surfaces, stainless steel.
      b. Faucet: As indicated on drawing "Plumbing Fixture Schedule."
      c. Color: Not applicable.
      d. Drain: Cast-brass with nickel-bronze grid and NPS 3 (DN 80) outlet; extra heavy-duty, cast iron, deep seal trap.

2.17 UTILITY BOXES

A. Utility Boxes, Clothes Washer:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing “Plumbing Fixture Schedule.”
2. Description: Flush mounted in wall cavity with shutoff valves.
   a. Material: Galvanized Steel.
   b. Finish: Unpainted.
   c. Valves: Bronze, brass stem, compression.
   d. Outlets: 3/4" Hose Thread.
   e. Inlet Size: NPS 1/2, female thread.
   f. Supplies: 60-inch Heavy-duty CW and HW clothes washer hoses, manufactured by Floodcheck (no exceptions). Provide with shock arrestors equal to Precision Plumbing Products #WHA-500L.

B. Utility Boxes, Ice Maker:
1. Basis-of-Design Product: Subject to compliance with requirements, provide the product listed on the drawing “Plumbing Fixture Schedule.”
2. Description: Flush mounted in wall cavity with angle stop.
   a. Material: Galvanized Steel.
   b. Finish: Unpainted.
   c. Supply: Annealed copper tube, minimum 48-inch length (coiled) to permit pulling out appliance for rear service.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.

B. Examine cabinets, counters, floors, and walls for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.

B. Install off-floor supports, affixed to building substrate, for wall-mounting fixtures.
1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
2. Use carrier supports without waste fitting for fixtures with tubular waste piping.
3. Use chair-type carrier supports with rectangular steel uprights for accessible fixtures.

C. All wall mounted fixtures and equipment shall be installed with floor mounted carriers (provided by Manufacturer).

D. Install wall-mounted fixtures AT ELEVATIONS INDICATED ON ARCHITECTURAL DRAWINGS.

E. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.

F. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.

G. Install wall-mounting fixtures with tubular waste piping attached to supports.

H. Install floor-mounting, back-outlet water closets attached to building floor substrate and wall bracket and onto waste fitting seals.

I. Install counter-mounting fixtures in and attached to casework.

J. Install fixtures level and plumb according to roughing-in drawings.

K. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.
   1. Exception: Use ball valve, if supply stops are not specified with fixture. Valves are specified in Specification Section "Valves."

L. All appurtenances supporting fixtures to be chrome plated in exposed areas (including but not limited to under-cabinet areas).

M. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.

N. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.

O. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.

P. Install toilet seats on water closets.

Q. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

R. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.

S. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

T. Install shower flow-control fittings with specified maximum flow rates in shower arms.

U. Install traps on fixture outlets.
   1. Exception: Omit trap on fixtures with integral traps.
   2. Exception: Omit trap on indirect wastes, unless otherwise indicated.

V. Install disposer in outlet of each sink indicated to have disposer. Install a labeled switch where indicated or in wall adjacent to sink if location is not indicated.

W. Install dishwasher air-gap fitting at each sink indicated to have air-gap fitting. Install on countertop at sink. Connect inlet hose to dishwasher and outlet hose to disposer.

X. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings. Escutcheons are specified in Specification Section "Basic Mechanical Materials and Methods."

Y. Seal joints between fixtures and walls, floors, and countertops using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Sealants are specified in Specification Section "Joint Sealants."

3.3 CONNECTIONS

A. Piping installation requirements are specified in other plumbing specification sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect fixtures and appliances with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

C. Ground equipment according to Specification Section "Grounding and Bonding."

D. Connect wiring according to Specification Section "Conductors and Cables."

E. Arrange for electric-power connections to fixtures, transformers and devices that require power. Electric power is specified in Electrical Specification Sections.

3.4 FIELD QUALITY CONTROL

A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.

B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.

C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.

D. Test installed fixtures after water systems are pressurized for proper operation. Replace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.

3.5 ADJUSTING

A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.

B. Operate and adjust disposers and controls. Replace damaged and malfunctioning units and controls.

C. Adjust water pressure at faucets and flushometer valves to produce proper flow and stream.

D. Replace washers and seals of leaking and dripping faucets and stops.

E. Install fresh batteries in sensor-operated mechanisms.

F. Run hot water (full flow) at each faucet until temperature is stable (-2 degree deviation from water heater set point); balance manual (y-type, etcetera) mixing valve at each faucet to 110 F spout-discharge temperature.

G. After compression cartridges are well-seated (50-60 cycles), adjust faucet wrist-blade handles to position parallel to back-splash (or wall that lavatory is mounted to) when fully closed (tight).

3.6 CLEANING

A. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials. Do the following:
   1. Remove faucet spouts and strainers, remove sediment and debris, and reinstall strainers and spouts.
   2. Remove sediment and debris from drains.

B. After completing installation of exposed, factory-finished fixtures, faucets, and fittings, inspect exposed finishes and repair damaged finishes.

3.7 PROTECTION

A. Provide protective covering for installed fixtures and fittings.

B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224100

SECTION 230005

MECHANICAL DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of selected portions of building or structure.
   2. Demolition and removal of selected site elements.
   3. Salvage of existing items to be reused or recycled.

1.2 DEFINITIONS

A. Remove or Demolish: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner cleaned, packaged, and ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.
   1. Coordinate with Owner's representative, who will establish special procedures for removal and salvage.

1.4 SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services (including but not limited to: Gas, Water, Fire Suppression, Chilled Water, Hot Water, Air Conditioning, etc).
   4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
   5. Means of protection for items to remain and items in path of waste removal from building.

B. Inventory: After selective demolition is complete, submit a list of items that have been salvaged.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI A10.6 and NFPA 241.

C. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Section “Project Management and Coordination.” Review methods and procedures related to selective demolition including, but not limited to, the following:
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   5. Review areas where existing construction is to remain and requires protection.

1.6 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is unknown whether hazardous materials will be encountered in the Work.
   1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

B. Service/ Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
      a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
   3. Maintain adequate ventilation when using cutting torches.
   4. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

E. Contractor shall terminate demolished pipe and/or ductwork. System shall be capped and insulated per new work specification.

F. Contractor shall remove any abandoned piping and/or ductwork in area of construction during the demolition process.

G. Unforeseen Conditions
   1. Any unforeseen utilities found during construction that directly affect any trade must be brought to the engineer's attention via RFI.
   2. All existing conditions must be clearly annotated on the As-Built drawings.

H. Repair any walls, floors or roofs that piping, ducts or equipment have been removed from (or through). Patch with similar materials to match finish and color (paint to match). If paint cannot be matched, repaint entire wall or surface.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 230005

SECTION 230100

SPECIAL CONDITIONS FOR ALL MECHANICAL WORK

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section covers the general provisions of the mechanical specifications applicable to the following systems:
   1. Heating, air conditioning, and ventilation.

B. The use of the word mechanical in the body of the various specifications sections shall be interpreted to include all the aspects of all of the systems referenced in Mechanical Specifications.

1.2 DRAWINGS

A. These specifications are accompanied by drawings of the building and details of the installations showing the locations of equipment, piping, ductwork, etc. The drawings and these specifications are complementary to each other; requirements described in one or the other shall be considered binding as if described in both.

B. If any departures from the drawings are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted to the Owner's Representative for approval. No departures shall be made without prior written approval by the Owner's Representative.

C. There are intricacies of construction which are impractical to specify or indicate in detail; means and methods for performing such work shall adhere to commonly accepted industry standards.

D. It is the Contractor's responsibility to properly use all information found on the Architectural, Structural, Mechanical, and Electrical drawings and applicable shop drawings where such information affects his work.

E. For new buildings, all final dimensions shall be scaled from the Architectural drawings, unless otherwise noted. For work associated with existing buildings (renovations and additions), all final dimensions shall be field verified.

1.3 CONSTRUCTION REQUIREMENTS

A. The architectural, civil, structural, electrical, plumbing, fire protection and mechanical drawings, and specifications are all part of the Contract Documents. In many instances there are details described on another trade's drawings that are not necessarily included or referenced in the mechanical drawings. It is the Contractor's responsibility to review in detail all parts of the Contract Documents prior to submitting a bid. Failure to comply with this requirement shall not relieve the Contractor of responsibility or be used as cause for additional compensation because architectural, structural, or electrical details were not included in the mechanical drawings.

B. It is the intent of the Contract Documents to provide complete and fully functional installation in every respect. Material and/or construction details not specifically described in the Contract Documents, but commonly considered incidental to the industry, are required by the Contractor.

C. The Contractor shall be responsible for fitting his material and apparatus into the building and shall carefully lay out his work at the site to conform to the structural conditions, to avoid all obstructions, to comply with Codes, to facilitate the work of other trades, to conform to the details of the installation supplied by the manufacturer of the equipment to be installed, and thereby to provide an integrated satisfactory operating installation.

D. The mechanical, electrical and plumbing drawings are schematic in nature and do not show every connection in detail or every pipe or conduit in its exact location. These details are subject to the requirements of ordinances and structural and architectural conditions.

E. The Contractor shall carefully investigate structural and finish conditions and shall coordinate the separate trades in order to avoid interference between the various phases of work. Work shall be laid out so that it will be concealed in furred chases and above suspended ceilings, etc. in finished portions of the building, unless specifically noted to be exposed. Work shall be installed to avoid compromising structural members; therefore, inserts to accommodate hangers shall be set before concrete is poured, and proper openings through floor, walls, beams, etc. shall be provided as hereinafter specified or as otherwise indicated or required. All work shall be installed parallel or perpendicular to building lines unless otherwise noted.

F. When the mechanical drawings do not give exact details as to the elevation of pipe or ducts, physically arrange the systems to fit in the space available at the elevations intended with the proper grades for the functioning of the system involved. Piping, exposed conduit, and duct systems are generally intended to be installed true and square to the building construction and located as high as possible against the structure in a neat and workmanlike manner. The plans do not show all required offsets, control lines, pilot lines, and other location details. Work shall be concealed in all finished areas. Piping specified to be insulated shall be supported in a manner that will allow the insulation to be installed without gaps. Insulated piping in concealed areas shall be offset with fittings as necessary to permit installation of insulation. Bending of pipes or installing pipes in a strain to insulate will not be permitted.

G. Final placement of serviceable equipment shall be carefully coordinated with all other trades to ensure sufficient clearance for maintenance according to manufacturer's recommendations. Lubricating orifices and adjustable components shall be easily accessible. Piping, conduit, valve stems, cabling and other building systems shall not interfere with service space.

H. Location of Exposed Devices
   1. All exposed devices (grills, registers, diffusers, sprinkler heads, medical gas outlets, plumbing rough-ins, lights, outlets, communication devices, etcetera) shall be referenced to fixed data points that are coordinated with all trades; shall be located to present symmetrical arrangements with respect to the fixed data point; and shall facilitate the proper arrangements of acoustical ceiling tiles. Fixed data points shall include such features as wall and ceiling lines, soffits, balanced border widths, masonry joints, etc. Devices located in acoustical ceiling tiles shall occur symmetrically in tile joints or in the centers of whole tiles. The final determination of the exact location of each outlet and the arrangements to be followed shall be acceptable to the Owner's Representative.
   2. The drawings schematically indicate locations of the exposed devices. Final locations shall be determined by carefully coordinating the drawings pertaining to each trade. Where conflicts are identified, Owner's Representative shall determine final location. The Owner reserves the right to make any reasonable change in location of any device before installation, without additional cost.

1.4 QUALIFICATIONS

A. Contractor must have minimum of five years experience installing commercial heating, ventilation and air conditioning systems, plumbing and piping systems similar to those described in these Contract Documents.

B. Contractor must be licensed and hold a current contracting license that has been valid for a minimum of five years in the State of Texas.

C. Contractor must be able to bond work for payment and performance of work being bid. Contractor's bonding agency shall have a Best's insurance rating of A or A+.

1.5 MATERIAL AND EQUIPMENT REQUIREMENTS

A. Manufacturer's Instructions: The manufacturer's published instructions shall be followed for preparing, assembling, installing, erecting, and cleaning manufacturer materials or equipment, unless otherwise indicated. The Contractor shall promptly notify the Owner's Representative in writing of any conflict between the requirements of the Contract Documents and the manufacturer's direction and shall obtain the clarification of the Owner's Representative before proceeding with the work. Should the Contractor perform any such work that does not comply with the manufacturer's directions or such clarification by the Owner's Representative, he shall bear all costs arising in connection with the correction of the deficiencies.

B. Storage at Site: The Contractor shall not receive material or equipment at the jobsite until there is suitable space provided to properly protect equipment from rust, drip, humidity, and dust damage and from surrounding work.

C. Capacities shall be not less than those indicated and shall be such that no component or system becomes inoperative or is damaged because of startup or other overload conditions.

D. Conformance to Agency Requirements: Where materials or equipment are specified to be approved, listed, tested, or labeled by the Underwriters Laboratories, Inc., ETL listed or constructed and/or tested in accordance with the standards of the American Society of Mechanical Engineers or the Air Moving and Conditioning Association, the Contractor shall submit proof that the items furnished under this section of the specifications conform to such requirements. The label of the Underwriters Laboratories, Inc. or ETL applied to the item will be acceptable as sufficient evidence that the items conform to such requirements. The ASME stamp or the AMCA label will be acceptable as sufficient evidence that the items conform to the respective requirements.

E. Nameplates: Each major component of equipment shall have the manufacturer's name, address, and model-identification number on a plate securely attached to the item of equipment. All data on nameplates shall be legible at the time of Final Inspection.

F. Prevention of Rust: Standard factory finish will be acceptable on equipment specified by model number otherwise surfaces of ferrous metal shall be given a rust-inhibiting coating. The treatment shall withstand 200 hours in salt-spray fog test, in accordance with Method 6061 of Federal Standard No. 141. Immediately after completion of the test, the specimen shall show no signs of wrinkling or cracking and no signs of rust creepage beyond 1/8 inch on either side of the scratch mark. Where rust inhibitor coating is specified hereinafter, any treatment that will pass the above test is acceptable unless a specific coating is specified, except that coal tar or asphalt-type coatings will not be acceptable unless so stated for a specific item. Where steel is specified to be hot-dip galvanized, mill-galvanized sheet steel may be used provided all raw edges are painted with a zinc-pigmented paint conforming to Military Specification MIL-P-26915.

G. Protection from Moving Parts: Belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts located so that any person can come in close proximity thereto, shall be fully enclosed or properly guarded.

H. Drive Guards: For machinery and equipment, provide guards as shown in AMCA 410 for belts, chains, couplings, pulleys, sheaves, shafts, gears, and other moving parts regardless of height above the floor. Drive guards may be excluded where motors and drives are inside factory-fabricated air handling units casings. Guards shall be constructed of sheet steel, cast iron, expanded metal, or wire mesh rigidly secured so as to be removable without disassembling pipe duct or electrical connection to equipment. Provide a 1-inch diameter hole in each drive guard at each shaft center to allow access for speed measurement.

I. Verifications of Dimensions: The Contractor shall be responsible for the coordination and proper relation of his work to the building structure and to the work of all trades. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working conditions, to verify all dimensions in the field, and to advise the Owner's Representative of any discrepancy before performing any work. Adjustments to the work required in order to facilitate a coordinated installation shall be made at no additional cost to the Owner, Architect, or Engineer.

J. Standard Products: Materials and equipment to be provided shall be the standard catalog products of manufacturers regularly engaged in the manufacture of products conforming to these specifications, and shall essentially duplicate materials and equipment that have been in satisfactory use at least two years.

K. Spare Parts Data: As soon as practicable after approval of materials and equipment and, if possible, not later than four months prior to the date of beneficial occupancy, the Contractor shall furnish spare parts data for each different item of equipment listed. The data shall include a complete list of parts and supplies with current unit prices and sources of supply, a list of parts and supplies that are either normally furnished at no extra cost with the purchase of the equipment or specified hereinafter to be furnished as part of the Contract, and a list of additional items recommended by the manufacturer to assure efficient operation for a period of 120 days at the particular installation. The foregoing shall not relieve the Contractor of any responsibilities under the warranty specified.

1.6 INSPECTION OF THE SITE

A. The Contractor shall visit the site, verifying all existing items indicated on drawings and/or specified, and familiarize himself with the existing work conditions, hazards, grades, actual formations, soil conditions, structures, utilities, equipment, systems, facilities, and local requirements. The submission of bids shall be deemed evidence of such visits. All proposals shall take these existing conditions into consideration, and the lack of specific information shall not relieve the Contractor of any responsibility.

1.7 UTILITY LOCATIONS AND ELEVATIONS

A. Locations and elevations of the various utilities included within the scope of this work have been obtained from substantially reliable sources and are offered separately from the Contract Documents, as a general guide only, without guarantee as to accuracy. Examine the site, the locations, and availability of all utilities and services required for their relation to the work. Verify the location of all existing site utilities with each responsible utility company or applicable party. The Contractor shall repair all damage to existing utilities, whether indicated on the drawings or not, at his sole expense.

1.8 PERMITS, UTILITY CONNECTIONS, AND INSPECTIONS

A. Permitting Fees: Contractor shall pay for all fees associated with permits required by municipal authorities having jurisdiction.

B. Tapping and Impact Fees: Contractor shall pay for all fees associated with tapping into municipal utility mains, including sanitary sewer, natural gas and domestic water. Impact fees will be paid for by the Owner.

C. Compliance: The Contractor shall comply in every respect with all requirements of local authorities having jurisdiction, including building inspections, fire marshal, local ordinances and codes, and utility company requirements. In no case does this relieve the Contractor of the responsibility of complying with these specifications and drawings where specified conditions are of a higher quality than the requirements of the above-specified authorities. Where requirements of the specifications and drawings are below the requirements of the above offices having jurisdiction, the Contractor shall make installations in compliance with the requirements of the above authorities.

D. Utilities: The Contractor shall coordinate with the various utility companies involved in this project and shall provide required utility relocations, extensions, modifications, and/or changes (complete in all respects) as described in the Contract Documents. Contractor shall verify the location of all existing utilities with the applicable Utility Company. The Contractor shall be responsible for all damages to existing utilities, whether indicated on drawings or not, and repair all damage to existing utilities as acceptable to the affected Utility Company.

E. Certification: Prior to final acceptance, the Contractor shall furnish a certificate of acceptance from the inspection departments having jurisdiction over the work for any and all work installed under this Contract. Any additional labor costs incurred as a result of a substitution shall be the Contractor’s responsibility.

1.9 EXISTING FACILITIES

A. The Contractor shall be responsible for loss or damage to the existing facilities caused by him and his workmen and shall be responsible for repairing or replacing such loss or damage. The Contractor shall send proper notices, make necessary arrangements, and perform other services required for the care, protection, and in-service maintenance of all plumbing, heating, air conditioning, and ventilating services for the new and existing facilities. The Contractor shall erect temporary barricades, with necessary safety devices, as required to protect personnel from injury, removing all such temporary protection upon completion of the work.

B. The Contractor shall provide temporary or new services to all existing facilities as required to maintain their proper operation when normal services are disrupted as a result of the work being performed under this project.

C. Where existing construction is removed to provide working and extension access to existing utilities, Contractor shall remove doors, piping, conduit, outlet boxes, wiring, light fixtures, air conditioning ductwork and equipment, etc. to provide this access and shall reinstall same upon completion of work in the areas affected.

D. Where partitions, walls, floors, or ceilings of existing construction are indicated to be removed, all Contractors shall remove and reinstall in locations approved by the Architect/Engineer all devices required for the operation of the various systems installed in the existing construction. This is to include but is not limited to temperature controls system devices, electrical switches, relays, fixtures, piping, conduit, etc.

E. Outages of services as required by the new installation will be permitted but only at a time approved by the Owner. The Contractor shall allow the Owner two weeks in order to schedule required outages. The time allowed for outages will not be during normal working hours unless otherwise approved by the Owner. All costs of outages, including overtime charges, shall be included in the contract amount.

1.10 DEMOLITION AND RELOCATION

A. The Contractor shall modify, remove, and/or relocate all materials and items so indicated on the drawings or required by the installation of new facilities. All removals and/or dismantling shall be conducted in a manner as to produce maximum salvage. Salvage materials shall remain the property of the Owner and shall be delivered to such destination or otherwise disposed of as directed by the Owner. Materials and/or items scheduled for relocation and which are damaged during dismantling or reassembly operations shall be repaired and restored to good operative condition. The Contractor may, at his discretion, and upon the approval of the Owner, substitute new materials and/or items of like design and quality in lieu of materials and/or items to be relocated.

B. All items which are to be relocated shall be carefully removed in reverse to original assembly or placement and protected until relocated. The Contractor shall clean and repair and provide all new materials, fittings, and appurtenances required to complete the relocations and to restore to good operative order. All relocations shall be performed by workmen skilled in the work and in accordance with standard practice of the trades involved.

C. When items scheduled for relocation and/or reuse are found to be in damaged condition before work has been started on dismantling, the Contractor shall call the attention of the Owner to such items and receive further instructions before removal. Items damaged in repositioning operations are the Contractor’s responsibility and shall be repaired or replaced by the Contractor as approved by the Owner, at no additional cost to the Owner.

D. Service lines and wiring to items to be removed, salvaged, or relocated shall be removed to points indicated on the drawings, specified, or acceptable to the Owner. Service lines and wiring not scheduled for reuse shall be removed to the points at which reuse is to be continued or service is to remain. Such services shall be sealed, capped, or otherwise tied off or disconnected in a safe manner acceptable to the Owner. All disconnections or connections into the existing facilities shall be done in such a manner as to result in minimum interruption of services to adjacent occupied areas. Services to existing areas or

facilities which must remain in operation during the construction period shall not be interrupted without prior specific approval of the Owner as hereinbefore specified.

1.11 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. No substitution of materials or equipment herein specified or called for on the drawings will be permitted, except by written permission of the Owner's Representative. Where several makes of equipment or material are mentioned, any item named may be bid upon provided it meets space, capacity specifications, and other requirements.

1.12 SUBMITTALS

A. Submittals for Review:
   1. As soon as practical or within 30 days after the date of contract award or notice to proceed, and before purchasing or starting installation of any materials or equipment, the Contractor shall submit for review sufficient material and equipment data to indicate that all requirements of the specifications have been met and samples shall be furnished when requested. All manufacturer's data used as part of the submittal shall have all non-applicable features crossed out or deleted in a manner that will clearly indicate exactly what is to be furnished.
   2. Four (4) copies of the submittal list and detailed submittals (for the Owner's and A/E's use) shall be submitted to the Owner's Representative. The Contractor is requested to include a minimum of three (3) additional copies for insertion in the project's Owner's Manuals at the completion of the project, and the number of additional copies the Contractor requires for his and his subcontractor's use during the project's construction. The detailed submittals shall be accompanied by the same number of sets of pictorial and descriptive data derived from the manufacturer's catalogs and sales literature or incorporated in the shop drawings. The Contractor may provide a detailed submittal on any item even though not required by the Owner's Representative.

B. Format
   1. Submittals shall be in pdf format. The first page shall have a cover sheet inserted with the title "MECHANICAL SUBMITTALS" centered in large print. Below the title shall be printed the name of the project, the date, the project location, the name and address of the contractor, the name and address of the subcontractor and the name and address of the engineer(s) in smaller print.
   2. Provide a Table of Contents at the beginning of the binder that summarizes the information being submitted according to specification section.
   3. Submittals shall be tab divided by specification section; all sections identified in the project specifications shall have a tab. When no information is being provided concerning a particular specification section, insert a single dated sheet that explains the circumstances.
   4. Loose-leaf or piecemeal submittals are not acceptable and subject to rejection unless prior approval has been granted by the Engineer.

C. Content:
   1. The Contractor shall prepare or cause to be prepared shop drawings, product data, materials and equipment lists, diagrams, data, samples, and other submittals as required by the contract documents, hereinafter referred to as "Submittal Data." The Contractor shall review and approve all submittal data for compliance with the contract documents, manufacturer's recommendations, adequacy, clearances, code compliance, safety, and coordination with associated work.
   2. The Contractor shall submit approved submittal data to the Owner's Representative for review and comment as to general conformance with the design concept and general compliance with information given in the contract documents. Owner's Representative's review shall not include review of quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with other trades or work, or construction safety and precautions, all of which are the sole responsibility of the Contractor.
   3. The Contractor shall clearly and specifically identify and call to the attention of the Owner's Representative any deviation from the contract documents for which Owner acceptance is desired. The responsibility for such a deviation accepted by the Owner shall remain with the Contractor.

4. Timeliness: The burden of timeliness in the complete cycle of submittal data is on the Contractor. The Contractor shall allow a minimum of four (4) weeks' time frame for review of each submission by the Owner's Representative. The Contractor is responsible for allowing sufficient time in the construction schedule to cover the aforementioned cycles of data processing, including time for all re-submission cycles on nonconforming materials, equipment, etc. covered by the data submitted. Construction delays and/or lack of timeliness in the above regard are the responsibility of the Contractor and will not justify any request for scheduled construction time extensions or extra compensation.
5. Work performed in accordance with approved submittal date that is not in accordance with the Contract Documents and did not have the specific acceptance of the Owner's Representative shall be replaced at Contractor's cost.

D. Re-submittals
1. Re-submit entire submittal in accordance with afore mentioned format and content requirements. Loose-leaf or piecemeal re-submittals are not acceptable. New and/or revised data for each section shall be prefaced with a colored (yellow, pink, orange, etc) cover sheet that identifies (in a word or two) the materials and/or equipment being re-submitted. Typeset the words "REVISED SUBMITTAL NO. 1 (or 2, 3 as applicable)" centered at the bottom of the cover sheet.
2. Subsequent re-submittals (second and third, if necessary) shall have different colored cover sheets to distinguish between the various re-submittals.
3. Include a cover letter at front of binder that specifically responds to each "REVISE AND RE-SUBMIT COMMENT" or "REJECTED" comment by number. Example responses would include the following:
   a. RESPONSE: "Please see attached re-submittal."
   b. RESPONSE: "Will be re-submitted at a later date."
   c. RESPONSE: "Requirement for (xxxxxx) was deleted in Addendum No. 2."
   d. RESPONSE: "Exception requested based on Section xx, Paragraph x.x.x.

E. These paragraphs related to Mechanical submittal data supersede any conflicting requirements contained in Division 01 sections.

1.13 CONTRACTOR CERTIFICATION OF SUBMITTAL DATA

A. The Contractor shall provide the following certification with all submittal data furnished to the Owner's Representative for review and comment.

Project Title:

Description of Submittal Data:

This is to certify that the above-described submittal data has been reviewed and is approved for compliance with the Contract Documents, manufacturer's recommendation, adequacy, clearances, code compliance, safety, and coordination with other trades and/or work except as follows: (list "none" or itemize and explain). In addition, the Contractor shall submit to the Owner's Representative a signed statement from each representative certifying as follows:

"I certify that the materials and/or equipment listed below have been personally inspected by the undersigned authorized manufacturer's representative and is properly installed and operating in accordance with the manufacturer's recommendations and are asbestos free."

_____

Name and Company

1.14 ACCEPTANCE OF MATERIALS AND EQUIPMENT

A. All equipment installed on this project shall have local (within 125 miles) representation, local factory-authorized service, and a local stock of repair parts. This requirement is essential and will be strictly

reviewed by the Owner's Representative prior to concurrence with the Contractor's approval for all submittals covered by Mechanical sections of this Specification.

B. NOTICE: The Contractor is responsible for providing materials and equipment that conform to the requirements of the project manual in every respect unless a deviation has been "accepted" in writing. Removal of any nonconforming materials and equipment and the replacement with conforming materials and equipment shall be at the Contractor's sole expense, regardless of when nonconformance was discovered.

C. Approval of materials and equipment shall be based on manufacturer's published data and shall be tentatively subject to the submission of complete shop drawings which comply with the contract documents. Approval is also dependent upon the existence of adequate and acceptable clearances for entry, servicing, and maintenance.

D. Approval of materials and equipment under this provision shall not be construed as authorizing any deviations from the specifications, unless the attention of the Owner's Representative has been directed in writing to the specific deviations. Data submitted shall not contain unrelated information unless all pertinent information is properly identified.

E. Physical Size of Equipment: Space is critical; therefore, equipment of larger sizes than shown, even though of approved manufacturer, will not be acceptable unless it can be demonstrated that ample space exists for proper installation, operation, and maintenance.

1.15 SHOP DRAWINGS

A. As soon as practicable after the award of contract and approval of materials and equipment, but prior to installation, complete and detailed shop drawings of the following shall be submitted for review and comment:
   1. Equipment arrangements.
   2. Duct layouts.
   3. Piping layouts.
   4. Layouts of equipment spaces indicating ductwork and piping larger than 2 inches.
   5. Typical fittings and connections.
   6. Equipment foundations.
   7. Factory-fabricated equipment and materials.
   8. Anchors.
   9. Control.
   10. Interlock.
   11. Sprinkler locations.
   12. Other details as directed by the Owner's Representative. Composite drawings of areas requiring coordination between trades shall be provided and expedited to eliminate conflicts and to ensure maximum cooperation and work progress.

B. Work performed without benefit of reviewed and approved shop drawings will not be recommended for payment by the Engineer until such time as the shop drawings are submitted, reviewed, and approved. Any work performed without the benefit of reviewed and approved shop drawings may require removal, relocation, and/or replacement at the Contractor's sole expense in order to resolve conflicts between the various systems and provide the performance specified.

C. All installation of equipment, fixtures, terminal devices, etc. shall be made in accordance with approved composite shop drawings. The Contractor shall modify installation and relocate installed work to provide code clearances, service access, and eliminate conflict with other systems.

D. Submit one print of shop drawings for each area, floor, system, etc. The print will be marked with the A/E's comments and returned to the Contractor. Contractor shall revise shop drawings, incorporate revisions in field and submit revised shop drawings at project close out.

1.16 SITE OBSERVATION

A. Site observation by the Architect, Engineer, and/or Owner's Representative is for the express purpose of verifying compliance by the Contractor with the contract documents, and shall not be construed as construction supervision nor indication of approval of the manner or location in which the work is being performed as being a safe practice or place.

1.17 SUPERVISION

A. In addition to the Superintendent required under the conditions of the contract, each subcontractor shall keep a competent superintendent or foreman on the job at all times.

B. It shall be the responsibility of each superintendent to study all plans and familiarize himself with the work to be done by other trades. He shall coordinate his work with other trades and, before material is fabricated or installed, make sure that his work will not cause an interference with another trade. Where interferences are encountered, they shall be resolved at the jobsite by the superintendents involved. Where interferences cannot be resolved without major changes to the plans, the matter shall be referred to the Owner's Representative for comments.

1.18 OPERATION PRIOR TO COMPLETION

A. When any piece of mechanical equipment is operable and it is to the advantage of the Contractor to operate the equipment, he may do so, providing that he properly supervises the operation and has the written permission of the Owner's Representative to do so. The warranty period shall not commence, however, until such time as the equipment is operated for the beneficial use of the Owner or date of substantial completion, whichever occurs first.

B. Regardless of whether or not the equipment has or has not been operated, the Contractor shall properly clean the equipment, install clean filter media, properly adjust, and complete all deficiency list items before final acceptance by the Owner. The date of acceptance and the start of the warranty may not be the same date.

1.19 MANUFACTURER'S RECOMMENDATIONS

A. The manufacturer's published directions shall be followed in the delivery, storage, protection, installation, piping, and wiring of all equipment and material. The Contractor shall promptly notify the Owner's Representative, in writing, of any conflict between the requirements of the contract documents and the manufacturer's directions, and shall obtain the Owner's Representative's comments before proceeding with the work. Should the Contractor perform any such work that does not comply with the manufacturer's directions or applicable comments from the Owner's Representative, he shall bear all costs arising in connection with the correction of such deficiencies.

1.20 CHECKING AND TESTING MATERIALS AND/OR EQUIPMENT

A. Before final acceptance of the work, an authorized representative of the manufacturer of the installed materials and/or equipment shall personally inspect the installation and operation of his materials and/or equipment to determine that it is properly installed and in proper operating order. Testing and checking shall be accomplished during the course of the work where required by work being concealed, and at the completion of the work otherwise. In addition, the Contractor shall submit to the Owner's Representative a signed statement from each representative certifying as follows:

"I certify that the materials and/or equipment listed below have been personally inspected by the undersigned authorized manufacturer's representative and is properly installed and operating in accordance with the manufacturer's recommendations and are asbestos free."

B. Check inspections shall include plumbing, heating, air conditioning, ventilating, mechanical control and electrical equipment, and such other items hereinafter specified or specifically designated by the Owner's Representative.

1.21 OPERATING AND MAINTENANCE INSTRUCTION

A. The Contractor shall prepare for the owner's manual hereinafter specified complete sets of operating and maintenance instructions, system piping, valving, control and interlock diagrams, manuals, parts lists, etc. for each item of equipment. These are to be assembled as hereinafter specified for owner's manual.

B. In addition, the Contractor shall provide the service of a competent engineer or a technician acceptable to the Owner's Representative to instruct a representative of the Owner in the complete and detailed operation of all equipment and systems. These instructions shall be provided for a period of sufficient duration to fully accomplish the desired results. Upon completion of these instructions, a letter of release will be required, acknowledged by the Owner, stating the dates of instruction and personnel to whom instructions were given.

C. Additional diagrams, operating instructions, etc. shall be provided as specified hereinafter in the other sections of these specifications.

1.22 MATERIAL AND EQUIPMENT SCHEDULES

A. Contractor shall refer to both drawings and specification for schedules. Where reference is made to items "scheduled on drawings" or "scheduled in specifications," same shall include schedules contained in both the drawings and the specifications. The Contractor's attention is directed to the various specification sections and drawings for schedules.

1.23 APPLICABLE CODES AND STANDARDS

A. The installation shall meet the minimum standards prescribed in the latest editions of the following listed codes and standards, which are made a part of these specifications, except as may be hereinafter specifically modified in these specifications and associated drawings.
   1. National Fire Protection Association Standards (NFPA):
      NFPA 10 - Portable Fire Extinguishers
      NFPA 54 - National Fuel and Gas Code
      NFPA 70 - National Electrical Code
      NFPA 90A - Air Conditioning Systems
      NFPA 101 - Life Safety Code
      NFPA 255 - Method of Test of Surface Burning Characteristics of Building Materials
   2. American National Standards Institute (ANSI):
      15-78 - Safety Code for Mechanical Refrigeration
      C.2 - 1984 National Electrical Safety Code
      A117.1 - Handicapped Code
   3. American Society of Mechanical Engineers (ASME): Section IV, V, CSD-1
   4. Air Conditioning and Refrigeration Institute Standards (ARI): All standards related to refrigeration and air conditioning equipment and piping furnished under these specifications.
   5. American Water Works Association (AWWA): All applicable manuals and standards.
   6. Sheet Metal and Air Conditioning Contractors National Associate, Inc, (SMACNA): All applicable manuals and standards.
   7. Air Moving and Conditioning Association (AMCA): All applicable manuals and standards.
   8. American Society of Testing Materials (ASTM): All applicable manuals and standards.
   9. National Electrical Manufacturers' Association (NEMA): All applicable manuals and standards.
   10. Occupational Safety and Health ACT (OSHA):
       National Sanitation Foundation - Standard No. 2
   11. American Society of Heating, Refrigeration, and Air conditioning Engineers (ASHRAE):
       ASHRAE 90.1
   12. Americans with Disabilities Act, 1990
   13. American Gas Association (AGA)
   14. Underwriters Laboratories, Inc. (UL)
   15. Manufacturer's Standardization Society of the Valve and Fitting Industry (MSS)
   16. Applicable Local and State Building Codes (International Building Codes, as amended):
   17. Applicable Local and State Mechanical Code (International Mechanical Code, as amended).

18. Applicable Local and State Plumbing Code (International Plumbing Code, as amended).
19. Applicable Local and State Energy Code (International Energy Conservation Code, as amended).
20. Applicable State Gas Code (International Fuel and Gas Code, as amended).

B. All materials and workmanship shall comply with all applicable city, state, and national codes, specifications, and industry standards. All materials shall be listed by the Underwriters Laboratories, Inc. as conforming to its standards and so labeled in every case where such a standard has been established for the particular type of material in question.

C. The contract documents are intended to comply with the aforementioned rules and regulations; however, some discrepancies may occur. Where such discrepancies occur, the Contractor shall immediately notify the Owner's Representative in writing of said discrepancies and apply for an interpretation. Should the discovery and notification occur after the execution of a contract, any additional work required for compliance with said regulations shall be paid for as covered by Division 1 of these contract documents, providing no work or fabrication of materials has been accomplished in a manner of noncompliance. Should the Contractor fabricate and/or install materials and/or workmanship in such a manner that does not comply with the applicable codes, rules, and regulations, the Contractor who performed such work shall bear all costs arising in correcting these deficiencies to comply with said rules and regulations.

1.24 DEFINITIONS

A. Refer to the condition of the contract for Division 1 for additional requirements regarding definitions.

B. Where "as required" or "as necessary" is used in these specifications or on the drawings, it shall mean "that situations exist that are not necessarily described in detail or indicated that may cause the Contractor certain coordination requirements in performing the work described or indicated. These coordination requirements entail the normal coordination activities expected of the Contractor where multiple trades are involved and new or existing construction causes deviations to otherwise simplistic approaches to the work to be performed. The term shall not be interpreted to permit an option on the part of the Contractor to achieve the end result."

C. Where "and/or" is used in these specifications or on the drawings, it shall mean "that situations exist where either one or both conditions occur or are required and shall not be interpreted to permit an option on the part of the Contractor.

1.25 FINAL INSPECTION

A. Refer to Division 1 for additional requirements for final inspection.

B. It shall be the responsibility of the Contractor to personally conduct a careful inspection, assuring himself that the work on the project is ready for final acceptance and developing his own "punchlists," before calling upon the Owner's Representative to make a final inspection. Failure of the Contractor to conduct such inspections and provide the Owner's Representative with a copy of his "punchlists" prior to the final inspection shall be adequate cause for the Owner's Representative to cancel any Contractor-requested final inspection.

C. In order not to delay final acceptance of the work, the Contractor shall conduct his own "final inspections" prior to requesting the Owner's Representative to "final" the project; will have all necessary bonds, guarantees, receipts, affidavits, etc. called for in the various articles of this specification prepared and signed in advance; and together with a letter of transmittal listing each paper included, shall deliver the same to the Owner's Representative at or before the time of said final inspection. The Contractor is cautioned to check over each bond, receipt, etc. before preparing same for submission to see that the terms check with the requirements of the specifications.

D. The final inspection will be made jointly by the Owner's Representative and the Owner.

1.26 REQUIREMENTS FOR FINAL ACCEPTANCE

A. Requirements for final acceptance shall include but not be limited to the Contractor accomplishing the following:
   1. Construction: Complete all construction.
   2. Deficiency Lists: Correct all deficiencies listed at time of Substantial Completion.
   3. Owner's Manual: Submit at least 30 days prior to final acceptance on (1) copy of the owner's manual for the Owner's Representative's review and comments. Following acceptance, prepare three (3) copies of bound and indexed owner's manual, to be delivered at the time of final acceptance, which shall include but not be limited to the following:
      a. System operating instructions.
      b. System control drawings.
      c. System interlock drawings.
      d. System maintenance instructions.
      e. Manufacturers', suppliers', and subcontractors' names, addresses, and telephone numbers, both local representatives and manufacturers' service headquarters.
      f. Equipment operating and maintenance instructions and parts lists.
      g. Manufacturer's certifications (see Checking and Testing Materials and/or Equipment, this section).
      h. Contractor's warranty.
      i. Acceptance certificates of authorities having jurisdiction.
      j. Log of all tests made during course of work.
      k. Owner's acknowledgment of receipt of instruction, enumerating items in owner's manual.
      l. List of manufacturers' guarantees executed by the Contractor.
      m. Certified performance curves.
      n. Balance and performance test reports.
      o. Owner's acknowledgment of items of equipment or accessories indicated or specified to be turned over to Owner.
   4. Instructions:
      a. Verbal, as herein specified.
      b. Posted, framed under glass or plastic laminated:
         1) System operating instructions.
         2) System control drawings.
         3) System interlock drawings.
   5. Record Drawings: Deliver the specified record drawings to the Owner's Representative.

1.27 RECORD DRAWINGS

A. The Contractor shall maintain a set of contract drawings (black-line prints) at the jobsite on which he shall indicate the installed (as-built) locations of the following:
   1. Equipment
   2. Main lines of piping and ductwork.
   3. Dimensional locations (including depth) of all underground piping, valves and conduits.

B. Drawings shall be used for construction reference and shall not leave the field office of the jobsite.

C. Drawings shall include all addenda, ASI's, Change Orders, and existing conditions and equipment that are not reflected in the original contract drawings.

D. Upon completion of work, the Contractor shall obtain CAD files of the contract drawings from the Owner's Representative and transfer the above as-built information into these files. The as-built files shall be permanently marked "RECORD DRAWINGS" and printed on full-size Mylar sheets. Upon completion, the CAD files shall be transferred to CD in AutoCAD 2007 format. Both the CAD files CD and Mylar drawings shall be submitted to the Owner's Representative as part of the Close-out Submittals.

E. Refer to Division 1 paragraph entitled "Record Documents" for additional requirements.

1.28 ALLOWANCES

A. Refer to Division 1 for allowances.

1.29 ALTERNATE PROPOSALS

A. Alternate proposals are summarized in Division 1 and on the bid proposal form. Refer to all sections of the specifications and the drawings to determine the exact extent and scope of the various alternate proposals as each pertains to the work of the various trades.

1.30 WARRANTY

A. General: All work performed (including equipment and materials furnished) under the various sections of these specifications shall be 100% warranted, for a period of one (1) year from the date of final acceptance thereof, against defective materials, design, and unauthorized substitution. Upon receipt of note of failure of any part of the guaranteed equipment and/or facilities during the guaranty period, the affected part(s) or facilities shall be replaced promptly with new parts, etc. by and at the expense of the Contractor. Further, the Contractor shall properly obtain, execute, and forward any and all manufacturer's warranties on equipment furnished under the Contract. Refer to Division 1 for additional requirements.

B. Extended Period: The Contractor shall provide all extended time warranties available from the manufacturer of the equipment provided as standard at no additional cost. This includes all extended warranties where specified with certain equipment as directed in other sections of this Specification.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

A. All materials, unless otherwise specified, shall be current United States manufacture, new, free from all defects, and of the best quality. Foreign goods specifically approved for use by the Owner's Representative prior to bidding may be furnished.

B. Materials and equipment shall be installed in accordance with the manufacturer's recommendations and the best standard practice for the type of work involved. All work shall be executed by mechanics skilled in their respective trades, and the installations shall present a neat, precise appearance.

C. The responsibility for the furnishing and installation of the proper mechanical equipment and/or material as intended rests entirely upon the Contractor. The Contractor shall request advice and supervisory assistance from the representative of specific manufacturers during the installation.

2.2 FLAME SPREAD AND SMOKE DEVELOPED PROPERTIES OF MATERIALS

A. Duct coverings, duct linings, vapor barrier facings, tapes, adhesives, core materials, insulation, jackets, piping (of any sort), and other materials in concealed locations, including any above-ceiling area, shall have a flame spread rating not over 25 without evidence of continued progressive combustion and a smoke developed rating no higher than 50. Flame spread and smoke developed ratings shall be in accordance with NFPA Standard No. 255.

2.3 BEARINGS

A. All ball bearings shall be of radial and/or thrust type and enclosed in a dust and moisture-proof housing.

2.4 MOTORS

A. The Contractor shall provide all motors required for equipment supplied under each portion of the work. Motors shall be premium efficiency and be built in accordance with the latest ANSI, IEE, and NEMA standards, shall be fully coordinated with the equipment served, shall be of sizes and electrical characteristics scheduled.

2.5 STARTING EQUIPMENT

A. Each motor shall be provided with proper starting equipment. This equipment, unless hereinafter specified or scheduled to the contrary, shall be provided by the trade furnishing the motor. All motor starting equipment provided by any one trade shall be of the same manufacture unless such starting equipment is an integral part of the equipment on which the motor is mounted.

2.6 LOW VOLTAGE (CONTROLS/THERMOSTAT) WIRING

A. All low voltage wiring installed by the Mechanical Contractor, Electrical Contractor or Controls Vendor shall be run in a neat and workmen like manner, parallel and perpendicular to building lines on J-Hooks (above ceiling grid only). Plenum rated cable shall be installed above ceilings. All other locations (exposed, Mechanical Rooms, outdoors or above hard lid ceiling) should be installed in conduit.

2.7 SLEEVES, INSERTS, AND FASTENINGS

A. General: Proper openings through floors, walls, roofs, etc. for the passage of piping, ductwork, conduits, etc. shall be provided. All piping and conduit through floors and piping through walls must pass through sleeves except soil pipe installed under concrete slabs-on-fill, and pipe and conduit that is cast-in-place. Sleeves shall be set in new construction before concrete is poured, as cutting holes through any part of the concrete will not be permitted unless acceptable to the Owner's Representative.

B. Aboveground, Exterior-Wall, Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeve for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
   1. Install steel pipe for sleeves smaller than 6 inches in diameter.
   2. Install cast-iron "wall pipes" for sleeves 6 inches in diameter and larger.
   3. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.

C. Underground, Exterior-Wall, Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Size sleeve for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
   1. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.

D. Sleeves: The minimum clearance between horizontal pipe, including insulation where applicable, and sleeve shall be 1/4 inch, except that the minimum clearance shall be 2 inches where piping contacts the ground. Sleeves through floors shall extend 3/4 inch above the floor; sleeves through walls and partitions shall be installed flush with exposed surfaces.

E. Materials: Install sleeves large enough to provide ¼" annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
   1. Steel Pipe Sleeves: For pipes smaller than 6-inch NPS.
   2. Steel, Sheet-Metal Sleeves: For pipes 6-inch NPS and larger, penetrating gypsum-board partitions.
   3. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level.
      a) Seal space outside of sleeve fittings with non-shrink, nonmetallic grout.

F. Inserts: Suitable concrete inserts for pipe, conduit, and equipment hangers shall be set and properly located for all piping, conduit, and equipment to be suspended from concrete construction.

G. Fasteners: Fastening of pipes, conduits, etc. in the building shall be as follows:
   1. To wood members: by wood screws.
   2. To masonry and concrete: by threaded metal inserts, metal expansion screws, or toggle bolts, whichever is appropriate for the particular type of masonry or concrete.

3. To steel: machine screws or welding (when specifically permitted or directed), or bolts.
NOTE: Under no circumstances will the use of plastic anchors or plastic expansion shields be permitted for any purpose whatsoever.

H. Ratproofing: The open space around all piping, ductwork, etc. passing through the ground floor and/or exterior walls shall be ratproofed in a manner acceptable to the Owner's Representative.

I. Weatherproofing: The annular space between a pipe and its sleeve in exterior walls or through floor to below grade shall be filled with polyurethane foam rods 50% greater in diameter than the space as backing and fill material and made watertight with a permanent elastic polysulfide compound. Seal both surfaces of wall or floor with a fire-resistant sealant.

J. Air Plenums: The space around piping, ductwork, etc. passing through an air plenum shall be made airtight in a manner acceptable to the Owner's Representative. The sealant used must be fire resistant.

2.8 FIRE AND SMOKE PARTITION, WALL, AND/OR FLOOR PENETRATIONS

A. Pipe, ductwork, conduit, etc. shall pass through fire- or smoke-rated floors, partitions, walls, or other barriers within a UL-listed assembly which shall maintain the rating of the applicable wall, floor, partition, or barrier.

B. The Contractor shall review the architectural and structural drawings and determine the location of the fire-rated building elements. Where these elements are penetrated, UL-listed fire-rated penetration assemblies approved by the local authority shall be provided in accordance with the manufacturer's instructions to obtain the required rating.

2.9 METAL BUILDING SYSTEMS/MECHANICAL-ELECTRICAL SUPPORTS

A. Metal building systems are required to be designed by the manufacturer to accommodate and support the mechanical systems indicated on the mechanical drawings and specified in Mechanical specifications.

B. The metal building systems manufacturer is required to provide the following:
1. Framed openings through the roofs with supports, roof curbs, and flashings for roof-mounted equipment, fans, vents, and air intakes.
2. Structural support for piping, conduits, and suspended equipment consisting of beam, joists, purlins, and/or blocking above and perpendicular to pipe routes and equipment hangers at intervals not to exceed 8 feet.
3. Structural support for suspended ceilings, diffusers, grilles, light fixtures including associated raceways and ductwork.

C. The mechanical trade shall:
1. Provide all routes, weights, installation heights, opening locations, etc. for all equipment, piping, vents, etc. to the metal building system manufacturer and coordinate requirements for structural supports, hangers, attachments, etc. with the metal building systems manufacturer.
2. Provide all supporting devices (hangers, attachments, brackets, cross beams, etc.) to attach to the metal building structural system.

2.10 FOUNDATIONS / HOUSEKEEPING PADS

A. General: All special foundations and supports required for the proper installation of equipment and pipe shall be provided as hereinafter specified and under the section of the specifications covering the equipment, unless otherwise indicated on the drawings.

B. All mechanical equipment shall receive concrete housekeeping pads unless otherwise noted. Equipment to receive pads are to include (but not limited to): air handlers, fan-coils, condensing units, boilers, water heaters, water softeners, expansion / compression tanks, filter feeders, water treatment equipment, air compressors, fans, pumps (in addition to inertia bases where required), chillers, surge tanks, deareators, etc.

C. Concrete foundations for the support of equipment such as floor-mounted pumps, fans, etc. shall be not less than 5½ inches high and not less than 4 inches larger (in both directions) than supported unit, unless otherwise noted and shall be poured in forms built of new dressed lumber. All corners of the foundations shall be neatly chamferred by means of sheet metal or triangular wood strips nailed to the form. Pads shall not be laid out directly against walls or structures. 2 inches shall be left available for pad form work. Foundation bolts shall be placed in the forms when the concrete is poured, the bolts being correctly located by means of templates. Allow 1 inch below the equipment bases for alignment and grouting (where applicable). Foundations for equipment located on the exterior of the building shall be provided as indicated. Foundations shall be constructed in accordance with approved shop drawings and shall be reinforced with #4 bars at 12 inches on center both ways (minimum).

D. Pipe and Conduit Support: All pipes and conduits throughout the building, both horizontal and vertical, shall be adequately supported from the construction to line of grade, with proper provision for expansion, contraction, vibration elimination, and anchorage. Vertical pipes and conduits shall be supported from floor lines with riser clamps sized to fit the lines and to adequately support their weight. At the bases of lines, where required for proper support, provide anchor base fittings or other approved supports.

2.11 ACCESS DOORS

A. General: Provide access doors for all serviceable mechanical appurtenances (valves, trap primers, shock arresters, volume dampers, fire/smoke dampers, actuators, sensors, etcetera) in inaccessible locations. Such locations include gypsum, brick and CMU ceilings and walls.

B. Location of panels shall be carefully coordinated with other Exposed Devices as described in earlier paragraphs.

C. Manufacturers shall be Inland-Milcor, Bilco, Miami Carey, or approved equal. Unless indicated otherwise, use panels equal to Milcor Style M for masonry and drywall construction, equal to Milcor Style K for plastered masonry walls and ceilings. Stainless steel panels shall be used in ceramic tile or glazed structural tile.

D. Minimum construction features include 14-gage frame and door, continuous hinges, cam-style latch and 10x10" unobstructed opening size.

E. UL labeled when in fire-rated construction, one and one-half hour rating.

F. Access doors located outside, in restrooms or in a moisture-laden environment (dressing area, shower area, lockers, etc.) shall be stainless steel construction.

G. Equipment access doors shall be of sufficient size to remove/replace equipment and provide routine maintenance as necessary, unless otherwise noted. Doors shall be set flush with adjacent finish surfaces. Exterior doors shall be provided with cylinder locks.

H. Access doors into ductwork shall be 14-gauge insulated galvanized steel with 16-gauge galvanized gasketed steel frame and cam-type locks. Ductwork access door shall be a minimum of 12" $\times$ 12" in size.

2.12 FLOOR AND CEILING PLATES

A. Except as otherwise noted, provide one-piece chrome-plated brass floor and ceiling plates (or escutcheons) around all pipes, conduits, etc. passing through walls, floors, or ceilings in any spaces, except underfloor and attic spaces. Plates shall be sized to fit snugly against the outside of the pipe or against the outside of insulation on lines which are insulated, and positively secured to such pipe or insulation. Plates will not be required for piping where pipe sleeves extend ¾ of an inch above finish floor and are concealed. Plates shall be one piece.

PART 3 - EXECUTION

3.1 SPACE AND EQUIPMENT ARRANGEMENT

A. The size of mechanical equipment indicated on the drawings is based on the dimensions of a particular manufacturer. While other manufacturers will be acceptable, it is the responsibility of the Contractor to determine whether the equipment he proposes to furnish will fit in the space. Shop drawings shall be prepared when required by the Owner's Representative to indicate a suitable arrangement.

B. All equipment shall be installed in a manner to permit access to all surfaces. All valves, motors, drives, filters, and other accessory items shall be installed in a position to allow removal for service without disassembly of another part.

3.2 LARGE APPARATUS

A. Any large piece of apparatus which is to be installed in any space in the building, and which is too large to permit access through stairways, doorways, or shafts shall be brought to the job and placed in the space before the enclosing structure is completed. Following placement in the space, such apparatus shall be thoroughly, completely protected from damage as hereinafter specified.

3.3 PROTECTION

A. The Contractor shall take such precautions as may be necessary to properly protect all materials and equipment from damage from the time of delivery until the completion of work. This shall include the erection of all required temporary shelters and supports to adequately protect any items stored in the open on the site from the weather, the ground and surrounding work; the cribbing of any items above the floor of the construction; and the covering of items in the uncompleted building with tarpaulins or other protective covering. Failure on the part of the Contractor to comply with the above will be sufficient cause for the rejection of the items in question.

B. The Contractor shall protect existing facilities, the work of others, and the premises from any and all damages that may be made possible by the execution of work.

C. Equipment and materials shall be protected from rust both before and after installation. Any equipment or materials found in a rusty condition at the time of final inspection must be cleaned of rust and repainted as specified elsewhere in these specifications.

3.4 COOPERATION BETWEEN TRADES AND WITH OTHER CONTRACTORS

A. Each trade, subcontractor, and/or Contractor must work in harmony with the various trades, subcontractors, and/or Contractors on the job as may be required to facilitate the progress to the best advantage of the job as a whole. Each trade, subcontractor, and/or Contractor must pursue its work promptly and carefully so as not to delay the general progress of the job. This Contractor shall work in harmony with Contractors working under other contracts on the premises.

B. It shall be the responsibility of each trade to cooperate fully with the other trades on the job to help keep the jobsite in a clean and safe condition. At the end of each day's work, each trade shall properly store all of its tools, equipment, and materials and shall clean its debris from the job. Upon the completion of the job, each trade shall immediately remove all of its tools, equipment, any surplus materials, and all debris caused by its portion of the work.

3.5 PRECEDENCE OF MATERIALS AND COORINATION OF WORK

A. These specifications and the accompanying drawings are intended to cover systems which will not interfere with the structural design of the building, which will fit into the several available spaces, and which will ensure complete and satisfactory systems. Each subcontractor and/or trade shall be responsible for the proper fitting of his material and apparatus into the building.

B. The work of the various trades shall be performed in the most direct and workmanlike manner without hindering or handicapping the work of other trades. Piping interferences shall be handled by giving precedence to pipe lines which require a stated grade for proper operation. Where space requirements conflict, the following order or precedence shall, in general, be observed:
   1. Building lines.
   2. Structural members.
   3. Light fixtures.
   4. Soil and drain piping.
   5. Condensate drains.
   6. Vent piping.
   7. Supply, return, and outside air ductwork.
   8. Exhaust ductwork.
   9. HVAC water and steam piping.
   10. Steam condensate piping.
   11. Fire protection piping.
   12. Natural gas piping.
   13. Domestic water (cold and hot).
   14. Refrigerant piping.
   15. Electrical conduit.

C. The light fixture grid layout as indicated on the drawings must be maintained. This Contractor shall refer to all light fixture plans and details indicated on the drawings and shall coordinate the location of dampers, supply grilles, return air grilles, sprinkler heads, etc. with the location of the light fixtures to assure proper access to all items in a manner acceptable to the Owner's Representative.

D. The electrical trades shall locate all junction boxes, pull boxes, conduits, etc. to avoid interference with the diffusers, dampers, grilles, etc. hereinbefore mentioned. The mechanical trades shall furnish to all other trades copies of approved ductwork shop drawings to assist in the coordination of the rough-in and installation of all items of work.

3.6 CONNECTIONS FOR OTHERS

A. This Contractor shall rough-in for and make all water, sewer, electrical, etc. connections to all fixtures, equipment, machinery, etc. provided by others in accordance with detailed roughing-in drawings provided by the equipment suppliers, by actual measurements of the equipment connections, or as detailed.

B. After the equipment is set in place, this Contractor shall make all final connections and shall provide all required pipe, fittings, valves, traps, connectors, etc.

C. Provide all air gap fittings required, using materials hereinbefore specified. In each water line serving an item of equipment or piece of machinery, provide a shutoff valve. On each drain without integral trap provide a suitable trap.

D. All pipe fittings, valves, traps, etc. exposed in finished areas and connected to chrome-plated lines provided by others shall be chrome-plated to match.

E. Provide all sheet metal ducts, transition pieces, etc. required for a complete installation of equipment provided by others.

3.7 INSTALLATION METHODS

A. Where to Conceal: All pipes and conduits shall be concealed in pipe chases, walls, furred spaces, below suspended floors, or above the ceilings of the building unless otherwise indicated.

B. Where to Expose: In mechanical rooms, janitor's closets tight against pan soffits in exposed Tee structures, or storage spaces, but only where necessary, piping and conduit may be run exposed. All exposed piping and conduit shall be run in the neatest, most inconspicuous manner, and parallel or perpendicular to the building lines.

C. Support: All piping and conduit shall be adequately and properly supported from the building structure by means of hanger rods or clamps to walls as herein specified.

D. Maintaining Clearance: Where limited space is available above the ceilings and below concrete beams or other deep projections, pipe and conduit shall be sleeved through the projection where it crosses, rather than hung below them, in a manner to provide maximum above-floor clearance. Sleeves shall be as herein specified. Approval shall be obtained from the Owner's Representative for each penetration.

E. All pipe, conduits, etc. shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. All ducts, pipes, and conduits run exposed in machinery and equipment rooms shall be installed parallel to the building lines, except that they shall be sloped to obtain the proper pitch. Piping and ducts run in furred ceilings, etc. shall be similarly installed, except as otherwise shown. Conduits in furred ceilings and in other concealed spaces may be run at angles to the construction but shall be neatly grouped and racked indicating good workmanship. All conduit and pipe openings shall be kept closed until the systems are closed with final connections.

F. Special Requirements:
1. There shall be no pipe joints nearer than 12 inches to a wall, ceiling, or floor penetration unless pipe joint is a welded or mechanically-coupled-type joint.
2. The Contractor shall study all construction documents and carefully lay out all work in advance of fabrication and erection in order to meet the requirements of the extremely limited spaces. Where conflicts occur, the Contractor shall meet with all involved trades and the Owner's Representative and resolve the conflict prior to erection of any work in the area involved.
3. All piping not directly buried in the ground shall be considered as "interior piping."
4. Prior to the installation of any ceiling material, gypsum, plaster, or acoustical board, the Contractor shall notify the Owner's Representative so that arrangements can be made for an inspection of the above-ceiling area about to be "sealed off." The Contractor shall give as much advance notice as possible up to ten (10) working days, but in no case less than five (5) working days.
5. The purpose of this inspection is to verify the completeness and quality of the installation of the air conditioning systems, the plumbing systems, and any other special above-ceiling systems such as pneumatic tube. The ceiling supports (tee bar or lath) should be in place so that access panel and light fixture locations are identifiable and so that clearances and access provisions may be evaluated.
6. No ceiling material shall be installed until the deficiencies listed from this inspection have been corrected to the satisfaction of the Owner's Representative.

3.8 CUTTING AND PATCHING

A. General: Cut and patch walls, floors, etc. resulting from work in existing construction or where made necessary by failure to provide proper openings or recesses in new construction.

B. Methods of Cutting: Openings cut through concrete and masonry shall be made with masonry saws and/or core drills and at such locations acceptable to the Owner's Representative. Impact-type equipment will not be used except where specifically acceptable to the Owner's Representative. Openings in concrete for pipes, conduits, outlet boxes, etc. shall be core drilled to exact size. Determine location of embedded conduit and reinforcing bars prior to cutting.

C. Restoration: All openings shall be restored to "as-new" condition under the appropriate specification section for the materials involved, and shall match remaining surrounding materials and/or finishes.

D. Masonry: Where openings are cut through masonry walls, provide and install lintels or other structural supports to protect the remaining masonry. Adequate supports shall be provided during the cutting operation to prevent any damage to the masonry occasioned by the operation. All structural members, supports, etc. shall be of the proper size and shape, and shall be installed in a manner acceptable to the Owner's Representative.

E. Plaster: All mechanical work in area containing plaster shall be completed prior to the application of the finish plaster coat. Cutting of finish plaster coat will not be permitted.

F. Weakening: No cutting, boring, or excavating which will weaken the structure shall be undertaken.

3.9 ROOF PENETRATIONS AND FLASHING

A. Pipe and conduit ducts, pitch pockets, curb bases, and flashing compatible with the roofing installation shall be provided for roof penetrations. Provide framing or other support around all openings through roof as required to preserve the structural integrity of the roof system and make the penetration weathertight.

B. Provide 30-inch round or square flashing acceptable to the roofing trades at all roof and deck drain and sleeve flashing locations.

C. Roof curbs for all roofs except standing seam metal roofs shall be provided by the equipment supplier supplying the roof-mounted equipment, etc., and such curbs shall be installed by the roofing trades. Contractor shall coordinate all roof curb requirements with all trades and the roofing trades at the earliest possible stage of the project.

D. Roof curbs for standing seam metal roofs shall be provided by the roofing trades. Curb base size, height, and type shall be coordinated with the roofing trades at the earliest possible stage of the project.

E. Flashing for pipe and conduit penetrations of standing seam metal roofs shall be provided and installed by the roofing trades.

3.10 EXCAVATING AND BACKFILLING

A. Perform trenching, excavating, backfilling for mechanical work as set forth below.

B. Depth of excavation to provide a minimum of 3 feet above top of pipe. Excavation to be carried to a depth of at least 6 inches below bottom of pipe elevation. Fill below pipe (6 inches), around pipe, and a minimum of 12 inches above pipe with sand of Class “B” crushed stone tamped firm and even. Separate topsoil during excavation. Final layer of dirt (12 inches minimum) to be topsoil. Trenches to be at least 18 inches wider than pipe with batter boards placed every 25 feet. Backfilling shall be done to exclude use of rock or stone above sand or Class “B” crushed stone.

3.11 TESTS AND INSPECTIONS

A. General: The Contractor shall make all tests deemed necessary by the inspection departments of the authority having jurisdiction, Board of Underwriters, etc. He shall provide all equipment, materials, and labor for making such tests. Fuel and electrical energy for system operational tests following beneficial occupancy by the Owner will be paid for by the Owner.

B. Other: Additional tests specified hereinafter under the various specification sections shall be made.

C. Notification: The Owner’s Representative shall be notified at his office 36 hours prior to each test and other specifications requirements requiring action on the part of the Owner, Architect, Engineer, and/or Owner’s Representative.

D. Test Logs: All tests which the Contractor conducts shall have pertinent data logged by the Contractor at the time of testing. Data shall include date, time, personnel, description and extent of system tested, test conditions, test results, specified results, and any other pertinent data. Data shall be delivered to the Owner’s Representative as specified under “Requirements for Final Acceptance.

E. Inspections: In general, an inspection by the Owner’s Representative shall be required prior to closing up any work and prior to beneficial occupancy or final project completion. The closing up of work includes, but is not limited to, pipe and conduit installations prior to backfilling; mechanical, electrical, and fire protection work prior to placement of concrete; or closing up walls and overhead mechanical, electrical, and fire protection work prior to installation of the ceiling.

3.12 CLEANING AND PAINTING

A. Thoroughly clean and touch up the finish on all parts of the materials and equipment. Exposed parts in equipment rooms, and all other spaces except sealed chases and attics shall be thoroughly cleaned of cement, plaster, and other materials, and all oil and grease spots shall be removed. Such surfaces shall be carefully wiped and all cracks and corners scraped out.

B. Exposed metal work which is not galvanized shall be carefully brushed down with steel brushes to remove rust and other spots and left smooth and clean and then painted with a suitable rust resistant primer. Exposed metal work includes work exterior to the building; exposed in mechanical or electrical equipment rooms and storage rooms; and other areas where occupants could see the work, whether normally occupied or not.

C. All other painting shall be accomplished under the Painting Section of Division 9 of the specifications.

3.13 DISCHARGE OF WASTES FROM CONSTRUCTION SITE

A. The Contractor shall comply with all applicable provisions of local, state, and federal laws regarding the discharge of wastes into sewer and waterways. Special caution shall be exercised to prevent the discharge of wastes which contain oil, tar, asphalt, roofing compound, kerosene, gasoline, paint, mud, cement, lime, or other materials which would degrade the water quality of the receiving water course. The Contractor shall construct and maintain oil interceptors, settling basins, acid neutralization tanks, and/or other effective pollution countermeasures, as required by the Texas Water Quality Board.

END OF SECTION 230100

SECTION 230513

BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following basic mechanical materials and methods to complement other Mechanical Sections.
   1. Piping materials and installation instructions common to most piping systems.
   2. Concrete base construction requirements.
   3. Escutcheons.
   4. Dielectric fittings.
   5. Dielectric isolation tape
   6. Flexible connectors.
   7. Mechanical sleeve seals.
   8. Nonshrink grout for equipment installations.
   9. Field-fabricated metal and wood equipment supports.
   10. Installation requirements common to equipment specification sections.
   11. Mechanical demolition.
   12. Cutting and patching.
   13. Touchup painting and finishing.
   14. Access Doors

B. Pipe and pipe fitting materials are specified in mechanical piping system Sections, if applicable.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:
   1. ABS: Acrylonitrile-butadiene-styrene plastic.
   2. CPVC: Chlorinated polyvinyl chloride plastic.
   3. NP: Nylon plastic.
   4. PE: Polyethylene plastic.
   5. PVC: Polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:
   1. CR: Chlorosulfonated polyethylene synthetic rubber.
   2. EPDM: Ethylene propylene diene terpolymer rubber.

1.3 SUBMITTALS

A. Product Data: For dielectric fittings, flexible connectors, access doors, solder/brazing material and mechanical sleeve seals.

B. Shop Drawings: Detail fabrication and installation for metal and wood supports and anchorage for mechanical materials and equipment.

C. Coordination Drawings: Detail major elements, components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Show space requirements for installation and access. Indicate if sequence and coordination of installations are important to efficient flow of the Work. Include the following:
   1. Clearances for servicing and maintaining equipment, accessories, and specialties, including space for disassembly required for periodic maintenance.
   2. Equipment and accessory service connections and support details.
   3. Fire-rated wall and floor penetrations.
   4. Scheduling, sequencing, movement, and positioning of large equipment into building during construction.
   5. Access panel and door locations

1.4 QUALITY ASSURANCE

A. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

B. Equipment Selection: Equipment of higher electrical characteristics, physical dimensions, capacities, and ratings may be furnished provided such proposed equipment is approved in writing and connecting mechanical and electrical services, circuit breakers, conduit, motors, bases, and equipment spaces are increased. Additional costs shall be approved in advance by appropriate Contract Modification for these increases. If minimum energy ratings or efficiencies of equipment are specified, equipment must meet design and commissioning requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and prevent entrance of dirt, debris, and moisture.

B. Protect stored pipes and tubes from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor, if stored inside.

C. Protect flanges, fittings, and piping specialties from moisture and dirt.

D. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate Mechanical equipment installation with other building components.

B. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction to allow for mechanical installations.

C. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components, as they are constructed.

D. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Coordinate installation of large equipment requiring positioning before closing in building.

E. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.

F. Coordinate requirements for access panels and doors if mechanical items requiring access are concealed behind finished surfaces.

G. Coordinate installation of identifying devices after completing covering and painting, if devices are applied to surfaces. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Dielectric Tape:
      a. Holdrite (#272-4).
   2. Metal, Flexible Connectors:
      a. Flexicraft Industries.
      b. Flex-Hose, Co., Inc.
      c. Grinnell Corp.; Grinnell Supply Sales Co.
      d. Mercer Rubber Co.
      e. Metraflex Co.
      f. Uniflex, Inc.
   3. Rubber, Flexible Connectors:
      a. General Rubber Corp.
      b. Mercer Rubber Co.
      c. Metraflex Co.
      d. Red Valve Co., Inc.
      e. Uniflex, Inc.
   4. Mechanical Sleeve Seals:
      a. Calpico, Inc.
      b. Metraflex Co.
      c. Thunderline/Link-Seal.

2.2 PIPE AND PIPE FITTINGS

A. Refer to individual Specification piping Sections for pipe and fitting materials and joining methods, if applicable.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Specification piping Sections for special joining materials not listed below, if applicable.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
   1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness, unless thickness or specific material is indicated.
      a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
      b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
   2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

E. Solder Filler Metals: ASTM B 32.
   1. ASTM B 32, 95/5 lead-free alloys. Include water –flushable and soluble flux according to ASTM B 813.

F. Brazing Filler Metals: AWS A5.8.
   1. BCuP Series: Copper-phosphorus alloys.
   2. BAg1: Silver alloy.

G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

H. Solvent Cements: Manufacturer's standard solvent cements for the following:
   1. CPVC Piping: ASTM F 493.
   2. PVC Piping: ASTM D 2564, medium bodied (bond). Include purple primer according to ASTM F 656.

I. Plastic Pipe Seals: ASTM F 477, elastomeric gasket.

J. Flanged, Ductile-Iron Pipe Gasket, Bolts, and Nuts: AWWA C110, rubber gasket, carbon-steel bolts and nuts.

K. Couplings: Iron-body sleeve assembly, fabricated to match OD of plain-end, pressure pipes.
   1. Sleeve: ASTM A 126, Class B, gray iron.
   2. Followers: ASTM A 47 malleable iron or ASTM A 536 ductile iron.
   3. Gaskets: Rubber.
   4. Bolts and Nuts: AWWA C111.
   5. Finish: Enamel paint.

2.4 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials or ferrous material body with separating nonconductive insulating material suitable for system fluid, pressure, and temperature, to prevent galvanic action and stop corrosion. Unions in first paragraph below are available in at least NPS 1/2 to NPS 2.

B. Dielectric Unions:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Capitol Manufacturing Company.
      b. Central Plastics Company.
      c. EPCO Sales, Inc.
      d. Hart Industries International, Inc.
      e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
      f. Zurn Mechanical Products Group; Wilkins Water Control Products.
   2. Description:
      a. Pressure Rating: 250 psig at 180 deg F.
      b. End Connections: Solder-joint copper alloy and threaded ferrous.
      c. Flanges in first paragraph below are available in at least NPS 1-1/2 to NPS 4.

C. Dielectric Flanges:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Capitol Manufacturing Company.
      b. Central Plastics Company.

c. EPCO Sales, Inc.
d. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:
a. Factory-fabricated, bolted, companion-flange assembly.
b. Pressure Rating: 175 psig minimum.
c. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Kits:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Advance Products & Systems, Inc.
b. Calico, Inc.
c. Central Plastics Company.
d. Pipeline Seal and Insulator, Inc.
2. Description:
a. Nonconducting materials for field assembly of companion flanges.
b. Pressure Rating: 150 psig.
c. Gasket: Neoprene or phenolic.
d. Bolt Sleeves: Phenolic or polyethylene.
e. Washers: Phenolic with steel backing washers.

E. Dielectric Couplings:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Calpico, Inc.
b. Lochinvar Corporation.
2. Description:
a. Galvanized-steel coupling.
b. Pressure Rating: 300 psig at 225 deg F.
c. End Connections: Female threaded.
d. Lining: Inert and noncorrosive, thermoplastic.

F. Dielectric Nipples:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Perfection Corporation; a subsidiary of American Meter Company.
b. Precision Mechanical Products, Inc.
c. Victaulic Company.
2. Description:
a. Electroplated steel nipple complying with ASTM F 1545.
b. Pressure Rating: 300 psig at 225 deg F.
c. End Connections: Male threaded or grooved.
d. Lining: Inert and noncorrosive, propylene.

2.5 DIELECTRIC ISOLATION TAPE

A. Tape to eliminate dissimilar metal contact: (equal to Holdrite #272-4)
1. White Polyester Felt. Pressure sensitive adhesive rubber base (one side only).
2. 4” width.

2.6 FLEXIBLE CONNECTORS

A. General: Fabricated from materials suitable for system fluid and that will provide flexible pipe connections. Include 125-psig minimum working-pressure rating, unless higher working pressure is indicated, and ends according to the following:
1. 2-Inch NPS and Smaller: Threaded.
2. 2-1/2-Inch NPS and Larger: Flanged.

3. Option for 2-1/2-Inch NPS and Larger: Grooved for use with keyed couplings.

B. Bronze-Hose, Flexible Connectors: Corrugated, bronze, inner tubing covered with bronze wire braid. Include copper-tube ends or bronze flanged ends, braze welded to hose.

C. Rubber, Flexible Connectors: CR or EPDM elastomer rubber construction, with multiple plies of NP fabric, molded and cured in hydraulic presses. Include 125-psig minimum working-pressure rating at 220 deg F. Units may be straight or elbow type, unless otherwise indicated.

2.7 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, used to fill annular space between pipe and sleeve.
1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe materials and size of pipe.
2. Pressure Plates: Stainless steel.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.8 PIPING SPECIALTIES

A. Sleeves: The following materials are for wall, floor, slab, and roof penetrations:
1. Steel Sheet Metal: 0.0239-inch minimum thickness, galvanized, round tube closed with welded longitudinal joint.
2. Steel Pipe: ASTM A 53, Type E, Grade A, Schedule 40, galvanized, plain ends.
3. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
4. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
a. Underdeck Clamp: Clamping ring with set screws.
5. Sleeve Fasteners: Manufactured, steel clips for securement during pour. Equal to B-line, BD40, BE-5-8 or BE-9-12.

B. Escutcheons: Manufactured wall, ceiling, and floor plates; deep-pattern type if required to conceal protruding fittings and sleeves.
1. ID: Closely fit around pipe, tube, and insulation of insulated piping.
2. OD: Completely cover opening.
3. Cast Brass: One piece, with set screw. (split face acceptable for existing piping)
a. Finish: Polished chrome-plate.

2.9 GROUT

A. Nonshrink, Nonmetallic Grout: ASTM C 1107, Grade B.
1. Characteristics: Post-hardening, volume-adjusting, dry, hydraulic-cement grout, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psig, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

2.10 ACCESS DOORS

A. General: Provide access doors for all serviceable mechanical appurtenances (valves, trap primers, shock arresters, actuators, sensors, etcetera) in inaccessible locations. Such locations include gypsum, brick and CMU ceilings and walls.

B. Location of panels shall be carefully coordinated with other Exposed Devices as described in earlier paragraphs.

C. Manufacturers shall be Milcor, Mifab, or approved equal. Unless indicated otherwise, use panels equal to Milcor Style M for masonry and drywall construction, equal to Milcor Style K for plastered masonry walls and ceilings. Stainless steel panels shall be used in ceramic tile or glazed structural tile.

D. Minimum construction features include 16-gage frame and door, continuous hinges, cam-style latch and 10x10" unobstructed opening size.

E. UL labeled when in fire-rated construction, one and one-half hour rating.

F. Access doors located outside, in restrooms or in a moisture-laden environment (dressing area, shower area, lockers, etcetera) shall be stainless steel construction.

G. Equipment access doors shall be of sufficient size to remove/replace equipment and provide routine maintenance as necessary, unless otherwise noted. Doors shall be set flush with adjacent finish surfaces. All access doors shall be provided with cylinder locks. All access doors (MEP) shall have one (1) common key.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS AND APPLICATIONS

A. General: Install piping as described below, unless piping Sections specify otherwise. Individual piping Sections specify unique piping installation requirements.

B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.

C. All piping to be installed in compliance with current NEC required clearances.

D. Install manufactured isolation clamps at all dissimilar metal pipe supports. Install dielectric isolation tape (engineer approved) only when a manufactured isolation clamp is not available.

E. Install piping at indicated slope.

F. Install components with pressure rating equal to or greater than system operating pressure.

G. Install piping in concealed interior and exterior locations, except in equipment rooms and service areas.

H. Install piping free of sags and bends.

I. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, unless otherwise indicated.

J. Install piping tight to slabs, beams, joists, columns, walls, and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.

K. Install piping to allow application of insulation plus 1-inch clearance around insulation.

L. Locate groups of pipes parallel to each other, spaced to permit valve servicing.

M. Install fittings for changes in direction and branch connections.

N. Install couplings according to manufacturer's written instructions.

O. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements in Section "Penetration Firestopping" for firestop materials and installations.
   1. Fire-stop all sleeves at floor penetrations of multistory buildings including underfloor penetrations.

P. Verify final equipment locations for roughing-in.

Q. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

R. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping specification Sections:
   1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
   2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
   3. Soldered Joints: Construct joints according to AWS's "Soldering Manual," Chapter "The Soldering of Pipe and Tube"; or CDA's "Copper Tube Handbook."
   4. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
   5. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
      a. Note internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
      b. Apply appropriate tape or thread compound to external pipe threads, unless dry seal threading is specified.
      c. Align threads at point of assembly.
      d. Tighten joint with wrench. Apply wrench to valve end into which pipe is being threaded.
      e. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
   6. Welded Joints: Construct joints according to AWS D10.12, "Recommended Practices and Procedures for Welding Low Carbon Steel Pipe," using qualified processes and welding operators according to "Quality Assurance" Article.
   7. Flanged Joints: Align flange surfaces parallel. Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly using torque wrench.
   8. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join pipe and fittings according to the following:
      a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
      b. CPVC Piping: ASTM D 2846 and ASTM F 493.
      c. PVC Pressure Piping: ASTM D 2672.
      d. PVC Nonpressure Piping: ASTM D 2855.
   9. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657 procedures and manufacturer's written instructions.
      a. Plain-End Pipe and Fittings: Use butt fusion.
      b. Plain-End Pipe and Socket Fittings: Use socket fusion.

3.2 ESCUTCHEON REQUIREMENTS

A. Install escutcheons at pipe penetrations of walls, ceilings, and floors in finished areas.
   1. Escutcheons for New Piping:

a. Piping exposed through floors and walls in finished areas: One piece, cast brass with polished chrome-plated finish with set screw. Deep escutcheons to be provided where standard depth will not fit.
b. Escutcheons shall cover entire hole penetration.
c. Escutcheon to be appropriately sized for pipe.

2. Escutcheons for Existing piping:
   a. Piping exposed through floors and walls in finished areas: Split plate, cast brass with polished chrome-plated finish with set screw. Deep escutcheons to be provided where standard depth will not fit.
   b. Escutcheons shall cover entire hole penetration.
   c. Escutcheon to be appropriately sized for pipe.
3. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

3.3 PIPE SLEEVE INSTALLATION REQUIREMENTS

A. Pipe sleeves are required at all through wall and floor penetrations.
1. Sleeves are to be of the following material:
   a. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc-coated, with plain ends.
2. Sleeves are required for all through floor and wall penetrations. Sleeves to be set and poured in place (in slab applications), secure all sleeves with fasteners.
3. Sleeves to extend 2 inches past face of floor or wall. Pipe sleeve in finished areas to be flush with wall or floor for installation of escutcheon.
4. Install sleeves in new partitions, slabs, and walls as they are built.
5. For interior wall penetrations, seal annular space between sleeve and pipe or pipe insulation using joint sealants appropriate for size, depth, and location of joint. Comply with requirements in Section "Joint Sealants" for joint sealants.
6. For exterior wall penetrations above grade, seal annular space between sleeve and pipe using joint sealants appropriate for size, depth, and location of joint. Comply with requirements in Section "Joint Sealants" for joint sealants.
7. For exterior wall penetrations below grade, seal annular space between sleeve and pipe using sleeve seals specified in this Section.
8. Install sleeves that are large enough to provide 1/4-inch (6.4-mm) annular clear space between sleeve and pipe or pipe insulation unless otherwise indicated. Seal annular space with water tight sealant. (equal to NP-1). All sleeves and penetrations to maintain rating of wall / floor. Seal pipe penetrations with fire-stopping materials.
9. Install sleeve materials according to the following applications:
   a. Sleeves for Piping Passing through Concrete Floor Slabs: galvanized steel pipe.
   b. Sleeves for Piping Passing through Concrete Floor Slabs of Mechanical Equipment Areas or Other Wet Areas: Galvanized-steel pipe sleeves.
      1) Extend sleeves 2 inches above finished floor level.
      2) For pipes penetrating floors with membrane waterproofing, extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches (50 mm) above finished floor level. Comply with requirements in Section "Sheet Metal Flashing and Trim" for flashing.
10. Sleeves for Piping Passing through Gypsum-Board Partitions:
    a. Galvanized-steel pipe sleeves.
    b. Exception: Sleeves are not required for water supply tubes and waste pipes for individual mechanical fixtures if escutcheons will cover openings.
11. Sleeves for Piping Passing through Concrete Roof Slabs: Reference details.
12. Sleeves for Piping Passing through Exterior Concrete Walls:
    a. Galvanized-steel pipe sleeves.
    b. Install sleeves that are large enough to provide 1-inch annular clear space between sleeve and pipe or pipe insulation when sleeve seals are used.
13. Sleeves for Piping Passing through Interior Concrete Walls:

a. Galvanized-steel pipe sleeves.

14. Mechanical sleeve seals
    a. Install sleeve seals in sleeves in exterior concrete walls at water-service piping entries into building. Sleeves must be poured in place. Installation of sleeves after wall is constructed is not acceptable.
    b. Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble sleeve seal components and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

B. Piping Connections: Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping 2-inch NPS and smaller, adjacent to each valve and at final connection to each piece of equipment with 2-inch NPS or smaller threaded pipe connection.
2. Install flanges, in piping 2-1/2-inch NPS and larger, adjacent to flanged valves and at final connection to each piece of equipment with flanged pipe connection.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.4 DIELECTRIC FITTING INSTALLATION

A. Install unions, in piping 2-inch NPS and smaller, adjacent to each valve and at final connection to each piece of equipment with 2-inch NPS or smaller threaded pipe connection.

B. Install flanges, in piping 2-1/2-inch NPS and larger, adjacent to flanged valves and at final connection to each piece of equipment with flanged pipe connection.

3.5 EQUIPMENT INSTALLATION – COMMON REQUIREMENTS

A. Install equipment to provide maximum possible headroom, if mounting heights are not indicated.

B. Install equipment according to approved submittal data. Portions of the Work are shown only in diagrammatic form. Refer conflicts to Architect.

C. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

D. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

E. Install equipment giving right of way to piping installed at required slope.

3.6 PAINTING AND FINISHING

A. Apply paint to exposed piping according to the following, unless otherwise indicated:
1. Interior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
2. Interior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over galvanized metal primer.
3. Interior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
4. Exterior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over rust-inhibitive metal primer.

5. Exterior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over galvanized metal primer.
6. Exterior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include two finish coats over rust-inhibitive metal primer.

B. Do not paint piping specialties with factory-applied finish.

C. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.7 ERECTION OF METAL SUPPORTS AND ANCHORAGE

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.

B. Field Welding: Comply with AWS D1.1, "Structural Welding Code--Steel."

3.8 ERECTION OF WOOD SUPPORTS AND ANCHORAGE

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorage to support and anchor mechanical materials and equipment (not to be used at pipe supports).

B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

3.9 DEMOLITION

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for mechanical installations. Perform cutting by skilled mechanics of trades involved.

B. Repair cut surfaces to match adjacent surfaces.

3.10 CUTTING AND PATCHING

A. Disconnect, demolish, and remove Work specified in Mechanical Sections.

B. If pipe, ductwork, insulation, or equipment to remain is damaged or disturbed, remove damaged portions and install new products of equal capacity and quality.

C. Accessible Work: Remove indicated exposed pipe and ductwork in its entirety.

D. Work Abandoned in Place: Cut and remove underground pipe a minimum of 2 inches beyond face of adjacent construction. Cap and patch surface to match existing finish.

E. Removal: Remove indicated equipment from Project site.

F. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational equipment indicated for relocation.

3.11 GROUTING

A. Install nonmetallic, nonshrink, grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors. Mix grout according to manufacturer's written instructions.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placing of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases to provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout according to manufacturer's written instructions.

END OF SECTION 230513

SECTION 230529

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following hangers and supports for mechanical system piping and equipment:
   1. Steel pipe hangers and supports.
   2. Trapeze pipe hangers.
   3. Metal framing systems.
   4. Thermal-hanger shield inserts.
   5. Fastener systems.
   6. Equipment supports.

B. Related Sections include the following:
   1. Specification Section "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
   2. Specification Section “Metal Ducts” for duct hangers and supports.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.

B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.5 SUBMITTALS

A. Product Data: For the following:
   1. Steel pipe hangers and supports.
   2. Thermal-hanger shield inserts.
   3. Powder-actuated fastener systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
   1. Trapeze pipe hangers. Include Product Data for components.
   2. Metal framing systems. Include Product Data for components.
   3. Equipment supports.

C. Welding certificates.

1.6 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."

B. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.1, "Structural Welding Code--Steel."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 METAL COATING REQUIREMENTS:

A. All metal products shall have the following coatings:
   1. Wet/damp areas: hot dipped galvanized.
   2. Dry or conditioned areas: pre-galvanized.

2.3 STEEL PIPE HANGERS AND SUPPORTS

A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.

B. Manufacturers:
   1. AAA Technology & Specialties Co., Inc.
   2. Bergen-Power Pipe Supports.
   3. B-Line Systems, Inc.; a division of Cooper Industries.
   4. Carpenter & Paterson, Inc.
   5. Empire Industries, Inc.
   6. ERICO/Michigan Hanger Co.
   7. Globe Pipe Hanger Products, Inc.
   8. Grinnell Corp.
   9. GS Metals Corp.
   10. National Pipe Hanger Corporation.
   11. PHD Manufacturing, Inc.
   12. PHS Industries, Inc.
   13. Piping Technology & Products, Inc.
   14. Tolco Inc.

C. Galvanized, Metallic Coatings: Pre-galvanized (minimum thickness of 0.5 mils) or hot dipped (1.4 to 3.9 mil thickness).

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

2.4 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

2.5 METAL FRAMING SYSTEMS

A. Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components.

B. Manufacturers:
1. B-Line Systems, Inc.; a division of Cooper Industries.
2. ERICO/Michigan Hanger Co.; ERISTRUT Div.
3. GS Metals Corp.
4. Power-Strut Div.; Tyco International, Ltd.
5. Thomas & Betts Corporation.
6. Tolco Inc.
7. Unistrut Corp.; Tyco International, Ltd.

C. Coatings: Manufacturer's standard finish unless bare metal surfaces are indicated.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

2.6 THERMAL-HANGER SHIELD INSERTS

A. Description: 100-psig minimum, compressive-strength insulation insert with a sheet metal shield.

B. Manufacturers:
1. Carpenter & Paterson, Inc.
2. ERICO/Michigan Hanger Co.
3. PHS Industries, Inc.
4. Pipe Shields, Inc.
5. Rilco Manufacturing Company, Inc.
6. Buckaroos

C. Insulation-Insert Material for Cold Piping: ASTM C 552, Type II cellular glass with vapor barrier. Wood inserts are not acceptable.

D. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate or ASTM C 552, Type II cellular glass.

E. Insulation-Insert Material for Hot Piping only, up to 3” diameter: Molded fiberglass block, 20 lbs/ft^3 density, thermal conductivity of 0.30.

F. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

G. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

H. Insert Length: Extend 4 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.7 FASTENER SYSTEMS

A. Mechanical-Expansion Anchors: Insert-wedge-type stainless steel, for use in hardened Portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
1. Manufacturers:
a. B-Line Systems, Inc.; a division of Cooper Industries.
b. Empire Industries, Inc.
c. Hilti, Inc.
d. ITW Ramset/Red Head.
e. MKT Fastening, LLC.
f. Powers Fasteners.

2.8 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

2.9 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars.
   1. Exterior: Galvanized steel.
   2. Interior: Black steel.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, non-shrink and nonmetallic grout; suitable for interior and exterior applications.
   1. Properties: Nonstaining, noncorrosive, and nongaseous.
   2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT APPLICATIONS

A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use padded hangers for piping that is subject to scratching.

F. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of non-insulated or insulated stationary pipes, NPS 1/2 to NPS 30.
   2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of 120 to 450 deg F pipes, NPS 4 to NPS 16, requiring up to 4 inches of insulation.
   3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS 3/4 to NPS 24, requiring clamp flexibility and up to 4 inches of insulation.
   4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS 1/2 to NPS 24, if little or no insulation is required.
   5. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
   6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS 3/4 to NPS 8.
   7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of non-insulated stationary pipes, NPS 1/2 to NPS 8.
   8. Adjustable Band Hangers (MSS Type 9): For suspension of non-insulated stationary pipes, NPS 1/2 to NPS 8.
   9. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of non-insulated stationary pipes, NPS 1/2 to NPS 2.
   10. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 8.
   11. Extension Hinged or 2-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 3.

12. U-Bolts (MSS Type 24): For support of heavy pipes, NPS 1/2 to NPS 30.
13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
14. Pipe Saddle Supports (MSS Type 36): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange.
15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange and with U-bolt to retain pipe.
16. Adjustable, Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes, NPS 2-1/2 to NPS 36, if vertical adjustment is required, with steel pipe base stanchion support and cast-iron floor flange.
17. Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 to NPS 30, from 2 rods if longitudinal movement caused by expansion and contraction might occur.
18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes, NPS 2-1/2 to NPS 20, from single rod if horizontal movement caused by expansion and contraction might occur.
19. Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42, if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes, NPS 2 to NPS 24, if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes, NPS 2 to NPS 30, if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.

G. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20, if longer ends are required for riser clamps.

H. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

I. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.
7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.

11. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
12. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
    a. Light (MSS Type 31): 750 lb.
    b. Medium (MSS Type 32): 1500 lb.
    c. Heavy (MSS Type 33): 3000 lb.
13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

J. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Thermal-Hanger Shield Inserts: For supporting insulated cold pipe. **Wood inserts are not acceptable.**

K. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.
4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from hanger.
6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from base support.
7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from trapeze support.
8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
    a. Horizontal (MSS Type 54): Mounted horizontally.
    b. Vertical (MSS Type 55): Mounted vertically.
    c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.

L. Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.

M. Comply with MFMA-102 for metal framing system selections and applications that are not specified in piping system Sections.

N. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments in concrete construction only in locations approved by the structural engineer.

3.2 HANGER AND SUPPORT INSTALLATION

A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure; attaching to metal roof decks is not permissible.

B. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.
   1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
   2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.

D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

E. Fastener System Installation:
   1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
   2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

F. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

G. Equipment Support Installation: Install suspended units on supports fabricated from welded-structural-steel shapes or from strut channels as applicable for the unit weight. Vertical support members must be appropriately sized threaded rods. Metal straps or cables are not allowed. Isolate units to prevent vibration or noise as specified in other sections.

H. Install hangers and supports to allow controlled thermal movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

I. Install lateral bracing with pipe hangers and supports to prevent swaying.

J. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads for NPS 2-1/2 and larger, including valves, flanges, and strainers, and at changes in direction of piping (24” maximum distance from elbow). Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

K. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

L. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9 (for building services piping) are not exceeded.

M. Insulated Piping: Comply with the following:
   1. Attach clamps and spacers to piping.
      a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
      b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
      c. Do not exceed pipe stress limits according to ASME B31.9 for building services piping.
   2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
      a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
   3. Install thermal-hanger shield inserts on insulated piping with vapor barrier. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
   4. Shield Dimensions for Pipe: Not less than the following:
      a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.

b. NPS 4: 12 inches long and 0.06 inch thick.
c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
5. Insert Material: Length at least as long as protective shield.
6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

N. Insulated Ducts (Mineral Fiber Blanket). Comply with the following:
1. At all unistrut supports provide mineral fiber board insert in between ductwork and unistrut. Insert to extend 12” on both sides of unistrut, full length of strut. Extend blanket between structural insert.

3.3 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for floor-mounted equipment to make a smooth bearing surface.

C. Provide lateral bracing to prevent swaying for suspended equipment supports.

3.4 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger support rods to 1-1/2 inches.

3.6 PAINTING

A. Touch Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touch Up: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 09 painting Sections.

C. Galvanized Surfaces: Clean welds, bolted connections, field cuts, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 230529

SECTION 230553

MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following mechanical identification materials and their installation:
   1. Equipment nameplates.
   2. Equipment markers.
   3. Equipment signs.
   4. Access panel and door markers.
   5. Pipe markers.
   6. Duct markers.
   7. Stencils.
   8. Valve tags.
   9. Valve schedules.
   10. Warning tags.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Valve Schedules: For each piping system. Furnish extra copies (in addition to mounted copies) to include in maintenance manuals. Reproduce on 8½ × 11 bond. Tabulate valve number, piping system, system abbreviation as shown on tag, room or space location of valve, and variations for identification. Mark valves intended for emergency shutoff and similar special uses. Indicate normal operating positions (open, closed, modulating, or balance).

1.4 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

1.5 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with location of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 GENERAL

A. Products specified are for applications referenced in other Mechanical sections. In addition to a factory installed equivalent nameplate, all equipment shall have an engraved equipment sign that matches the schedule tag name.

2.2 EQUIPMENT IDENTIFICATION DEVICES

A. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.
   1. Data:
      a. Manufacturer, product name, model number, and serial number.
      b. Capacity, operating and power characteristics, and essential data.
      c. Labels of tested compliances.
   2. Location: Accessible and visible.
   3. Fasteners: As required to mount on equipment.
   4. Material: Brass.

B. Equipment Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.
   1. Data: Instructions for operation of equipment and for safety procedures.
   2. Engraving: Manufacturer's standard letter style, of sizes and with terms to match equipment identification.
   3. Thickness: 1/8 inch, unless otherwise indicated.
   4. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.

2.3 PIPING IDENTIFICATION DEVICES

A. Manufactured Pipe Markers, General: Manufacturers standard preprinted, semi-rigid, snap-on type.
   1. Colors: Comply with ASME A13.1, unless otherwise indicated.
   2. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers extending 360 degrees around pipe at each location.
   3. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip-type pipe markers at least three times letter height and of length required for label.
   4. Arrows: Integral with piping system service lettering to accommodate both directions; or as separate unit on each pipe marker to indicate direction of flow.
   5. Lettering: Manufacturers standard preprinted.

2.4 DUCT IDENTIFICATION DEVICES

A. Duct Markers: Engraved, color-coded laminated plastic. Include direction and quantity of airflow and duct service (such as supply, return, and exhaust). Include contact-type, permanent adhesive. See Execution section for color scheme.

2.5 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch sequenced numbers. Provide 5/32-inch hole for fastener.
   1. Material: 0.032-inch thick aluminum.
   2. Valve-Tag Fasteners: Brass S-hook.
   3. Size: 1½ inches in diameter, unless otherwise indicated.

2.6 VALVE SCHEDULES

A. Valve-Schedule Frames: Glazed display frame for removable mounting on masonry walls for each page of valve schedule. Include mounting screws.

B. Frame: Extruded aluminum.

C. Glazing: ASTM C 1036, Type I, Class 1, Glazing Quality B, 2.5-mm, single-thickness glass.

2.7 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags; of plasticized card stock with matte finish suitable for writing.
   1. Size: 3 by 5-1/4 inches **minimum**.
   2. Fasteners: Brass grommet and wire.
   3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.
   4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 APPLICATIONS, GENERAL

A. Products specified are for applications referenced in other Mechanical Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

3.2 EQUIPMENT IDENTIFICATION

A. Install and permanently fasten equipment nameplates on each major item of mechanical equipment that does not have nameplate or has nameplate that is damaged or located where not easily visible. Locate nameplates where accessible and visible. Include nameplates for the following general categories of equipment:
   1. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
   2. Pumps, compressors, chillers, condensers, and similar motor-driven units.
   3. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
   4. Fans, blowers, primary balancing dampers, and mixing boxes.
   5. Packaged HVAC central-station and zone-type units.

B. Install equipment markers with permanent fasteners on or near each major item of mechanical equipment. Data required for markers may be included on signs, and markers may be omitted if both are indicated.
   1. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, ½ inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
   2. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
   3. Locate markers where accessible and visible. Include markers for the following general categories of equipment:
      a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
      b. Fire department hose valves and hose stations.
      c. Meters, gages, thermometers, and similar units.
      d. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
      e. Pumps, compressors, chillers, condensers, and similar motor-driven units.
      f. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
      g. Fans, blowers, primary balancing dampers, and mixing boxes.
      h. Packaged HVAC central-station and zone-type units.
      i. Tanks and pressure vessels.

j. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.

C. Install equipment signs with screws or permanent adhesive on or near each major item of mechanical equipment. Locate signs where accessible and visible.
1. Identify mechanical equipment with equipment markers in the following color codes:
a. Green: For cooling equipment and components.
b. Yellow: For heating equipment and components.
c. Green and Yellow, Orange: For combination cooling and heating equipment and components.
d. Brown: For energy-reclamation equipment and components.
2. Letter Size: Minimum 1/2 inch for name of units if viewing distance is less than 24 inches, 3/4 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
3. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
4. Include signs for the following general categories of equipment:
a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
b. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
c. Pumps, compressors, chillers, condensers, and similar motor-driven units.
d. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
e. Fans, blowers, primary balancing dampers, and mixing boxes.
f. Packaged HVAC central-station and zone-type units.
g. Tanks and pressure vessels.
h. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.

D. Install access panel markers with screws on equipment access panels.

3.3 PIPING IDENTIFICATION

A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
1. Pipes with OD, Including Insulation, Less Than 6 Inches: Snap-on application of pretensioned, semi-rigid plastic pipe marker.
2. Pipes with OD, Including Insulation, 6 Inches and Larger: Shaped pipe markers. Use size to match pipe and secure with manufacturer's stainless steel bands.
3. Fasten Option: Laminated or bonded application of pipe marker to pipe or insulation.

B. Locate pipe markers and color bands where piping is exposed in finished spaces; in machine rooms; in accessible maintenance spaces such as shafts, tunnels and plenums; and in exterior nonconcealed locations such as rooftops and chiller yards, as follows:
1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and nonaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings.

3.4 DUCT IDENTIFICATION

A. Install duct markers with permanent adhesive on air ducts in the following color codes:
1. Green: For cold-air supply ducts.
2. Yellow: For hot-air supply ducts.

3. Blue: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
4. ASME A13.1 Colors and Designs: For hazardous material exhaust.
5. Letter Size: Minimum 1/2 inch for name of units if viewing distance is less than 24 inches, 3/4 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

B. Locate markers near points where ducts enter into concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system. Reduce intervals to 25 feet in areas of high duct congestion.

3.5 VALVE-SCHEDULE INSTALLATION

A. Mount valve schedule on wall in accessible location in each major equipment room.

3.6 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

3.7 VALVE TAGS

A. Install on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, plumbing fixture supply stops, shutoff valves, and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in valve schedule.

B. Valve Tag Application Schedule: Tag valves according to size, shape, color scheme, and with captions similar to those indicated in the following:

C. Tag Material: Aluminum.

D. Tag Size and Shape: 1-1/2 inches, round.

E. Tag Color: According to the following:
1. Chilled Water: Blue.
2. Cold Water: Black.
3. Hot Water: Red.
4. Fire Protection: Red.
5. Sprinkler: White.
6. Gas: Yellow.
7. Steam: Red.

F. Letter Color: White.

G. Install mounted valve schedule in each major equipment room.

3.8 EQUIPMENT SIGNS AND MARKERS

A. Install engraved plastic-laminate signs or equipment markers on or near each major item of mechanical equipment. Include signs for the following general categories of equipment:
1. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
2. Meters, gages, thermometers, and similar units.
3. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
4. Pumps, compressors, chillers, condensers, and similar motor-driven units.
5. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.

6. Fans, blowers, primary balancing dampers, and mixing boxes.
7. Packaged HVAC central-station and zone-type units.
8. Tanks and pressure vessels.
9. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.
10. Any concealed appurtenances requiring access for maintenance shall be clearly identified by sign (to include but not be limited to unions, strainers, valves, etc.).

B. Duct Systems: Identify air supply, return, exhaust, intake, and relief ducts with duct markers; or provide stenciled signs and arrows showing service and direction of flow.
   1. Location: Locate signs near points where ducts enter into concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.

3.9 ADJUSTING AND CLEANING

A. Relocate mechanical identification materials and devices that have become visually blocked by work of this or other Divisions.

B. Clean faces of identification devices and glass frames of valve charts.

END OF SECTION 230553

SECTION 230593

TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The work included in this section consists of the furnishing of all labor, instruments, tools, and services required in connection with the testing, adjusting and balancing (TAB) of the heating, ventilating, and air conditioning systems as described in the mechanical specifications and/or shown on the mechanical plans, or reasonable implied therefrom.

B. TAB of the HVAC systems will be performed by an impartial technical firm that is a member of NEBB and whose operations are limited to the field of professional testing and balancing.

C. Mechanical Contractor to obtain TAB services from an independent TAB contractor.

D. Qualified TAB firms shall submit cost, scope of work, qualifications, time line, and references.

E. The TAB firm is responsible to and shall submit five (5) copies of all reports directly to the Architect/Engineer and one copy to the Owner.

F. TAB services shall result in the optimum temperature, airflow, and noise levels in the conditioned space of the project.

G. The following basic components of the HVAC systems shall be tested, adjusted, and balanced:
   1. Air distribution systems.
   2. Air moving equipment.
   3. HVAC pumps (chilled water, hot water, condenser water, etc.).
   4. Heating systems (HVAC).
   5. Control systems verification.

1.2 SUMMARY

A. This Section includes testing, adjusting, and balancing HVAC systems to produce design objectives, including the following:
   1. Balancing airflow and water flow within distribution systems, including submains, branches, and terminals, to indicated quantities according to specified tolerances.
   2. Adjusting total HVAC systems to provide indicated quantities.
   3. Measuring electrical performance of HVAC equipment.
   4. Setting quantitative performance of HVAC equipment.
   5. Verifying that automatic control devices are functioning properly.
   6. Measuring sound and vibration.
   7. Reporting results of the activities and procedures specified in this Section.

B. Related sections include the following:
   1. Testing and adjusting requirements unique to particular systems and equipment are included in the Sections that specify those systems and equipment. See all related HVAC mechanical sections.
   2. Field quality-control testing to verify that workmanship quality for system and equipment installation is specified in system and equipment Sections.

1.3 DEFINITIONS

A. Adjust: To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.

B. Balance: To proportion flows within the distribution system, including submains, branches, and terminals, according to design quantities.

C. Draft: A current of air, when referring to localized effect caused by one or more factors of high air velocity, low ambient temperature, or direction of airflow, whereby more heat is withdrawn from a person's skin than is normally dissipated.

D. Procedure: An approach to and execution of a sequence of work operations to yield repeatable results.

E. Report Forms: Test data sheets for recording test data in logical order.

F. Static Head: The pressure due to the weight of the fluid above the point of measurement. In a closed system, static head is equal on both sides of the pump.

G. Suction Head: The height of fluid surface above the centerline of the pump on the suction side.

H. System Effect: A phenomenon that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.

I. System Effect Factors: Allowances used to calculate a reduction of the performance ratings of a fan when installed under conditions different from those presented when the fan was performance tested.

J. Terminal: A point where the controlled medium, such as fluid or energy, enters or leaves the distribution system.

K. Test: A procedure to determine quantitative performance of a system or equipment.

L. Testing, Adjusting, and Balancing Agent: The entity responsible for performing and reporting the testing, adjusting, and balancing procedures.

M. NEBB: National Environmental Balancing Bureau.

N. SMACNA: Sheet Metal and Air Conditioning Contractors' National Association.

1.4 SUBMITTALS

A. Quality-Assurance Submittals: Within 30 days from the Contractor's Notice to Proceed, submit 2 copies of evidence that the testing, adjusting, and balancing Agent and this Project's testing, adjusting, and balancing team members meet the qualifications specified in the "Quality Assurance" Article below.

B. Contract Documents Examination Report: Within 45 days from the Contractor’s Notice to Proceed, submit 2 copies of the Contract Documents review report as specified in Part 3 of this Section.

C. Strategies and Procedures Plan: Within 60 days from the Contractor’s Notice to Proceed, submit 2 copies of the testing, adjusting and balancing strategies and step-by-step procedures as specified in Part 3 “Preparation” Article below. Include a complete set of report forms intended for use on this Project.

D. Certified Testing, Adjusting and Balancing Reports: Submit 2 copies of reports prepared, as specified in this Section, on approved forms certified by the testing, adjusting and balancing Agent.

E. Sample Report Forms: Submit 2 sets of sample testing, adjusting and balancing report forms.

F. Warranty: Submit 2 copies of special warranty specified in the “Guarantee” Article below.

1.5 QUALITY ASSURANCE

A. Agent Qualifications: Engage a testing, adjusting, and balancing agent certified by NEBB.

B. Testing, Adjusting, and Balancing Conference: Meet with the Owner's and the Architect's representatives on approval of the testing, adjusting, and balancing strategies and procedures plan to develop a mutual

understanding of the details. Ensure the participation of testing, adjusting, and balancing team members, equipment manufacturers' authorized service representatives, HVAC controls Installer, and other support personnel. Provide 7 days' advance notice of scheduled meeting time and location.

1. Agenda Items: Include at least the following:
   a. Submittal distribution requirements.
   b. Contract Documents examination report.
   c. Testing, adjusting, and balancing plan.
   d. Work schedule and Project site access requirements.
   e. Coordination and cooperation of trades and subcontractors.
   f. Coordination of documentation and communication flow.

C. Certification of Testing, Adjusting, and Balancing Reports: Certify the testing, adjusting, and balancing field data reports. This certification includes the following:
   1. Review field data reports to validate accuracy of data and to prepare certified testing, adjusting, and balancing reports.
   2. Certify that the testing, adjusting, and balancing team complied with the approved testing, adjusting, and balancing plan and the procedures specified and referenced in this Specification.

D. Testing, Adjusting, and Balancing Reports: Use standard forms from NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems."

E. Instrumentation Type, Quantity, and Accuracy: As described in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems," Section II, "Required Instrumentation for NEBB Certification."

F. Instrumentation Calibration: Calibrate instruments at least every 12 months or more frequently if required by the instrument manufacturer.

1.6 PROJECT CONDITIONS

A. Partial Owner Occupancy: The Owner may occupy completed areas of the building before Substantial Completion. Cooperate with the Owner during testing, adjusting, and balancing operations to minimize conflicts with the Owner's operations.

1.7 COORDINATION

A. Coordinate the efforts of factory-authorized service representatives for systems and equipment, HVAC controls installers, and other mechanics to operate HVAC systems and equipment to support and assist testing, adjusting, and balancing activities.

B. Notice: Provide 7 days' advance notice for each test. Include scheduled test dates and times.

C. Perform testing, adjusting, and balancing after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

1.8 GUARANTEE

A. General: The national project performance guarantee specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2- PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Contract Documents to become familiar with project requirements and to discover conditions in systems' designs that may preclude proper testing, adjusting, and balancing of systems and equipment.
   1. Contract Documents are defined in the General and Supplementary Conditions of the Contract.
   2. Verify that balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers, are required by the Contract Documents. Verify that quantities and locations of these balancing devices are accessible and appropriate for effective balancing and for efficient system and equipment operation.

B. Examine approved submittal data of HVAC systems and equipment.

C. Examine Architect's and Engineer's design data, including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.

D. Examine equipment performance data, including fan and pump curves. Relate performance data to project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system. Calculate system effect factors to reduce the performance ratings of HVAC equipment when installed under conditions different from those presented when the equipment was performance tested at the factory. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," Sections 7 through 10; or in SMACNA's "HVAC Systems--Duct Design," Sections 5 and 6. Compare this data with the design data and installed conditions.

E. Examine system and equipment installations to verify that they are complete and that testing, cleaning, adjusting, and commissioning specified in individual Specification Sections have been performed.

F. Examine system and equipment test reports.

G. Examine HVAC system and equipment installations to verify that indicated balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers, are properly installed, and their locations are accessible and appropriate for effective balancing and for efficient system and equipment operation.

H. Examine systems for functional deficiencies that cannot be corrected by adjusting and balancing.

I. Examine air-handling equipment to ensure clean filters have been installed, bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.

J. Examine terminal units, such as variable-air-volume boxes and mixing boxes, to verify that they are accessible and their controls are connected and functioning.

K. Examine plenum ceilings, utilized for supply air, to verify that they are airtight. Verify that pipe penetrations and other holes are sealed.

L. Examine strainers for clean screens and proper perforations.

M. Examine 3-way valves for proper installation for their intended function of diverting or mixing fluid flows.

N. Examine heat-transfer coils for correct piping connections and for clean and straight fins.

O. Examine open-piping-system pumps to ensure absence of entrained air in the suction piping.

P. Examine equipment for installation and for properly operating safety interlocks and controls.

Q. Examine automatic temperature system components to verify the following:
   1. Dampers, valves, and other controlled devices operate by the intended controller.
   2. Dampers and valves are in the position indicated by the controller.

3. The Integrity of valves and dampers for free and full operation and for tightness of fully closed and fully open positions. This includes dampers in multizone units, mixing boxes, and variable-air-volume terminals.
4. Automatic modulating and shutoff valves, including 2-way valves and 3-way mixing and diverting valves, are properly connected.
5. Thermostats and humidistats are located to avoid adverse effects of sunlight, drafts, and cold walls.
6. Sensors are located to sense only the intended conditions.
7. Sequence of operation for control modes is according to the Contract Documents.
8. Controller set points are set at design values. Observe and record system reactions to changes in conditions. Record default set points if different from design values.
9. Interlocked systems are operating.
10. Changeover from heating to cooling mode occurs according to design values.

R. Report deficiencies discovered before and during performance of testing, adjusting, and balancing procedures.

3.2 PREPARATION

A. Prepare a testing, adjusting, and balancing plan that includes strategies and step-by-step procedures.

B. Complete system readiness checks and prepare system readiness reports. Verify the following:
1. Permanent electrical power wiring is complete.
2. Hydronic systems are filled, clean, and free of air.
3. Automatic temperature-control systems are operational.
4. Equipment and duct access doors are securely closed.
5. Balance, smoke, and fire dampers are open.
6. Isolating and balancing valves are open and control valves are operational.
7. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
8. Windows and doors can be closed so design conditions for system operations can be met.
9. Motors are wired properly with appropriate overloads and correct rotation.

3.3 GENERAL TESTING AND BALANCING PROCEDURES

A. Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and this Section.

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. After testing and balancing, close probe holes and patch insulation with new materials identical to those removed. Restore vapor barrier and finish according to the insulation Specifications for this Project.

C. Mark equipment settings with paint or other suitable, permanent identification material, including damper-control positions, valve indicators, fan-speed-control levers, and similar controls and devices, to show final settings.

3.4 FUNDAMENTAL AIR SYSTEMS' BALANCING PROCEDURES

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. For variable-air-volume systems, develop a plan to simulate diversity.

D. Determine the best locations in main and branch ducts for accurate duct airflow measurements.

E. Check the airflow patterns from the outside-air louvers and dampers and the return- and exhaust-air dampers, through the supply-fan discharge and mixing dampers.

F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

G. Verify that motor starters are equipped with properly sized thermal protection.

H. Check dampers for proper position to achieve desired airflow path.

I. Check for airflow blockages.

J. Check condensate drains for proper connections and functioning.

K. Check for proper sealing of air-handling unit components.

3.5 VARIABLE-AIR-VOLUME SYSTEMS' ADDITIONAL PROCEDURES

A. Pressure-Dependent, Variable-Air-Volume Systems without Diversity: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:
   1. Balance systems similar to constant-volume air systems.
   2. Set terminal units and supply fan at full-airflow condition.
   3. Adjust inlet dampers of each terminal unit to design airflow and verify operation of the static-pressure controller. When total airflow is correct, balance the air outlets downstream from terminal units as described for constant-volume air systems.
   4. Readjust fan airflow for final maximum readings.
   5. Measure operating static pressure at the sensor that controls the supply fan, if one is installed, and verify operation of the static-pressure controller.
   6. Set supply fan at minimum airflow if minimum airflow is indicated. Measure static pressure to verify that it is being maintained by the controller.
   7. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow as described for constant-volume air systems.
      a. If air outlets are out of balance at minimum airflow, report the condition but leave the outlets balanced for maximum airflow.
   8. Measure the return airflow to the fan while operating at maximum return airflow and minimum outside airflow. Adjust the fan and balance the return-air ducts and inlets as described for constant-volume air systems.

3.6 FUNDAMENTAL PROCEDURES FOR HYDRONIC SYSTEMS

A. Prepare test reports with pertinent design data and number in sequence starting at pump to end of system. Check the sum of branch-circuit flows against approved pump flow rate. Correct variations that exceed plus or minus 5 percent.

B. Prepare schematic diagrams of systems' "as-built" piping layouts.

C. Prepare hydronic systems for testing and balancing according to the following, in addition to the general preparation procedures specified above:
   1. Open all manual valves for maximum flow.
   2. Check expansion tank liquid level.
   3. Check makeup-water-station pressure gage for adequate pressure for highest vent.
   4. Check flow-control valves for specified sequence of operation and set at design flow.
   5. Set differential-pressure control valves at the specified differential pressure. Do not set at fully closed position when pump is positive-displacement type, unless several terminal valves are kept open.
   6. Set system controls so automatic valves are wide open to heat exchangers.
   7. Check pump-motor load. If motor is overloaded, throttle main flow-balancing device so motor nameplate rating is not exceeded.

8. Check air vents for a forceful liquid flow exiting from vents when manually operated.

3.7 HYDRONIC SYSTEMS' BALANCING PROCEDURES

A. Determine water flow at pumps. Use the following procedures, except for positive-displacement pumps:
   1. Verify impeller size by operating the pump with the discharge valve closed. Verify with the pump manufacturer that this will not damage pump. Read pressure differential across the pump. Convert pressure to head and correct for differences in gage heights. Note the point on the manufacturer's pump curve at zero flow and confirm that the pump has the intended impeller size.
   2. Check system resistance. With all valves open, read pressure differential across the pump and mark the pump manufacturer's head-capacity curve. Adjust pump discharge valve until design water flow is achieved.
   3. Verify pump-motor brake horsepower. Calculate the intended brake horsepower for the system based on the pump manufacturer's performance data. Compare calculated brake horsepower with nameplate data on the pump motor. Report conditions where actual amperage exceeds motor nameplate amperage.
   4. Report flow rates that are not within plus or minus 5 percent of design.

B. Set calibrated balancing valves, if installed, at calculated presettings.

C. Measure flow at all stations and adjust, where necessary, to obtain first balance.
   1. System components that have Cv rating or an accurately cataloged flow-pressure-drop relationship may be used as a flow-indicating device.

D. Measure flow at main balancing station and set main balancing device to achieve flow that is 5 percent greater than design flow.

E. Adjust balancing stations to within specified tolerances of design flow rate as follows:
   1. Determine the balancing station with the highest percentage over design flow.
   2. Adjust each station in turn, beginning with the station with the highest percentage over design flow and proceeding to the station with the lowest percentage over design flow.
   3. Record settings and mark balancing devices.

F. Measure pump flow rate and make final measurements of pump amperage, voltage, rpm, pump heads, and systems' pressures and temperatures, including outdoor-air temperature.

G. Measure the differential-pressure control valve settings existing at the conclusions of balancing.

3.8 VARIABLE-FLOW HYDRONIC SYSTEMS' ADDITIONAL PROCEDURES

A. Balance systems with automatic 2- and 3-way control valves by setting systems at maximum flow through heat-exchange terminals and proceed as specified above for hydronic systems.

3.9 PRIMARY-SECONDARY-FLOW HYDRONIC SYSTEMS' ADDITIONAL PROCEDURES

A. Balance the primary system crossover flow first, then balance the secondary system.

3.10 MOTORS

A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:
   1. Manufacturer, model, and serial numbers.
   2. Motor horsepower rating.
   3. Motor rpm.
   4. Efficiency rating if high-efficiency motor.
   5. Nameplate and measured voltage, each phase.
   6. Nameplate and measured amperage, each phase.
   7. Starter thermal-protection-element rating.

B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass for the controller to prove proper operation. Record observations, including controller manufacturer, model and serial numbers, and nameplate data.

3.11 BOILERS

A. Measure entering- and leaving-water temperatures and water flow.

3.12 HEAT-TRANSFER COILS

A. Water Coils: Measure the following data for each coil:
1. Entering- and leaving-water temperatures.
2. Water flow rate.
3. Water pressure drop.
4. Dry-bulb temperatures of entering and leaving air.
5. Wet-bulb temperatures of entering and leaving air.
6. Airflow.
7. Air pressure drop.

B. Electric-Heating Coils: Measure the following data for each coil:
1. Nameplate data.
2. Airflow.
3. Entering- and leaving-air temperatures at full load.
4. Voltage and amperage input of each phase at full load and at each incremental stage.
5. Calculated kW at full load.
6. Fuse or circuit-breaker rating for overload protection.

3.13 TEMPERATURE TESTING

A. During testing, adjusting, and balancing, report need for adjustment in temperature regulation within the automatic temperature-control system.

B. Measure indoor wet- and dry-bulb temperatures every other hour for a period of 2 successive 8-hour days, in each separately controlled zone, to prove correctness of final temperature settings. Measure when the building or zone is occupied.

C. Measure outside-air, wet- and dry-bulb temperatures.

3.14 TEMPERATURE-CONTROL VERIFICATION

A. Verify that controllers are calibrated and commissioned.

B. Check transmitter and controller locations and note conditions that would adversely affect control functions.

C. Record controller settings and note variances between set points and actual measurements.

D. Verify operation of limiting controllers (i.e., high- and low-temperature controllers).

E. Verify free travel and proper operation of control devices such as damper and valve operators.

F. Verify sequence of operation of control devices. Note air pressures and device positions and correlate with airflow and water-flow measurements. Note the speed of response to input changes.

G. Confirm interaction of electrically operated switch transducers.

H. Confirm interaction of interlock and lockout systems.

I. Record voltages of power supply and controller output. Determine if the system operates on a grounded or nongrounded power supply.

J. Note operation of electric actuators using spring return for proper fail-safe operations.

3.15 TOLERANCES

A. Set HVAC system airflow and water flow rates within the following tolerances:
   1. Supply, Return, and Exhaust Fans: -5 to plus 10 percent.
   2. Air Outlets and Inlets: ± 10 percent.
   3. Heating-Water Flow Rate: ± 10 percent.
   4. Cooling-Water Flow Rate: ± 5 percent.

3.16 REPORTING

A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article above, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

B. Status Reports: As Work progresses, prepare reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

C. Preliminary Report: Submit preliminary TAB reports to the design engineer for each floor, the central plant, and the chilled and hot water hydronic system.

3.17 FINAL REPORT

A. General: Typewritten, or computer printout in letter-quality font, on standard bond paper, in 3-ring binder, tabulated and divided into sections by tested and balanced systems.

B. Include a certification sheet in front of binder signed and sealed by the certified testing and balancing engineer.
   1. Include a list of the instruments used for procedures, along with proof of calibration.

C. Final Report Final Report Contents: In addition to the certified field report data, include the following:
   1. Pump Curves.
   2. Fan curves.
   3. Manufacturers' test data.
   4. Field test reports prepared by system and equipment installers.
   5. Other information relative to equipment performance, but not include approved Shop Drawings and Product Data.

D. General Report Data: In addition to the form titles and entries, include the following data in the final report, as applicable:
   1. Title page.
   2. Name and address of testing, adjusting and balancing Agent.
   3. Project name.
   4. Project location.
   5. Architect's name and address.
   6. Engineer's name and address.
   7. Contractor's name and address.
   8. Report date.
   9. Signature of testing, adjusting and balancing Agent who certifies the report.
   10. Summary of contents, including the following:

a. Design versus final performance.
b. Notable characteristics of systems.
c. Description of system operation sequence if it varies from the Contract Documents.

11. Nomenclature sheets for each item of equipment.
12. Data for terminal units, including manufacturer, type size and fittings.
13. Notes to explain why certain final data in the body of reports vary from design values.
14. Test conditions for fans and pump performance forms, including the following:
    a. Settings for outside-return-and exhaust-air dampers.
    b. Conditions of filters.
    c. Cooling coil, wet-and dry-bulb, conditions.
    d. Face and bypass damper settings at coils.
    e. Fan drive settings, including settings and percentage of maximum pitch diameter.
    f. Inlet vane settings for variable-air-volume, systems.
    g. Settings for supply-air, static-pressure, controller.
    h. Other system operating conditions that affect performance.

E. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present with single-line diagrams and include the following:
1. Quantities of outside, supply, return and exhaust airflows.
2. Water and steam flow rates.
3. Duct, outlet and inlet sizes.
4. Pipe and valve sizes and locations.
5. Terminal units.
6. Balancing stations.
7. Locations of duct traverse(s) of duct layout.

F. Air-Handling Unit Test Reports: For air-handling units with coils, include the following:
1. Unit Data: Include the following:
    a. Unit identification.
    b. Location.
    c. Make and type.
    d. Model number and unit size.
    e. Manufacturer's serial number.
    f. Unit arrangement and class.
    g. Discharge arrangement.
    h. Sheave make, size in inches and bore.
    i. Sheave dimension, center-to-center and amount of adjustments in inches (mm).
    j. Number of belts, make and size.
    k. Number of filters, type and size.
2. Motor Data: Include the following:
    a. Make and frame type and size.
    b. Horsepower and rpm.
    c. Volts, phase and hertz.
    d. Full-load amperage and service factor.
    e. Sheave make, size in inches and bore.
    f. Sheave dimensions, center-to-center and amount of adjustments in inches.
3. Test Data: Include design and actual values for the following:
    a. Unit identification.
    b. Location.
    c. Make and type.
    d. Model number and unit size.
    e. Manufacturer's serial number.

G. Apparatus-Coil Test Reports: For apparatus coils, include the following:
1. Coil Data: Include the following:
    a. System Identification.
    b. Location.
    c. Coil type.

d. Number of rows.
e. Fin spacing in fins per inch.
f. Make and model number.
g. Face area in sq.ft.
h. Tube size in NPS.
i. Tube and fin materials.
j. Circuiting arrangement.

2. Test Data: Include design and actual values for the following:
a. Airflow rate in cfm.
b. Average face velocity in fpm.
c. Air pressure drop in inches wg.
d. Outside-air, wet and dry-bulb temperatures in deg F.
e. Return-air, wet and dry-bulb temperatures in deg F.
f. Entering-air, wet and dry-bulb temperatures in deg F.
g. Leaving-air, wet and dry bulb temperatures in deg F.
h. Return-air, wet and dry-bulb temperatures in deg F.
i. Entering water temperature in deg F.
j. Leaving water temperature in deg F
k. Water flow rate in gpm.
l. Water pressure differential in feet of head or psig.

H. Water Chiller Test Reports: For chillers (Air Cooled or Water Cooled)
1. Unit Data: Include the following:
a. Unit Identification.
b. Location.
c. Make and type.
d. Model number and unit size.
e. Manufacturer's serial number.
f. Unit arrangement and class.
2. Motor Data:
a. Make and frame type and size.
b. Volts, phase and hertz.
c. Full-load amperage and service factor.
3. Test Data:
a. Total chilled water flow rate in gpm.
b. Total condenser water flow rate in gpm.
c. WPD in ft across chilled water.
d. WPD in ft across condenser water.
e. Chilled water supply and return temperatures ˚F.
f. Condenser water supply and return temperatures in ˚F.

I. Cooling Tower Test Reports: For condenser water cooling tower:
1. Unit Data: Include the following:
a. Unit identification.
b. Location.
c. Make and type.
d. Model number and unit size.
e. Manufacturer's serial number.
f. Unit arrangement and class.
g. Discharge arrangement.
2. Motor Data (Fan or Pump): Include the following:
a. Make and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.
3. Test Data: Include design and actual values for the following:
a. Total condenser under flowrate in gpm.
b. Total wpd in ft across condenser water.

c. Condenser water supply and return temperatures in ˚F.
d. Fan rpm.

J. Electric-Coil Test Reports: For electric furnaces, duct coils, and electric coils installed in central-station air-handling units, include the following:
1. Unit Data: Include the following:
a. System identification.
b. Location.
c. Coil identification.
d. Capacity in Btuh (kW).
e. Number of stages.
f. Connected volts, phase, and hertz.
g. Rated amperage.
h. Airflow rate in cfm.
i. Face area in sq. ft.
j. Minimum face velocity in fpm.
2. Test Data: Include design and actual values for the following:
a. Heat output in Btuh.
b. Airflow rate in cfm.
c. Air velocity in fpm.
d. Entering-air temperature in deg F.
e. Leaving-air temperature in deg F.
f. Voltage at each connection.
g. Amperage for each phase.

K. Fan Test Reports: For supply, return, and exhaust fans, include the following:
1. Fan Data: Include the following:
a. System identification.
b. Location.
c. Make and type.
d. Model number and size.
e. Manufacturer's serial number.
f. Arrangement and class.
g. Sheave make, size in inches, and bore.
h. Sheave dimensions, center-to-center and amount of adjustments in inches (mm).
2. Motor Data: Include the following:
a. Make and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.
e. Sheave make, size in inches, and bore.
f. Sheave dimensions, center-to-center and amount of adjustments in inches.
g. Number of belts, make, and size.
3. Test Data: Include design and actual values for the following:
a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Suction static pressure in inches wg.

L. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:
1. Report Data: Include the following:
a. System and air-handling unit number.
b. Location and zone.
c. Locate traverse location on duct work layout.
d. Traverse air temperature in deg F.
e. Duct static pressure in inches wg.

f. Duct size in inches.
g. Duct area in sq. ft.
h. Design airflow rate in cfm.
i. Design velocity in fpm.
j. Actual airflow rate in cfm.
k. Actual average velocity in fpm.
l. Barometric pressure in psig.

M. Air-Terminal-Device Reports: For terminal units, include the following:
1. Unit Data: Include the following:
a. System and air-handling unit identification.
b. Location and zone.
c. Test apparatus used.
d. Area served.
e. Air-terminal-device make.
f. Air-terminal-device number from system diagram.
g. Air-terminal-device type and model number.
h. Air-terminal-device size.
i. Air-terminal-device effective area in sq. ft.
2. Test Data: Include design and actual values for the following:
a. Airflow rate in cfm.
b. Air velocity in fpm.
c. Preliminary airflow rate as needed in cfm.
d. Preliminary velocity as needed in fpm.
e. Final airflow rate in cfm.
f. Final velocity in fpm.
g. Space temperature in deg F.

N. System-Coil Reports: For reheat coils and water coils of terminal units, include the following:
1. Unit Data: Include the following:
a. System and air-handling unit identification.
b. Location and zone.
c. Room or riser served.
d. Coil make and size.
e. Flowmeter type.
2. Test Data: Include design and actual values for the following:
a. Airflow rate in cfm.
b. Entering-water temperature in deg F.
c. Leaving-water temperature in deg F.
d. Water pressure drop in feet of head or psig.
e. Entering-air temperature in deg F.
f. Leaving-air temperature in deg F.

O. Instrument Calibration Reports: For instrument calibration, include the following:
1. Report Data: Include the following:
a. Instrument type and make.
b. Serial number.
c. Application.
d. Dates of use.
e. Dates of calibration.

END OF SECTION 230593

SECTION 230719

MECHANICAL INSULATION

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes mechanical insulation for duct, equipment, and pipe, including the following:
   1. Insulation Materials:
      a. Cellular glass.
      b. Flexible elastomeric.
      c. Mineral fiber.
      d. Phenolic
   2. Adhesives.
   3. Mastics.
   4. Sealants.
   5. Factory-applied jackets.
   6. Field-applied fabric-reinforcing mesh.
   7. Field-applied tape.
   8. Field-applied jackets.
   9. Securements.
   10. Corner angles.

B. Related Sections include the following:
   1. Specification Section "Metal Ducts" for duct liners.
   2. Specification Section “Hangers and Supports for HVAC Piping and Equipment” for high-density inserts at hangers; wood inserts at hangers are not acceptable.
   3. Specification Section “Special Conditions for All Mechanical Work”.
   4. Specification Section “Basic Mechanical Materials and Methods”.

C. Not all items listed within this specification are used. Use only items applicable per application schedule.

1.3 DEFINITIONS

A. ASJ: All-service jacket.

B. CONCEALED: Covered or concealed by a ceiling (gypsum or lay-in acoustical tile) or wall.

C. EXPOSED: Open to view; not concealed by a ceiling or wall of any sort.

D. FSK: Foil, scrim, kraft paper.

E. UNDERFLOOR: Accessible crawl space beneath lowest floor level. (considered “outdoors”)

1.4 SUBMITTALS

A. Product Data: For each type of product indicated, identify thermal conductivity, thickness, and jackets (both factory and field applied, if any). Provide submittal data on all products to be used.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, and cement material containers, with appropriate markings of applicable testing and inspecting agency.
   1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

B. All products to be stored in a dry location, protected from the elements. All damaged insulation to be replaced.

1.7 COORDINATION

A. Coordinate size and location of supports, hangers, and high-density insulation inserts and shields specified in Specification Section "Hangers and Supports for HVAC Piping and Equipment." Coordinate with drawing details where applicable; wood inserts at hangers are not acceptable.

B. Coordinate clearance requirements with piping Installer for piping insulation application, duct Installer for duct insulation application, and equipment Installer for equipment insulation application. Before preparing piping and ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

C. Insulation not to be installed until building is dried in.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 INSULATION MATERIALS

A. Refer to Part 3 schedule articles for requirements about where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Phenolic:
   1. Manufacturers:
      a. Resolco
      b. Dyplast Products
      c. Polyguard
      d. Approved equal.
   2. 100% CFC-free, HCFC-free, and halogen-free, closed cell rigid phenolic foam insulation.
   3. Minimal thermal conductivity @ 75˚ F
      a. Green, 2.5 lb/ft³: 0.15 (Btu.in/hr.ft². F)
      b. Pink, 5.0 lb/ft³: 0.21 (Btu.in/hr.ft². F)

G. Cellular Glass:
   1. Manufacturers:
      a. Pittsburgh Corning Corporation; Foamglas Super K.
   2. Block Insulation: ASTM C 552, Type I.
   3. Special-Shaped Insulation: ASTM C 552, Type III.
   4. Board Insulation: ASTM C 552, Type IV.
   5. Preformed Pipe Insulation with Factory-Applied ASJ: Comply with ASTM C 552, Type II, Class 2.
   6. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
   7. Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Minimal thermal conductivity at 75˚ F of 0.27 (Btu.in/hr.ft². F) (R-value of 10.34@ 3 inches thickness). Factory-applied jacket requirements are specified in Part 2 “Factory-Applied Jackets” Article.

H. Flexible Elastomeric:
   1. Manufacturers:
      a. Aeroflex USA Inc.; Aerocel.
      b. Armacel LLC; AP Armaflex.
   2. Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.
   3. Minimal thermal conductivity at 75˚ F of 0.25 (Btu.in/hr.ft². F).

I. Mineral-Fiber Blanket Insulation:
   1. Manufacturers:
      a. Johns Manville; Microlite.
      b. Knauf Insulation; Duct Wrap
      c. Owens-Corning; All-Service Duct Wrap.
   2. Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSP jacket. Factory-applied jacket requirements are specified in Part 2 “Factory-Applied jackets” Article.
   3. Minimal density of 1.0 lb/ft³, installed R-value of 6.0 (at 2" thick).

J. Mineral-Fiber Board Insulation:
   1. Manufacturers:
      a. Johns Manville; 800 Series Spin-Glas.
      b. Knauf Insulation; Insulation Board.
      c. Owens Corning; Fiberglas 700 Series.
   2. Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied FSK

jacket. For equipment applications, provide insulation with factory-applied FSK jacket. Factory-applied jacket requirements are specified in Part 2 "Factory-Applied Jackets" Article.

3. Minimal density of 2.25 lb/ft³, with a R-value of 8.7 (at 2" thickness).

K. Mineral-Fiber, Preformed Pipe Insulation:
   1. Manufacturers:
      a. Johns Manville; Micro-Lok.
      b. Knauf Insulation; 1000° Pipe Insulation.
      c. Owens Corning; Fiberglas Pipe Insulation.
   2. Type I, 850 deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Minimum thermal conductivity at 75˚ F of 0.23 (Btu.in/hr.ft². F). Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in Part 2 "Factory-Applied Jackets" Article.

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated. All products are to contain low V.O.C. as defined/governed by LEED IEQ 4.1 and 4.2 (Regardless of project type).

B. Cellular-Glass, One part, acetoxy cure, silicone adhesive, with a service temperature range of minus 50 to plus 400 deg F.
   1. Products:
      a. Foamglas: PC RTV 450 Sillicone Adhesive

C. Flexible Elastomeric: Comply with MIL-A-24179A, Type II, Class I.
   1. Products:
      a. K-Flex: 720 LVOC or equal

D. Phenolic: Water based adhesive with a service temp of minus 20°F to 700°F.
   1. Products:
      a. Foster 97-15

E. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
   1. Products:
      a. Design Polymerics, DP2502 (or approved equal).

2.4 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C, Type II. All products are to contain low V.O.C. as defined/governed by LEED IEQ 4.1 and 4.2 (Regardless of project type).

B. Vapor-Barrier Mastic: Water based; suitable for outdoor use on below ambient services, or indoor vapor barrier use.
   1. Products:
      a. Childers Products, Division of ITW; CP-35.
   2. Water-Vapor Permeance: ASTM F 1249, 0.09 perm at 55-mils film thickness.
   3. Service Temperature Range: Minus 20 to plus 190 deg F.
   4. Solids Content: ASTM D 1644, 60 percent by volume and 73 percent by weight.
   5. Color: White.
   6. VOC: 36 g/l

2.5 SEALANTS

A. Joint Sealants:
   1. Joint Sealants for Cellular-Glass Products:
      a. Pittsburgh Corning Corporation; Pittseal 444N.

2. Joint Sealant for Phenolic Products
   a. Foster 95-50

B. Metal Jacket:
   1. Products:
      a. Foster 95-44 or equal.
      b. Childers Products, Division of ITW; CP-76.

C. Mineral Fiber:
   1. Design Polymerics DP 2502.
   2. Childers Products, Division of ITW; CP-35.

D. PVC Jacket:
   1. Childers Products, Division of ITW; CP-35.

2.6 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
   1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
   2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
   3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.7 FIELD-APPLIED FABRIC-REINFORCING MESH

A. Woven Glass-Fiber Fabric: Comply with MIL-C-20079H, Type I, plain weave, and presized a minimum of 2.2 oz./sq. yd. 10 x 10 strand count per square inch, minimum 4" wide band.
   1. Available Products:
      a. Chil-glas #10.
      b. Charles Harmon and Co. white weaveset.

2.8 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, 25/50 ASTM-F 84, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
   1. Products:
      a. Johns Manville; Zeston.
      b. Proto PVC Corporation; LoSmoke.
   2. Color: White:
   3. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
      a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.
   4. Factory-fabricated tank heads and tank side panels.

C. Metal Jacket:
   1. Products:
      a. Childers Products, Division of ITW; Metal Jacketing Systems.
   2. Aluminum Jacket: Comply with ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105 or 5005, Temper H-14.
      a. Factory cut and rolled to size.
      b. Finish and thickness are indicated in field-applied jacket schedules.

2.9 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136 and UL listed.
   1. Width: 4 inches.
   2. Thickness: 14.0 mils.
   3. Adhesion: 73 ounces force/inch in width.
   4. Elongation: 2 percent.
   5. Tensile Strength: 55 lbf/inch in width.
   6. Color: White

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136 and UL listed.
   1. Width: 4 inches.
   2. Thickness: 13 mils.
   3. Adhesion: 73 ounces force/inch in width.
   4. Elongation: 2 percent.
   5. Tensile Strength: 40 lbf/inch in width.
   6. Color: Silver

2.10 SECUREMENTS

A. Bands:
   1. Products:
      a. Childers Products; Bands.
   2. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 316; 0.015 inch thick, 3/4 inch wide with wing or closed seal.
   3. Aluminum: ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch with wing or closed seal.
   4. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

B. Insulation Pins and Hangers:
   1. Cupped-Head, Capacitor-Discharge-Insulated Weld Pins: Zinc-coated steel pin, fully annealed for capacitor-discharge welding, 12 Gauge shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer. Contractor to field verify, integrity of pin weld on ductwork with sheet metal thickness less than 22-gauge. Integrity to be verified prior to concealment with insulation.
      a. Products:
         1) GEMCO; Cupped Head Weld Pin or equal.
   2. Metal, “Peel and Press” Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
      a. Products:
         1) GEMCO; Peel and Press or equal.
      b. Baseplate: Galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
      c. Spindle: Copper- or zinc-coated, low carbon steel, fully annealed, 12 Gauge diameter shank, length to suit depth of insulation indicated.
      d. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.
   3. Insulation-Retaining Washers and Cap: Self-locking cap washers formed from 12 Gauge, galvanized-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
      a. Products:
         1) AGM Industries, Inc.; RC-150.
         2) GEMCO; R-150.

b. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.

C. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.

2.11 CORNER ANGLES

A. PVC Corner Angles: 30 mils thick, minimum 1 by 1 inch, PVC according to ASTM D 1784, Class 16354-C. White or color-coded to match adjacent surface.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.
1. Verify that systems and equipment to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application. For Stainless Steel; apply a corrosion coating to insulated surfaces with an epoxy primer and an epoxy finish 5 mils thick.

B. Verify and coordinate insulation installation with the systems and trades installing heat tracing. Comply with requirements for heat tracing that applies to insulation.

3.3 COMMON INSTALLATION REQUIREMENTS

A. Requirements in this Article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment, ducts and fittings, and piping including fittings, valves, and specialties.

C. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment, duct system, and pipe system as specified in insulation system schedules.

D. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

E. Install high-density inserts at hanger locations prior to insulating (duct and pipe); wood or block inserts are not acceptable.

F. Install insulation with longitudinal seams at top and bottom of horizontal runs.

G. Where multiple layers of insulation are required, longitudinal and end seams are to be staggered.

H. Do not weld brackets, clips, pins or other attachment devices to piping, fittings, tanks, coils, equipment, vessel, and specialties.

I. Keep insulation materials clean and dry before, during application, and finishing.

J. Install insulation with tight longitudinal seams and end joints.

K. Install insulation with least number of joints practical.

L. Install insulation so that material is not over compressed. Install corner angles prior to insulating; to protect all insulation from damage.

M. Seal all joints, and seams, including penetrations in insulation, at supports, and other projections with insulation of same material overlapped by 2”. Secure strips with outward clinching staples along edge of overlap, (spaced 1 inch on center) and seal entire joint or seam with mastic and embedded fiberglass reinforcing mesh, minimum 4", cover mesh with finish coat of mastic.

N. Do not insulate, conceal, or enclose pipe hangers, channel and steel supports, etc. not directly fasten to duct.

O. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

P. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses. Do not water down products unless directed by manufacture. Use clean potable demineralized water when required.

Q. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

R. Repair all damage insulation prior to concealment as noted above.

S. Do not insulate or conceal vibration-control devices, labels, stamps, nameplates, data plates, manholes, cleanouts, etc. require for maintenances.

T. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarded integrity, unless otherwise indicated.

U. Insulate pipe elbows, tees, valves, strainers, flanges, etc., using preformed fitting insulation, mitered fittings or oversized preformed pipe insulation made from same material thickness and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, voids, and irregular surfaces with insulating mastic finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation. Provide a removable reusable insulation cover; design that maintains vapor barrier. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts.

V. Cover segmented insulated surfaces with a layer of finishing adhesive and coat with a vapor-barrier mastic. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

W. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Secure PVC covers to adjoining insulation facing using staples and ASJ tape. Seal PVC fitting covers with mastic.

X. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes, vessels, and equipment. Shape insulation at these connections by tapering it to and around the connection with insulating adhesive and finish with mastic. All connections are to be accessible.

Y. Install removable insulation segment and covers at flanges, valves, controls, unions, equipment access doors, manholes, hand holes, and other elements that require frequent removal for service and inspection. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.4 PENETRATIONS

A. Install insulation continuously through all walls, floors, and partitions penetrations and sleeves.

B. Extend jacket of outdoor installation into wall and roof jacks by 2 inches. Seal jacket to roof flashing with approved flashing sealant.

C. Insulation Installation at Fire-Rated Walls, floors and Partitions Penetrations for duct work where fire/smoke dampers are required: Terminate insulation at fire damper sleeves as require by damper manufacturer. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.

3.5 GENERAL PIPE INSULATION INSTALLATION (IN ADDITION TO COMMON REQUIREMENTS)

A. Preformed Pipe Insulation Installation on Pipe, Fittings, Valves, Flanges, Tanks, Elbows, and Appurtenances for Cellular- Glass, Mineral- Fiber, Flexible Elastomeric, and Phenolic insulations:
   1. Install insulation in a manner that secures material to system being insulated with staples, tape and mastic.
   2. When insulation with preformed pipe insulation, seal all longitudinal seams, end joints, and protrusions with manufacturers recommended tape matching jacket, vapor-barrier mastic, joint sealant, and adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
   3. Secure fittings, jacket, cover, etc. with tape matching jacket and secure with outward clinched staples 1 inch on center. Apply vapor-barrier mastic over staples.
   4. Arrange insulation to permit access to valves packing, flanges, unions, etc. and valve operation for maintenance without disturbing insulation. Install insulation so that it can be removed without damage to surrounding insulation or access enclosure.
   5. Pipe hangers are not to be concealed in insulation.
   6. Seal all exposed insulation ends with mastic.
   7. Seal all mitered joints prior to installing covers with vapor-barrier sealant and mastic.
   8. Install preformed pipe insulation to outer diameter of pipe flange.
   9. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
   10. Fill voids between inner circumference of valves, flange, elbows, and bolts insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
   11. Install preformed sections of same material insulation when available. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Install PVC cover over fitting or mitered section.
   12. Arrange insulation to permit access to valves packing, flanges, unions, etc. and valve operation for maintenance without disturbing insulation. Install insulation so that it can be removed without damage to surrounding insulation or access enclosure.

3.6 GENERAL BLANKET AND BOARD INSULATION INSTALLATION (IN ADDITION TO COMMON REQUIREMENTS)

A. Blanket and Board Insulation Installation on Duct, Tanks, Vessels, Elbows, and Appurtenances:
   1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for a minimum of 50 percent coverage of duct and plenum and 100 percent coverage of equipment, tanks, etc.; to secure insulation to surfaces. Apply adhesive to entire circumference of all surfaces; including fittings and transitions.
   2. Install cupped-head, capacitor-discharge-weld pins surfaces to secure insulation to ductwork. Install on sides and bottom of horizontal and vertical ducts having a width or height greater than 23 inches. Locate 16 inches center and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface as required by manufacturer recommendation. Use approved adhesive stick anchor pins with washers for all equipment, tanks, etc. Cut excess portion of stick anchor pins and install washer’s caps. Cover exposed pins and washers caps with tape and mastic matching insulation facing.

3. Install PVC corner angles prior to installing blanket insulation.
4. Do not over compress insulation during installation. Cover exposed pins and washers with tape matching insulation facing and mastic.
5. Install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from 1 edge and 1 end of insulation segment. Secure laps to adjacent insulation section with 3/4-inch outward-clinching staples, 1 inch on center. Coat all seams/joints with mastic and embed with fiberglass reinforced mesh, minimum 4", cover mesh with finish coat of mastic.
6. Repair punctures, tears, penetrations and protrusions with 6-inch-wide strips of same material used to insulate duct. Seal all seams with staples, cover with mastic and cover with embedded fiberglass reinforced mesh, cover mesh with finish coat of mastic.
7. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to 2 times the insulation thickness but not less than 3 inches.
8. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
9. Insulate hangers attached to duct work. Do not insulate or enclose channel, supports, etc. not directly fasten to duct.
10. Insulation termination: Butt insulation up to termination point. Apply mastic no less than 3" overlap on insulation, and 3" on metal surface. Embed fiberglass reinforced mesh overlapping full 3" of termination point, 6" strip. Cover mesh with finish coat of mastic.

3.7 FIELD-APPLIED JACKET INSTALLATION

A. Install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge. Secure metal jacket with stainless-steel bands 12 inches on center and at end joints.

3.8 FINISHES

A. Duct, Equipment, and Pipe Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Division 9 painting Sections.
   1. Flat Acrylic Finish: Two (2) finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
      a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer’s recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

D. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:
   1. Inspect insulated duct, pipe, and equipment, randomly selected by Engineer, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to two (3) location(s) for each system.
   2. All insulation applications will be considered defective work if sample inspection reveals noncompliance with requirements.

3. Remove all defective work and install new insulation and jackets to replace insulation and jackets removed for inspection. Repeat inspection procedures as needed.

3.10 INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:
   1. Indoor, concealed/exposed supply, return, relief and outdoor air.
   2. Outdoor, concealed/exposed supply, return and relief air.

B. Piping Requiring Insulation:
   1. Indoor and outdoor hydronics.
   2. All pipe and appurtenances that are susceptible to sweating.
   3. All pipe and appurtenances carrying water or refrigerant, for space conditioning.
   4. Any piping not specifically scheduled for insulation below to be insulated with the code minimum required insulation.

C. Items Not Insulated:
   1. Fibrous-glass ducts.
   2. Double-wall metal ducts or lined metal ducts, both with sufficient insulation thickness to comply with adopted edition of IECC and ASHRAE/ IESNA 90.1.
   3. Factory-insulated flexible ducts.
   4. Factory-insulated plenums and casings.
   5. Flexible connectors.
   6. Vibration-control devices.
   7. Factory-insulated access panels and doors.
   8. General building exhaust duct.

3.11 DUCT AND PLENUM INSULATION SCHEDULE

A. Indoor, concealed, all duct insulation shall be of the following (Including dishwasher exhaust):
   1. Mineral-Fiber Blanket: 2 inches thick and 1.00-lb/cu. ft. nominal density.

B. Indoor, exposed (including mechanical rooms and utility rooms), rectangular, all duct insulation shall be of the following:
   1. Mineral-Fiber Board: 2 inches thick and 2.25-lb/cu. ft. nominal density.

C. Indoor, exposed round or flat oval ductwork shall be double-wall construction.

D. Outdoor (including underfloor), all duct insulation shall be any of the following:
   1. Rectangular Duct: Cellular Glass, 3 inches thick and 7.5-lb/cu. ft. nominal density. (minimum R-value of 8)
   2. Round/Flat Oval: Double wall construction (reference Metal Ducts Specification).

3.12 AIR DEVICE INSULATION SCHEDULE

A. Supply-air devices (all styles/sizes): Field insulate backside of all devices that are not factory lined:
   1. Mineral-Fiber Blanket: 1-1/2 inches thick and 0.75-lb/cu. ft. nominal density. Secured to air device with FSK tape, all sides.

3.13 EQUIPMENT INSULATION SCHEDULE

A. Insulate indoor and outdoor equipment in paragraphs below that is not factory insulated.

B. Expansion/compression/buffer tanks, Air-separators, filter feeders, etc. insulation shall be any of the following:
   1. Cellular Glass: 3 inches. (chilled water service)
   2. Phenolic: 2 inches. (chilled water service)

3. Mineral Fiber Board: 3 inches. (hot water service)

C. Steam-to-hot water heat exchanger insulation:
1. Mineral-Fiber board: 3” thick, 3lb/cu. ft. density.
2. Cellular Glass: 3" thick, 7.5 lb/cu. ft density.

3.14 PIPING INSULATION SCHEDULE

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range.

B. Condensate and Equipment Drains:
1. All Pipe Sizes: Insulation shall be any of the following:
a. Flexible Elastomeric: 1 inch thick.

C. Chilled Water Supply and Return:
1. All Pipe Sizes: Insulation shall be any of the following:
a. Pre-insulated Pipe: Reference Hydronic Piping Specification (for use underfloor, buried, and outdoors).
b. Cellular Glass: (for use indoors and outdoors, not accepted in underfloor or buried). Reference schedule below for thickness.
c. Phenolic: (for use indoors and outdoors, not accepted in underfloor or buried). Reference schedule below for thickness.

D. Hot Water Supply and Return:
1. All pipe sizes:
a. Mineral-Fiber (for use indoors) Reference table below for thickness.
b. Pre-insulated Pipe: Reference Hydronic Piping Specification (for use underfloor and outdoors). Reference table below for thickness.
c. Phenolic: (for use indoors and outdoors, not accepted in underfloor or buried) Reference Schedule below for thickness.
d. Cellular Glass: (for use indoors and outdoors, not accepted in underfloor or buried) Reference Schedule below for thickness.

E. Phenolic Density Schedule:
1. Indoors Concealed: 2.5 lb/ft.^{3} (Green)
2. Indoors Exposed: 5 lb/ft.^{3} (Pink)
3. Outdoors: 5 lb/ft.^{3} (Pink)

F. Steam and Steam Condensate, 350˚ F and below:
1. All pipe sizes:
a. Mineral-Fiber, Preformed pipe, Type I: 3" thick.

Insulation Thickness Schedule

Fluid	≤1.5” Pipe Size					>1.5” Pipe Size				
	Cellular Glass	Phenolic	Pre-Insulated	Mineral Fiber	Flex Elastomeric	Cellular Glass	Phenolic	Pre-Insulated	Mineral Fiber	Flex Elastomeric
Chilled Water	2”	1.5”	1.5”	N/A	N/A	2”	1.5”	1.5”	N/A	N/A
Hot Water	2”	1.5”	1.5”	1.5”	N/A	2.5”	2”	2”	2”	N/A
Steam/ Condensate	N/A	N/A	N/A	3”	N/A	N/A	N/A	N/A	3”	N/A
Condensate	N/A	N/A	N/A	N/A	1”	N/A	N/A	N/A	N/A	1”
Refrigerant Suction/Hot Gas Piping	N/A	N/A	N/A	N/A	1.5”	N/A	N/A	N/A	N/A	1.5”

G. Refrigerant Suction and Hot Gas Piping:
   1. All pipe sizes: Insulation shall be the following:
      a. Flexible elastomeric: 1-½ inch thick.

3.15 FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. Ducts/Piping exposed in finished indoor areas, outdoors, underfloor and mechanical rooms.
   1. Aluminum, Stucco Embossed: 0.016 inch thick.

C. Indoor hydronic piping fitting or elbows.
   1. PVC: 0.015 inch thick.

END OF SECTION 230719

SECTION 233113

METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Single-wall rectangular ducts and fittings.
2. Double-wall rectangular ducts and fittings.
3. Single-wall round and flat-oval ducts and fittings.
4. Double-wall round and flat-oval ducts and fittings.
5. Sheet metal materials.
6. Duct liner.
7. Sealants and gaskets.
8. Hangers and supports.
9. Ductwork Handling and Plenum Protection.
10. Ductwork Cleaning

B. Related Sections:
1. Mechanical Specification Section "Testing, Adjusting, and Balancing" for testing, adjusting, and balancing requirements for metal ducts.
2. Mechanical Specification Section "Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.
3. Mechanical Specification Section “Hangers & Supports for HVAC Piping and Equipment”.
4. Mechanical Specification Section “Basic Mechanical Materials and Methods”.
5. Mechanical Specification Section “Special Conditions for All Mechanical Work”.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated.
1. Static-Pressure Classes: Variable Volume Systems
   a. Supply Ducts: (Upstream from Air Terminal Units): 3-inch wg.
   b. Supply Ducts (Downstream from Air Terminal Units): 1-inch wg.
   c. Return Ducts (Negative Pressure): 1-inch wg.
   d. Outside Air Ducts (Negative Pressure): 1-inch wg.
2. Static-Pressure Classes: Constant Volume Systems
   a. Supply Ducts: 2-inch wg.
   b. Return Ducts (Negative Pressure): 1-inch wg.
   c. Outside Air Ducts (Negative Pressure): 1-inch wg.
3. Static-Pressure Classes: Other Systems
   a. Fume Hood Exhaust (negative Pressure): 3-inch wg.
   b. General Exhaust (Negative Pressure): 1-inch wg.
   c. Relief Air: 1-inch wg.
4. Leakage Class:
   a. Round Supply-Air Duct: 3 cfm/100 sq. ft. at static pressure class.
   b. Flat-Oval Supply-Air Duct: 3 cfm/100 sq. ft. at static pressure class.
   c. Rectangular Supply-Air Duct: 6 cfm/100 sq. ft. at static pressure class.

d. Flexible Supply-Air Duct: 6 cfm/100 sq. ft. at static pressure class.

B. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1.4 DEFINITIONS

A. Exposed: Open to view; not concealed by a ceiling.
1. Includes mechanical rooms.
2. Includes outdoors.
3. Includes crawlspace.

B. Concealed: Covered or Concealed by a ceiling, solid inaccessible or lay-in acoustical tile.

1.5 SUBMITTALS

A. Product Data: For each type of the following products:
1. Liners and adhesives.
2. Sealants and gaskets.
3. Insulation.
4. Metal.
5. Fasteners.
6. Hangers.
7. Double Wall Ductwork (Round or Flat Oval).
8. Single Wall (Round or Flat Oval).

B. Shop Drawings/Coordination Drawings: CADD generated, ¼" scale. Show fabrication and installation details for metal ducts.
1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
2. Factory- and shop-fabricated ducts and fittings.
3. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
4. Elevation of top of ducts.
5. Dimensions of main duct runs from building grid lines.
6. Fittings.
7. Reinforcement and spacing.
8. Seam and joint construction.
9. Penetrations through fire-rated and other partitions.
10. Equipment installation based on equipment being used on Project.
11. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
12. Hangers and supports, including methods for duct and building attachment, and vibration isolation (where applicable).
13. Ceiling suspension assembly members.
14. Other systems installed in same space as ducts, including fire sprinkler piping; electrical conduits; cable trays; hydronic, domestic, and sanitary piping; and structural members.
15. Ceiling-and-wall-mounting access doors and panels required to provide access to dampers and other operating devices.
16. Ceiling-mounting items, including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.

C. Welding certificates.

D. Field quality-control reports.

E. Field pressure test reports.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
   2. AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-4, "Transverse (Girth) Joints," for static-pressure class, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-5, "Longitudinal Seams - Rectangular Ducts," for static-pressure class, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 2, "Fittings and Other Construction," for static-pressure class, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

E. Seal all duct transverse joints, longitudinal seams, flanges, and duct wall penetrations (SMACNA Seal Class-A regardless of static pressure construction class).

2.2 DOUBLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. McGill Airflow LLC.

B. Rectangular Ducts: Fabricate ducts with indicated dimensions for the inner duct.

C. Outer Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

D. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-4, "Transverse (Girth) Joints," for static-pressure class, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

E. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-5, "Longitudinal Seams - Rectangular Ducts," for static-pressure class, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

F. Interstitial Insulation: Fibrous-glass liner complying with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."
   1. Maximum Thermal Conductivity: 0.27 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
   2. Thickness:

a. 1 inch, minimum for INDOOR, exposed ducts in conditioned spaces.
b. 1-1/2 inches, minimum for INDOOR ducts in unconditioned spaces, including, but not limited to return-air plenums and mechanical rooms.
c. 2-1/2 inches, minimum for OUTDOOR ducts.

3. Install spacers that position the inner duct at uniform distance from outer duct without compressing insulation.
4. Coat insulation with antimicrobial coating.

G. Formed-on Transverse Joints (Flanges): Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-4, "Traverse (Girth) Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

H. Seal all duct transverse joints, longitudinal seams, flanges and duct wall penetrations (SMACNA Seal Class-A regardless of static pressure construction class).

2.3 SINGLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS

A. General Fabrication Requirements: Spiral seams complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class. Longitudinal-seams (snap-lock) are not acceptable for any application.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Lindab Inc.
b. McGill AirFlow LLC.
c. SEMCO Incorporated.
d. Spiral Pipe of Texas
e. Direct Duct

B. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter (diameter of the round sides connecting the flat portions of the duct).

C. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Transverse Joints - Round Duct," for static-pressure class, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

D. Seams: Fabricate according to the spiral seam requirements of SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Seams - Round Duct and Fittings," for static-pressure class, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." Longitudinal-seams (snap-lock) are not acceptable for any application, except where indicated below.
1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
2. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.

E. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "90 Degree Tees and Laterals," and Figure 3-5, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

F. Seal all duct transverse joints, longitudinal seams, flanges and duct wall penetrations (SMACNA Seal Class-A regardless of static pressure construction class).

2.4 DOUBLE-WALL ROUND AND FLAT-OVAL DUCTS AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Lindab Inc.
   2. McGill AirFlow LLC.
   3. SEMCO Incorporated.
   4. Spiral Pipe of Texas
   5. Direct Duct

B. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter (diameter of the round sides connecting the flat portions of the duct) of the inner duct.

C. Outer Duct Fabrication Requirements: Spiral seams complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class. Longitudinal-seams (snap-lock) are not acceptable for any application.
   1. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Transverse Joints - Round Duct," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
      a. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.
   2. Seams: Fabricate according to the spiral seam requirements of SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Seams - Round Duct and Fittings," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." Longitudinal-seams (snap-lock) are not acceptable for any application, except where indicated below.
      a. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
      b. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.
   3. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "90 Degree Tees and Laterals," and Figure 3-5, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Inner Duct: Minimum 0.028-inch perforated galvanized sheet steel having 3/32-inch- diameter perforations, with overall open area of 23 percent.

E. Interstitial Insulation: Fibrous-glass liner complying with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."
   1. Maximum Thermal Conductivity: 0.27 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
   2. Thickness:
      a. 1 inch, minimum for INDOOR, exposed ducts in conditioned spaces.
      b. 1-1/2 inches, minimum for INDOOR ducts in unconditioned spaces, including, but not limited to return-air plenums and mechanical rooms.
      c. 2-1/2 inches, minimum for OUTDOOR ducts.
   3. Install spacers that position the inner duct at uniform distance from outer duct without compressing insulation.
   4. Coat insulation with antimicrobial coating.
   5. Cover insulation with polyester film complying with UL 181, Class 1.

2.5 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, rust, stains, discolorations, and other imperfections. All ductwork shall be a minimum of 24 gage, with a minimum thickness of 0.023 inches. Where in the SMACNA “HVAC Duct Construction Standards-Metal Flexible” it indicates that a lighter gage may be utilized, a minimum of 24 gage shall be used.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
   1. Galvanized Coating Designation: G60 (Z180).
   2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. PVC-Coated, Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
   1. Galvanized Coating Designation: G60 (Z180).
   2. Minimum Thickness for Factory-Applied PVC Coating: 4 mils thick on sheet metal surface of ducts and fittings exposed to corrosive conditions, and minimum 4 mils thick on opposite surface.
   3. Coating Materials: Acceptable to authorities having jurisdiction for use on ducts listed and labeled by an NRTL for compliance with UL 181, Class 1.

D. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.

E. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304 or 316, as indicated in the "Duct Schedule" Article; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in the "Duct Schedule" Article.

F. Aluminum Sheets: Comply with ASTM B 209 (ASTM B 209M) Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.

G. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
   1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

H. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

I. Plastic Connectors are not acceptable.

2.6 DUCT LINER

A. Fibrous-Glass Duct Liner: Comply with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. CertainTeed Corporation; Insulation Group.
      b. Johns Manville.
      c. Knauf Insulation.
      d. Owens Corning.
      e. Maximum Thermal Conductivity:
         1) Type I, Flexible: 0.27 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
         2) Type II, Rigid: 0.23 Btu x in./h x sq. ft. x deg F at 75 deg F mean temperature.
   2. Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior surface of the duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.

3. Water-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916. Equal to DP 2502.

B. Insulation Pins and Washers:
1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch- diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer. Equal to CS-10.

C. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-19, "Flexible Duct Liner Installation."
1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
2. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
3. Butt transverse joints without gaps, and coat joint with adhesive.
4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
5. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and dimensions of standard liner make longitudinal joints necessary.
6. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.
7. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:
   a. Fan discharges.
   b. Intervals of lined duct preceding unlined duct.
   c. Upstream edges of transverse joints in ducts where air velocities are higher than 2500 fpm or where indicated.
8. Terminate inner ducts with buildouts attached to fire-damper sleeves, dampers, turning vane assemblies, or other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct walls with bolts, screws, rivets, or welds.

2.7 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL. All products are to contain low V.O.C. as defined/governed by LEED IEQ 4.1 and 4.2 (Regardless of project type).

B. Water-Based Joint and Seam Sealant (for indoor installation):
1. Application Method: Brush on.
2. Solids Content: Minimum 68 percent.
3. Water resistant.
4. Mold and mildew resistant.
5. VOC: less than 30 g/l (less water).
6. Maximum Static-Pressure Class: 15-inch wg, positive and negative.
7. Service: Indoor.
8. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
9. DP 1020 or approved equal.

C. Water-Based Joint and Seam Sealant (for outdoor installation):
1. Application Method: Tube application or dry tooling.
2. Service Temp Range (degrees F): -40 to 180.
3. Water resistant.
4. Mold and mildew resistant.
5. Service: Indoor.

6. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
7. Sonolastic NP-1 or approved equal.

D. Flanged Joint Sealant: Comply with ASTM E-84.
1. General: Butyl gasket tape.
2. Type: Butyl Rubber.
3. Service Temperature: Minus 40°F to 245°F
4. Pressure Class: All
5. DP 1040

2.8 HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 4-1 (Table 4-1M), "Rectangular Duct Hangers Minimum Size," and Table 4-2, "Minimum Hanger Sizes for Round Duct."

D. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

E. Trapeze and Riser Supports:
1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. All ductwork sizes indicted on drawings are internal, free area dimensions. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible".

C. Install round and flat-oval ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Conceal ducts from view in finished spaces. Do not encase horizontal runs in solid partitions unless specifically indicated.

H. Coordinate layout with suspended ceiling, fire-and smoke-control dampers, lighting layouts, and similar finished work.

I. Seal all joints and seams. Apply sealant to male end connectors before insertion, and afterward to cover entire joint and sheet metal screws. Sealant of seems/joints to include (but not limited to): all joints (including gasketed joints) metal seams, taps, any connections, etc.

J. Paint interiors of metal ducts that do not have duct liner, for 24 inches (600 mm) upstream of return air registers and grilles. Apply one coat of flat, black, latex finish coat over a compatible galvanized-steel primer. Paint materials and application requirements are specified in Division 9 painting Sections.

K. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

L. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness. Compression of insulation by other trades (pipe, conduit, etc) is not acceptable.

M. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

N. Where ducts pass through non-fire-rated interior partitions and exterior walls, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

O. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Mechanical Specification Section "Air Duct Accessories" for fire and smoke dampers.

P. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "Duct Cleanliness for New Construction Guidelines."

Q. Horizontal ductwork in mechanical rooms must be installed a minimum of 8’-0” AFF.

R. All duct floor penetrations must have a water-tight, continuous concrete curb surrounding them. Minimum curb size shall be 3-1/2” tall X 3-1/2” wide.

3.2 DUCTWORK HANDLING AND PLENUM PROTECTION

A. All ductwork shall be delivered to site and stored with all openings protected from the elements. Protection to include 2.5 mil thick polyethylene plastic film secured with tape or integral elastic band.

B. Each segment/section of ductwork installed is to be appropriately protected from elements.

C. Any ductwork damaged during delivery, installation, or at any time during construction will be removed from job and replaced.

D. Ductwork found onsite (installed or stored) without approved protection will be removed from job and replaced.

E. Ductwork installed exposed to the elements to be sealed (joints and seems) immediately after installation. Any ductwork not sealed is susceptible to rejection and removed from job.

F. Under no circumstances shall insulation be applied to ductwork prior to the building being fully dried in (i.e.: building sealed, windows and roof installed, etc). Any ductwork being insulated prior to building dry-in is susceptible to rejections and removed from job.

G. If ductwork is found onsite not protected or the newly installed ductwork is deemed as dirty, engineer can elect for the contractor to clean all duct at no cost to the owner per NADCA 1992.

3.3 SEAM AND JOINT SEALINGS

A. Seal all duct transverse joints, longitudinal seams, flanges and duct wall penetrations (SMACNA Seal Class-A regardless of static pressure construction class).

3.4 HANGERS AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible," Chapter 4 "Hangers and Supports," unless otherwise indicated.
   1. Support rectangular ducts greater than 36 inches with width with trapeze threaded rod and angle or channel supports. Straps not acceptable.
   2. Rectangular Duct Hangers Exposed to View: Threaded rod and channel supports (do not use steel angles).

B. Building Attachments: Concrete inserts or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
   1. Where practical, install concrete inserts before placing concrete.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards-Metal and Flexible," Table4-1 (Table 4-1M), "Rectangular Duct Hangers Minimum Size," and Table 4-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection. Elbows 36" and larger to be individually supported.

D. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16' feet. Support vertical ducts in a manner that introduces minimal weight onto the roof curb flange.

E. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
   1. Do not attach hangers to metal deck roof assemblies with built-up insulation only (no concrete). Attach only to structural steel members.

3.5 CONNECTIONS

A. Make all connections to all fan-bearing equipment with flexible connectors complying with Specification Section "Duct Accessories".

B. Comply with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible" for branch, outlet and inlet, and terminal unit connections. Reference detail for specific additional items required.

3.6 PAINTING

A. Paint interior of metal ducts that are visible through registers and grilles and that do not have duct liner. Apply one coat of flat, black, latex paint over a compatible galvanized-steel primer. Paint materials and application requirements are specified in Division 09 painting Sections.

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Leakage Tests:
   1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Leakage Class defined in previous sections of specification. (Amount of ductwork to be tested to be determined by Engineer or Field Inspector).
   2. Test the following systems:
      a. Medium Pressure Ductwork (3-Inch wg), up to Air Terminal (branch taps included): Test representative duct sections totaling no less than 100 percent of total installed duct area.

b. Low Pressure Supply Ducts: Test representative duct totaling no less than 20 percent of total installed duct area.
c. Return Ducts: Test representative duct sections totaling no less than 20 percent of total installed duct area.
d. Exhaust Ducts: Test representative duct sections totaling no less than 20 percent of total installed duct area.
e. Outdoor Air Ducts: Test representative duct sections totaling no less than 20 percent of total installed duct area.
f. Grease Laden/Dishwasher Exhaust: Test representative duct sections per IMC "Light Test."

3. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
4. Test for leaks before insulation application.

C. Duct system will be considered defective if it does not pass tests and inspections.

D. Contractor to disassemble, reassemble and seal segments of systems to accommodate leakage testing and for compliance with test requirements / leakage rates.

E. All testing equipment to be calibrated (by manufacturer) within 3 years of onsite duct pressure testing. Documentation to be provided for verification of certification to Engineer through submittal process.

F. Test Coupons: Cut out three (3) 4x4" test coupons in random locations selected by the design engineer for verification of gage thickness. Coupons shall be taken at the time of pressure testing.

G. Prepare test and inspection reports.

3.8 DUCT SCHEDULE

A. Fabricate ducts with galvanized sheet steel except as follows:
1. Acid-Resistant (Fume-Handling) Ducts:
a. Type 304, stainless-steel sheet – welded.
b. Exposed to View: No. 4 finish.
c. Concealed: No. 2D finish.
2. Moist Environment Ducts: Aluminum.
3. Spaces with pools, spas, hot tubs or water features: Aluminum.
4. Kitchen Exhaust – Reference applicable specification.

B. Intermediate Reinforcement:
1. Galvanized-Steel Ducts: Galvanized steel.
2. Stainless-Steel Ducts: Galvanized steel.
3. Aluminum Ducts: Aluminum or galvanized sheet steel coated with zinc chromate.

C. Liner:
1. Transfer Ducts: Fibrous glass, Type I 1 inch thick.

D. Double-Wall Duct Schedule:
1. All exposed Round/Flat Oval Ductwork.

E. Elbow Configuration:
1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible," Figure 2-2, "Rectangular Elbows".
a. Velocity 1000 fpm or Lower:
1) Radius Type RE 1 with minimum 0.5 radius-to-diameter ratio.
2) Mitered Type RE 4 without vanes.
b. Velocity 1000 to 1500 fpm:
1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
2) Radius Type RE 3 with minimum 0.5 radius-to-diameter ratio and two vanes.

3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible," Figure 2-3, "Vanes and Vane Runners," and Figure 2-4, "Vane Support Elbows."

c. Velocity 1500 fpm (7.6 m/s) or Higher:
1) Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
2) Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible," Figure 2-3, "Vanes and Vane Runners," and Figure 2-4, "Vane Support in Elbows.

2. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible," Figure 3-3, "Round Duct Elbows".
a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
1) Velocity 1000 fpm or Lower: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.
2) Velocity 1000 to 1500 fpm: 1.0 radius-to-diameter ratio and four segments for 90-degree elbow.
3) Velocity 1500 fpm or higher: 1.5 radius-to-diameter and five segments for 90-degree elbow.
b. Round Elbows, 12 inches and smaller diameter: Stamped or pleated.
c. Round Elbows, 14 inches and larger in diameter: Welded.

F. Branch Configuration
1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards-Metal and Flexible," Figure 2-6, "Branch Connections."
a. Rectangular Main to Rectangular Branch: 45-degree entry.
b. Rectangular Main to Round Branch: Side takeoff fitting.
2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards – Metal and Flexible," Figure 3-4, "90 Degree Tees and Laterals," and Figure 3-5, "Conical Tees." Saddle taps are permitted in existing duct.
a. Velocity 1000 fpm or Lower: 90-degree tap.
b. Velocity 1000 to 1500 fpm: Conical tap.
c. Velocity 1500 fpm or higher: 45-degree lateral.

3.9 CLEANING NEW SYSTEMS

A. If ductwork is found onsite not protected or the newly installed ductwork is deemed as dirty, engineer can elect for the contractor to clean all duct at no cost to the owner per NADCA 1992.

B. System Cleaning: (If required)
1. Mark position of dampers and air-directional mechanical devices before cleaning, and perform cleaning before air balancing.
2. Provide service openings (approved duct access doors), as required, for physical and mechanical entry during cleaning and for inspection. All duct access doors to be installed prior to any duct pressure tests.
a. Removed and reinstall ceiling sections to gain access during the cleaning process.
3. Vent vacuuming system to the outside. Include filtration to conation debris removed from HVAC systems, and locate exhaust down wind and minimum of 20 feet away from air intakes and other points of entry into building.
4. Clean the following metal duct systems by removing surface contaminants and deposits:
a. Air outlets and inlets (registers, grilles and diffusers).
b. Supply, return and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers and drive assemblies.

c. Air-handling unit internal surfaces and components including mixing box, coil section, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
d. Coils and related components.
e. Return-air ducts, dampers and actuators except in ceiling plenums and mechanical equipment rooms.
f. Supply-air ducts, dampers, actuators and turning vanes.

5. Mechanical Cleaning Methodology:
   a. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
   b. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
   c. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner or duct accessories.
   d. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet.
   e. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Cleanliness Verification:
   a. Visually inspect metal ducts for contaminants.
   b. Where contaminants are discovered, re-clean and re-inspect ducts.

END OF SECTION 233113

SECTION 233300

DUCT ACCESSORIES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Backdraft dampers.
2. Manual-volume dampers.
3. Fire dampers
4. Fire and smoke dampers.
5. Turning vanes.
6. Duct-mounted access doors and panels.
7. Flexible ducts.
8. Flexible connectors.
9. Side takeoff fittings.
10. Duct accessory hardware.
11. Motorized control dampers.

B. Related Sections include the following:
1. Specification Section "Access Doors" for wall- and ceiling-mounted access doors and panels.
2. Specification Section "Louvers and Vents" for intake and relief louvers and vents connected to ducts and installed in exterior walls.
3. Specification Section "Air Terminal Units" for constant-volume and variable-air-volume control boxes and reheat boxes.
4. Specification Section "Air Inlets and Outlets."
5. Specification Section "Instrumentation and Controls for HVAC" for electric damper actuators.

1.3 SUBMITTALS

A. Product Data: For the following:
1. Backdraft dampers.
2. Manual-volume dampers.
3. Fire dampers.
4. Fire and smoke dampers.
5. Duct-mounted access doors and panels.
6. Flexible ducts.
7. Motorized control dampers.
8. Side takeoff fittings

1.4 QUALITY ASSURANCE

A. NFPA Compliance: Comply with the following NFPA standards:
1. NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."
2. NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

1.5 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
   1. Fusible Links: Furnish quantity equal to 10 percent of amount installed.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

A. Galvanized, Sheet Steel: Lock-forming quality; ASTM A 653/A 653M, G90 (Z275) coating designation; mill-phosphatized finish for surfaces of ducts exposed to view.

B. Reinforcement Shapes and Plates: Galvanized steel reinforcement where installed on galvanized, sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for 36-inch length or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.2 BACKDRAFT DAMPERS

A. Description: Suitable for horizontal or vertical installations.

B. Frame: 0.063-inch thick extruded aluminum, with mounting flange.

C. Blades: 0.050-inch thick aluminum sheet.

D. Blade Seals: Felt.

E. Blade Axles: Nonferrous.

F. Tie Bars and Brackets: Aluminum.

G. Return Spring: Adjustable tension.

2.3 MANUAL-VOLUME DAMPERS

A. General: Factory fabricated with required hardware and accessories. Stiffen damper blades for stability. Include locking device to hold single-blade dampers in a fixed position without vibration. Close duct penetrations for damper components to seal duct consistent with pressure class.
   1. Pressure Classifications of 3-Inch wg or Higher: End bearings or other seals for ducts with axles full length of damper blades and bearings at both ends of operating shaft.

B. Standard Volume Dampers: Multiple- or single-blade, opposed-blade design, standard leakage rating, with linkage outside airstream, and suitable for horizontal or vertical applications.
   1. Roll-Formed Steel Blades: 0.064-inch thick, galvanized, sheet steel.
   2. Blade Axles: Galvanized steel.
   3. Tie Bars and Brackets: Galvanized steel.
   4. 1-1/2-inch insulation buildout with locking quadrant.

C. Low-Leakage Volume Dampers: Multiple- or single-blade, opposed-blade design, low-leakage rating, with linkage outside airstream, and suitable for horizontal or vertical applications.
   1. Steel Frames: Hat-shaped, galvanized, sheet steel channels, minimum of 0.064 inch thick, with mitered and welded corners; frames with flanges where indicated for attaching to walls; and flangeless frames where indicated for installing in ducts.
   2. Roll-Formed Steel Blades: 0.064-inch thick, galvanized, sheet steel.
   3. Blade Seals: Felt.
   4. Blade Axles: Galvanized steel.
   5. Tie Bars and Brackets: Galvanized steel.

6. 1-1/2-inch insulation buildout with locking quadrant.

D. Jackshaft: 1-inch diameter, galvanized steel pipe rotating within a pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
   1. Length and Number of Mountings: Appropriate to connect linkage of each damper of a multiple-damper assembly.

E. Damper Hardware: Zinc-plated, die-cast core with dial and handle made of 3/32-inch thick zinc-plated steel, and a 3/4-inch hexagon locking nut. Include center hole to suit damper operating-rod size. Include elevated platform for insulated duct mounting.

F. Remotely Operated Damper Accessories:
   1. Galvanized steel rotary cable with termination for adjustment either at the diffuser face or at a wall- or ceiling-recessed box/cup as shown on drawings. Secure other cable end to damper worm gear assembly. Cable must be one-piece with no linkages along the length. Provide mounting clips to support cables at all changes in direction and at 3-foot intervals.

2.4 FIRE DAMPERS

A. General: Labeled to UL 555 (sixth edition). Ruskin Model D1BD2-B (or design engineer approved equivalent). Dampers shall be marked with a UL-Classified fire protection rating and marked “For Use in Dynamic Systems”.

B. Fire Rating: One and one-half and/or three hours as indicated.

C. Frame: SMACNA Type B with blades out of airstream; fabricated with roll-formed, 0.034-inch- thick galvanized steel; with mitered and interlocking corners.

D. Mounting Sleeve: Provide factory-mounted sleeve and retaining angles.
   1. Minimum Thickness (Sleeve shall not extend more than 6" past wall or floor without factory installed access door): 16 gauge and length to suit application.

E. Mounting Orientation: Vertical or horizontal as indicated.

F. Blades: Roll-formed, interlocking, 0.034-inch thick, galvanized, sheet steel. In place of interlocking blades, use full-length, 0.034-inch thick, galvanized steel blade connectors.

G. Horizontal Dampers: Include a blade lock and stainless-steel negator closure spring.

H. Fusible Link: Replaceable, 165 deg F rated as indicated.

2.5 COMBINATION FIRE / SMOKE DAMPERS (SFD)

A. General: Labeled to UL 555/UL 555S (sixth and fourth edition respectively) Combination fire and smoke dampers shall be labeled for one-and-one-half-hour rating to UL 555S. Provide Class II leakage rating. Dampers shall be marked with a UL-classified fire rating. Ruskin FSD-60 or approved equivalent. The SFD shall be listed to operate from the fire alarm control panel (FACP). Each SFD shall have an associated smoke detector that shall be addressable from the FACP. The smoke detector shall be provided by the Fire Alarm Contractor and installed by the Electrical Contractor. Coordinate damper installation with these trades.

B. Electric Fusible Link (EFL): 165 or 212 deg F rated as applicable.

C. Frame and Blades: 16 gauge, galvanized, sheet steel. Damper blades shall be airfoil-shaped, single-piece construction, with blade seals mechanically locked into blade edge (adhesive clip-on seals are not acceptable). Ruskin FSD-60 or equivalent. Damper blades shall be minimum 14 gauge. SFD’s installed off vertical chases shall have vertical airfoil blades (Ruskin FSD 60-V or equivalent).

D. Mounting Sleeve: Factory-installed, 16 gauge, galvanized, sheet steel; length to suit wall or floor application. Sleeve shall not extend more than 6" past wall or floor without factory installed access door. SFD shall be capable of mounting on either side of wall and working with airflow in either direction. Provide manufacturer-recommended duct-to-sleeve joints.

E. Electric controlled closure is not less than 7 seconds or more than 10 seconds to prevent HVAC and duct damage. Damper shall have local reset button and shall have automatic reset after test, smoke detection or power failure conditions. Damper shall close upon loss of power or AHU shut down. Actuator shall be 120V.

F. Provide with stainless steel jam seals and bearings. (Bronze bearings are not acceptable)

G. Furnish and install dampers according to manufacturer's instructions and in compliance with the latest edition of the SMACNA Duct Manual and NFPA Standards (90, 92A, and 92B).

2.6 TURNING VANES

A. Fabricate to comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."

B. Manufactured Turning Vanes: Fabricate of 1-1/2-inch wide, curved blades set 3/4 inch o.c.; support with bars perpendicular to blades set 2 inches o.c.; and set into side strips suitable for mounting in ducts.

2.7 DUCT-MOUNTED ACCESS DOORS AND PANELS

A. Manufactures:
   1. Greenheck
   2. Flexmaster
   3. Elgens
   4. No exceptions

B. Ratings
   1. Differential Pressure
      a. Access doors shall have a maximum differential pressure rating of 4.5 in.wg.

C. Construction
   1. Frame
      a. Access door shall be constructed of 27 ga. Galvanized steel on sizes up to 12 in. x 12 in. On sizes 14 in. x 14 in. and larger shall be constructed of 22 ga. Galvanized steel.
   2. Door Panel: Door panel is constructed of 24 ga. Galvanized steel on both sides of the insulation.
   3. Insulation: Insulation is 1 in. fiberglass.
   4. Gasket: Gasket is ½ in. wide dual gasket (compressible synthetic type). Gasket is to be used door to frame and frame to duct.
   5. Hinge: Continuous piano style.
   6. Latches: Latches is plated steel with galvanized steel strikes.
   7. Finish: Mill finish is standard.

2.8 FLEXIBLE CONNECTORS

A. General: Flame-retarded or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.

B. Standard Metal-Edged Connectors: Factory fabricated with a strip of fabric 3-1/2 inches wide attached to two strips of 2-3/4-inch wide, 0.028-inch thick, galvanized, sheet steel or 0.032-inch aluminum sheets. Select metal compatible with connected ducts.

C. Conventional, Indoor System Flexible Connector Fabric: Glass fabric double coated with polychloroprene.
   1. Minimum Weight: 26 oz./sq. yd.
   2. Tensile Strength: 480 lbf/inch in the warp, and 360 lbf/inch in the filling.

D. Conventional, Outdoor System Flexible Connector Fabric: Glass fabric double coated with a synthetic-rubber, weatherproof coating resistant to the sun's ultraviolet rays and ozone environment.
   1. Minimum Weight: 26 oz./sq. yd.
   2. Tensile Strength: 530 lbf/inch in the warp, and 440 lbf/inch in the filling.

2.9 INSULATED FLEXIBLE DUCT, LOW PRESSURE

A. Manufacturers:
   1. Flexmaster type 1M UL181 Class I Air Duct.
   2. Thermaflex MK-E
   3. No exceptions

B. The duct shall be constructed of a CPE fabric supported by helical wound galvanized steel.

C. The internal working pressure rating shall be at least 6" w.g. positive and 4" w.g. negative, with a bursting pressure of at least 2-1/2 times the working pressure.

D. The duct shall be rated for a velocity of at least 4000 feet per minute.

E. The duct must be suitable for continuous operation at a temperature range of -20 deg F to +250 deg F.

F. Acoustical performance, when tested by an independent laboratory in accordance with the Air Diffusion Council's *Flexible Air Duct Test Code FD 72-R1*, Section 3.0, Sound Properties, shall be as follows:
   1. The insertion loss (dB) of a 6-foot length of straight duct when tested in accordance with ASTM E 477, at a velocity of 500 feet per minute, shall be at least:

Octave Band	**2**	**3**	**4**	**5**	**6**	**7**
Hz.	125	250	500	1000	2000	4000
6" diameter	11	33	36	37	19	14
8" diameter	13	35	34	37	29	17
12" diameter	10	26	26	32	24	11

G. Factory insulate the flexible duct with fiberglass insulation. The R-value shall be at least 6 at a mean temperature of 75 deg F.

H. Cover the insulation with a fire retardant metalized vapor barrier jacket reinforced with crosshatched scrim (FSK) having a permeance of not greater than 0.05 perms when tested in accordance with ASTM E 96, Procedure A.

2.10 SIDE TAKEOFF FITTINGS

A. Provide Flexmaster Model STOD or SBMD takeoff for sheet metal for all taps connecting to flex duct, except for air devices with OBD's and flow bar. For devices with OBD, use Flexmaster Model STO- or SBM no exceptions.

B. The side takeoff fittings shall maintain a ratio of 1:1 of inlet to outlet on all units over 7-inch diameter to allow proper sizing of the duct system.

C. Model STOD side takeoff shall have a 1-inch offset rear edge for enhanced pressure drop characteristics and 1-1/2-inch insulation buildout with locking hand quadrant.

D. Fittings shall have a 1-inch-wide prepunched mounting flange with corner clips and adhesive gasket for minimal leakage and ease of installation.

E. The fittings shall be constructed of a two-piece 26-gauge G-90 galvanized steel body and collar.

F. The overall length of the fitting shall be 13 inches with or without damper to reduce turbulence in the airstream.

G. The round outlet shall be provided with a rolled stiffener bead for strength and ease of installation and sealing of spiral and flexible ductwork joints.

2.11 ACCESSORY HARDWARE

A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments, and length to suit duct insulation thickness.

B. Splitter Damper Accessories: Zinc-plated damper blade bracket; 1/4-inch, zinc-plated operating rod; and a duct-mounted, ball-joint bracket with flat rubber gasket and square-head set screw.

C. Flexible Duct Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action, in sizes 3 to 18 inches to suit duct size.

D. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

2.12 MOTORIZED CONTROL DAMPERS

A. Manufacturers:
   1. Greenheck.
   2. Nailor Industries Inc.
   3. Ruskin Company.
   4. Pottorff.

B. General Description: AMCA-rated, opposed-blade design; minimum of 0.1084-inch thick, galvanized-steel frames with holes for duct mounting; minimum of 0.0635-inch thick, galvanized-steel damper blades with maximum blade width of 8 inches.
   1. Secure blades to ½-inch diameter, zinc-plated axles using zinc-plated hardware, with nylon blade bearings, blade-linkage hardware of zinc-plated steel and brass, ends sealed against spring-stainless-steel blade bearings, and thrust bearings at each end of every blade.
   2. Operating Temperature Range: From minus 40 to plus 200 deg F.
   3. Provide parallel- or opposed-blade design with inflatable seal blade edging, or replaceable rubber seals, rated for leakage at less than 10 cfm per sq. ft. of damper area, at differential pressure of 4-inch wg when damper is being held by torque of 50 in.×lbf (5.6 N×m); when tested according to AMCA 500D.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install duct accessories according to applicable details shown in SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for metal ducts and NAIMA's "Fibrous Glass Duct Construction Standards" for fibrous-glass ducts.

B. When installing volume dampers in lined duct, avoid damage to and erosion of duct liner.

C. Install manual volume dampers at all main branch lines for ease of balancing.

D. Provide test holes at fan inlet and outlet and elsewhere as indicated.

E. Install fire and smoke dampers according to manufacturer's UL-approved written instructions.
   1. Install fusible links in fire dampers.

F. Install mounting angles, minimum of 1 ½ "x 1 ½ "x 20 gauge steel on both sides of SFD or FD.

G. Install duct access panels for access to both sides of duct coils. Install duct access panels downstream from volume dampers, fire dampers, smoke-fire dampers, turning vanes, and equipment.

H. Install duct access panels to allow access to interior of ducts for cleaning, inspecting, adjusting and maintaining accessories and terminal units.
   1. Install access panels on side of duct where adequate clearance is available.
   2. Label access doors according to Specification Section “Mechanical Identification.”

3.2 ADJUSTING

A. Adjust duct accessories for proper settings.

B. Adjust fire and smoke dampers for proper action.

C. Final positioning of manual-volume dampers is specified in Specification Section "Testing, Adjusting, and Balancing."

END OF SECTION 233300

SECTION 233423

HVAC POWER VENTILATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Ceiling-mounting ventilators.
   2. Centrifugal roof ventilators
   3. Destratification fans
   4. In-line centrifugal fans.
   5. Propeller fans.

1.3 PERFORMANCE REQUIREMENTS

A. Project Altitude: Base fan-performance ratings on actual Project site elevations.

B. Operating Limits: Classify according to AMCA 99.

C. Fan Unit Schedule: The following information is described in an equipment schedule on the Drawings.
   1. Fan performance data including capacities, static pressure, sound power characteristics, motor requirements and electrical characteristics.
   2. Fan arrangement, including wheel configuration inlet and discharge configurations and required accessories.

1.4 SUBMITTALS

A. Product Data: Include rated capacities, furnished specialties and accessories for each type of product indicated and include the following:
   1. Certified fan performance curves with system operating conditions indicated.
   2. Certified fan sound-power ratings.
   3. Motor ratings and electrical characteristics, plus motor and electrical accessories.
   4. Material thickness and finishes, including color charts.
   5. Dampers, including housings, linkages and operators.
   6. Roof curbs.
   7. Fan speed controllers.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components and location and size of each field connection.
   1. Wiring Diagrams: Power, signal and control wiring.
   2. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
   3. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails and base weights.

C. Coordination Drawings: Show roof penetration requirements and reflected ceiling plans drawn to scale and coordinating roof penetrations and units mounted above ceiling. Show the following:
   1. Roof framing and support members relative to duct penetrations.

2. Ceiling suspension assembly members.
3. Size and location of initial access modules for acoustical tile.
4. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.

D. Maintenance Data: For power ventilators to include in maintenance manuals specified in Division 1.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. AMAC Compliance: Products shall comply with performance requirements and shall be licensed to use the AMCA-Certified Ratings Seal.

C. NEMA Compliance: Motors and electrical accessories shall comply with NEMA standards.

D. UL Standard: Power ventilators shall comply with UL 705.

E. Listing and labeling: Provide electrically operated fixtures specified in this section that are listed and labels.
1. The terms “Listed” and “Labeled”. As defined in the Nations Electrical Code, Article 100.
2. Listing and Labeling Agency Qualifications: A “Nationally Recognized Testing laboratory” (NTRL) as defined in OSHA Regulation 1910.7.

F. UL Standard: Provide Power Ventilators that comply with UL 762, grease laden air at 300 deg. F where applicable (kitchen exhaust).

G. Warranty: The manufacturer’s standard warranty shall be for a period of 12 months from the date of Substantial Completion. Warranty is limited to manufacturer defects only. The warranty shall include parts and labor during this period.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver fans as factory-assembled unit, to the extent allowable by shipping limitations, with protective crating and covering.

B. Disassemble and reassemble units, are required for moving to final location, according to manufacturer’s written instructions.

C. Lift and support units with manufacturer’s designated lifting or supporting points.

1.7 COORDINATION

A. Coordinate size and location of structural-steel support members.

B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Specification Section “Cast-In-Place Concrete”.

C. Coordinate installation of roof curbs, equipment supports and roof penetrations. These items are specified in Specification Section “Roof Accessories”.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Belts: One set for each belt-driven unit.

1.9 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field Measurements. Verify clearances.

B. Do not operate fans until ductwork is clean, filters are in place, bearings are lubricated and fans have been commissioned.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Centrifugal Roof Ventilators:
      a. Cook, Loren Company
      b. Envirofan
      c. Greenheck Fan Corp.
      d. Leading Edge

2.2 CEILING-MOUNTING VENTILATORS

A. Description: Centrifugal fans designed for installing in ceiling or wall or for concealed in-line applications.

B. Housing: Steel, lined with acoustical insulation

C. Fan Wheel: Centrifugal wheels directly mounted on motor shaft. Fan shrouds, motor and fan wheel shall be removable for service.

D. Grille: Painted aluminum, louvered grille with flange on intake and thumbscrew attachment to fan housing.

E. Electrical Requirements: Junction box for electrical connection on housing and receptacle for motor plug-in.

F. Accessories:
   1. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
   2. Filter: Washable aluminum to fit between fan and grille.
   3. Isolation: Rubber-in-shear vibration isolators.
   4. Manufacturer’s standard roof jack or wall cap and transition fittings.

G. Capacities and Characteristics: Refer to drawing schedules.

2.3 CENTRIFUGAL ROOF VENTILATORS – DOWNBLAST

A. Description: Belt-driven or direct-driven centrifugal fans consisting of housing, wheel, fan shaft, bearings, motor and disconnect switch, drive assembly, curb base and accessories.

B. Housing: Removable, spun-aluminum, dome top and outlet baffle; square, two-piece, aluminum base with venture inlet cone.

C. Fan Wheels: aluminum hub and wheel with backward-inclined blades.

D. Belt-Driven Drive Assembly: Resiliently mounted to housing, with the following features:

1. Fan Shaft: turned, ground, and polished stainless steel; keyed to wheel hub.
2. Shaft Bearings: Heavy-duty re-greasable bail type in a pillow block cast iron housing, selected for a minimum L50 life in excess of 200,000 hours.
3. Pulleys: Cast-iron, adjustable-pitch motor pulley.
4. Fan and motor isolated from exhaust airstream.
5. Belts: Oil and heat resistant, nonstatic.

E. Accessories: The following items are required as indicated:
1. Variable-Speed Controller: Solid-state control to reduce speed from 100 percent to less than 50 percent (required on direct drive fans only).
2. Disconnect Switch: Nonfusible type, with thermal-overload protection mounted inside fan housing, factory wired through an internal aluminum conduit.
3. Bird Screens: Removable, 1/2-inch mesh, aluminum or brass wire.
4. Dampers: Counterbalanced, parallel-blade, backdraft dampers mounted in curb base; factory set to close when fan stops.

F. Roof Curbs: Galvanized steel; mitered and welded corners; 1-1/2-inch- thick, rigid, fiberglass insulation adhered to inside walls; and 1-1/2-inch wood nailer. Size as required to suit roof opening and fan base. Built in cant and mounting flange.
1. Configuration: Built-in cant and mounting flange.
2. Overall Height: 18 inches
3. Pitch Mounting: Manufacture curb for roof slope, if necessary.
4. Metal Liner: Galvanized steel.

2.4 CENTRIFUGAL ROOF VENTILATORS – UPBLAST

A. Description: Belt-driven or direct-driven centrifugal fans consisting of housing, wheel, fan shaft, bearings, motor and disconnect switch, drive assembly, curb base, and accessories. Grease laden fans to comply with UL 762 Grease Laden Air.

B. Housing: Removable, spun-aluminum, dome top and outlet baffle; square, two-piece, aluminum base with venturi inlet cone.

C. Fan Wheels: Aluminum hub and wheel with backward-inclined blades.

D. Belt-Driven Drive Assembly: Resiliently mounted to housing, with the following features:
1. Fan Shaft: Turned, ground and polished stainless steel; keyed to wheel hub.
2. Shaft Bearings: heavy-duty re-greasable ball type in a pillow block cast iron housing, selected for a minimum L50 life in excess of 200,000 hours.
3. Pulleys: Cast-iron, adjustable-pitch motor pulley.
4. Fan and motor isolated from exhaust airstream.

E. Accessories: The following items are required as indicated:
1. Disconnect Switch: Non-fusible type, with thermal-overload protection mounted inside fan housing, factory wired through in internal aluminum conduit.

F. Roof Curbs: Galvanized steel; mitered and welded corners; 1-1/2-inch thick, rigid, fiberglass insulation adhered to inside walls; and 1-1/2-inch wood nailer. Size as required to suit roof opening and fan base.
1. Configuration: Built-in cant and mounting flange.
2. Overall Height: 18 inches
3. Pitch Mounting: Manufacture curb for roof slope, if necessary.
4. Metal Liner: Galvanized steel.
5. Vented Curb Extension, with hinged curb cap.

2.5 DESTRATIFICATION FANS

A. Ceiling Fans 60” diameter 3 blade fan, dynamically balanced with permanently lubricated ball bearing motor, U.L. listed (UL 507), with all necessary hooks and supports for a complete installation. Provide solid state speed controllers and secondary support cable.

B. Wall Mount Circulators: 24” 3-blade oscillating fan. Wall bracket, 2-speed motor, powder coated for guards, heavy duty pull chain, 45°-90° sweep. Safety cable mounting kit.

2.6 IN-LINE CENTRIFUGAL FANS (TUBULAR)

A. Description: In-line, direct or belt-driven (as scheduled on the drawings) centrifugal fans consisting of housing, wheel, outlet guide vanes, fan shaft, bearings, motor and disconnect switch, drive assembly, mounting brackets and accessories.

B. Housing: Spilt, spun aluminum with aluminum straightening vanes, inlet and outlet flanges and support bracket adaptable to floor, side wall or ceiling mounting.

C. Direct-Driven Units: Motor mounted in airstream, factory wired to disconnect switch located on outside of fan housing; with wheel, inlet cone, and motor on swing-out service door.

D. Belt-Driven Units: Motor mounted on adjustable base, with adjustable sheaves, enclosure around belts within fan housing, and lubricating tubes from fan bearings extended to outside of fan housing.

E. Fan Wheels: Aluminum, air foil blades welded to aluminum hub.

F. Accessories:
   1. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
   2. Companion Flanges: For inlet and outlet duct connections.
   3. Fan Guards: 1/2 by 1 inch mesh of galvanized steel in removable frame. Provide guard for inlet or outlet for units not connected to ductwork.
   4. Motor and Drive Cover (Belt Guard): Epoxy-coated steel.

G. Capacities and Characteristics: Refer to drawing schedules.

2.7 IN-LINE CENTRIFUGAL FANS (SQUARE)

A. Description: In-line, direct driven (as scheduled on the drawings) centrifugal fans consisting of housing, wheel, outlet guide vanes, fan shaft, bearings, motor and disconnect switch, drive assembly, mounting brackets and accessories.

B. Housing: Insulated and galvanized with inlet and outlet flanges and support bracket adaptable to floor, side wall or ceiling mounting.

C. Direct-Driven Units: ECM Motor mounted in airstream, factory wired to disconnect switch located on outside of fan housing; with wheel, inlet cone, and motor on swing-out service door.

D. Fan Wheels: Aluminum, backward inclined air foil blades welded to aluminum hub.

E. Accessories:
   1. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
   2. Companion Flanges: For inlet and outlet duct connections.
   3. Housing Insulation.
   4. Motor and Drive Cover (Belt Guard): Epoxy-coated steel.

F. Capacities and Characteristics: Refer to drawing schedules.

2.8 PROPELLER FANS

A. Description: Direct-or belt-driven (as scheduled on the drawings) propeller fans consisting of fan blades, hub, housing, orifice ring, motor, drive assembly and accessories.

B. Housing: Galvanized-steel sheet with flanged edges and integral orifice ring with baked-enamel finish coat applied after assembly.

C. Steel Fan Wheels: Formed-steel blades riveted to heavy-gage steel spider bolted to cast-iron hub.

D. Fan Wheel: Replaceable, extruded-aluminum, airfoil blades fastened to cast-aluminum hub; factor set pitch angle of blades.

E. Belt-Drive Drive Assembly: Resiliently mounted to housing, statically and dynamically balanced and selected for continuous operation at maximum rated fan speed and motor horsepower, with final alignment and belt adjustment made after installation.
   1. Service Factor Based on Fan Motor Size: 1.4.
   2. Fan Shaft: Turned, ground and polished steel; keyed to wheel hub.
   3. Shaft Bearings: Permanently lubricated, permanently sealed, self-aligning ball bearings.
      a. Ball-Bearing Rating Life: ABMA 9, L_{10} of 100,000 hours.
   4. Pulleys: Cast iron with split, tapered bushing; dynamically balanced at factory.
   5. Motor Pulleys: Adjustable pitch for use with motors through 5 hp; fixed pitch for use with larger motors. Select pulley so pitch adjustment is at the middle of adjustment range at fan design conditions.
   6. Belts: Oil resistant, nonsparking, and nonstatic; matched sets for multiple belt drives.
   7. Belt Guards: Fabricate of steel motors mounted on outside of fan cabinet.

F. Accessories:
   1. Gravity Shutters: Aluminum blades in aluminum fame; interlocked blades with nylon bearings.
   2. Motor-Side Back Guard: Galvanized steel, complying with OSHA specifications, removable for maintenance.
   3. Wall Sleeve: Galvanized steel to match fan and accessory size.
   4. Weathershield Hood: Galvanized steel to match fan and accessory size.
   5. Weathershield Front Guard: Galvanized steel with expanded metal screen.

G. Capacities and Characteristics: Refer to drawing schedules.

2.9 MOTORS

A. Motor Construction: NEMA MG 1, general purpose, continuous duty, Design B.

B. Enclosure Type: The following features are required as indicted.
   1. Open drip proof motors where satisfactorily housed or remotely located during operation.
   2. Guarded drip proof where exposed to contact by employees or building occupants.

C. All motors shall be pre-wired to the disconnect at the factory.

2.10 SOURCE QUALITY CONTROL

A. Sound-Power Level Ratings: Comply with AMCA 301, “Methods for Calculating Fan Sound Ratings from Laboratory Test Data.” Factory test fans according to AMCA 300, “Reverberant Room Method for Sound Testing of Fans.” Label fans with AMCA-Certified Ratings Seal.

B. Fan Performance Ratings: Establish flow rate, pressure, power, air density, speed of rotation and efficiency by factory tests and ratings according to AMCA 210, “Laboratory Methods of Testing Fans for Rating.”

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install power ventilators level and plumb.

B. Support inline fans with galvanized all thread and spring isolators with a static deflection of 1 inch.

C. Support suspended units from structure using galvanized threaded steel rods and spring hangers.

D. Secure roof-mounting fans to roof curbs with stainless steel hardware. Anchor fan to curb with a minimum of two (2) fasteners per side. Refer to Specification Section “Roof Accessories” for installation of roof curbs.

E. Ceiling Units: Suspect units from structure; use steel wire or metal straps.

F. Install units with clearances for service and maintenance.

G. Label units according to requirements specified in Specification Section “Mechanical Identification.”

3.2 CONNECTIONS

A. Duct installation and connection requirements are specified in other Mechanical Sections. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors for all fans; no exceptions. Flexible connectors are specified in Specification Section “Duct Accessories.”

B. Install duct adjacent to power ventilators to allow service and maintenance.

C. Ground equipment according to Specification Section “Grounding and Bonding.”

3.3 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:
   1. Verify that shipping, blocking and bracing are removed.
   2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters and disconnect switches.
   3. Verify that cleaning and adjusting are complete.
   4. Disconnect fan drive from motor, verify proper motor rotation direction and verity fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts and install belt guards.
   5. Adjust belt tension.
   6. Adjust damper linkages for proper damper operation.
   7. Verity lubrication for bearings and other moving parts.
   8. Verity that manual and automatic volume control and fire and smoke dampers in connected ductwork system are in fully open positions.
   9. Disable automatic temperature-control operators, energize motor and adjust fan to indicated rpm, and measure and record motor voltage and amperage.
   10. Shut unit down and reconnect automatic temperature-control operators.
   11. Remove and replace malfunctioning units and retest as specified above.

B. Starting Procedures:
   1. Energize motor and adjust fan to indicated rpm.
   2. Measure and record motor voltage and amperage.

C. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation. Remove malfunctioning units, replace with new units, and retest.

D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Shut unit down and reconnect automatic temperature-control operators.

F. Refer to Specification Section “Testing, Adjusting and Balancing” for testing, adjusting, and balancing procedures.

G. Replace fan and motor pulleys as required to achieve design airflow.

H. Repair or replace malfunctioning units. Retest as specified above after repairs or replacements are made.

3.4 ADJUSTING

A. Adjust damper linkages for proper damper operation.

B. Adjust belt tension.

C. Refer to Specification Section “Testing, Adjusting and Balancing for HVAC” for testing, adjusting and balancing procedures.

D. Replace fan and motor pulleys as required to achieve design airflow.

E. Lubricate bearings.

3.5 CLEANING

A. On completion of installation, internally clean fans according to manufacturer’s written instructions. Remove foreign material and construction debris. Vacuum fan wheel and cabinet.

B. After completing system installation, including outlet fitting and devices, inspect exposed finish. Remove burns, dirt and construction debris and repair damaged finished.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner’s maintenance personnel to adjust, operate, and maintain power ventilators.
   1. Train owner’s maintenance personnel on procedures and schedules for starting and stopping, troubleshooting servicing, and maintaining equipment and schedules.
   2. Review data in maintenance manuals. Refer to Specification Section “Closeout Procedures.”
   3. Review data in maintenance manuals. Refer to Specification Section “Operation and Maintenance Data.”
   4. Schedule training with Owner, through Architect, with at least seven days’ advance notice.

3.7 COMMISSIONING

A. Final Checks before Startup: Perform the following operations and checks before startup:
   1. Verify that shipping, blocking and bracing are removed.
   2. Verify that unit is secure on mountings and supporting devices and that connections for piping, ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters and disconnects.
   3. Perform cleaning and adjusting specified in this Section.
   4. Disconnect fan drive from motor, verify proper motor rotation direction and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts and install belt guards.
   5. Lubricate bearings, pulleys, belts and other moving parts with factory-recommended lubricants.

6. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in the fully open position.
7. Disable automatic temperature-control operators.

B. Starting Procedures for fans are as follows:
1. Energize motor; verify proper operation of motor, drive system and fan wheel. Adjust fan to be indicated RPM.
2. Measure and record motor voltage and amperage.

C. Shut unit down and reconnect automatic temperature-control operators.

D. Refer to Specification Section “Testing, Adjusting and Balancing,” for procedures for air-handling-system testing, adjusting and balancing.

E. Replace fan and motor pulleys as required to achieve design conditions.

END OF SECTION 233423

SECTION 233713

DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes ceiling- and wall-mounted diffusers, registers, and grilles.

B. Related Sections include the following:
   1. Specification Section "Duct Accessories" for fire and smoke dampers and volume-control dampers not integral to diffusers, registers, and grilles.
   2. Specification Section "Testing, Adjusting, and Balancing" for balancing diffusers, registers and grilles.

1.3 DEFINITIONS

A. Diffuser: Circular, square, or rectangular air distribution outlet, generally located in the ceiling and comprised of deflecting members discharging supply air in various directions and planes and arranged to promote mixing of primary air with secondary room air.

B. Grille: A louvered or perforated covering for an opening in an air passage, which can be located in a sidewall, ceiling, or floor.

C. Register: A combination grille and damper assembly over an air opening.

1.4 SUBMITTALS

A. Product Data: For each model indicated, include the following:
   1. Data Sheet: For each type of air outlet and inlet, and accessory furnished; indicate construction, finish, and mounting details.
   2. Performance Data: Include throw and drop, static-pressure drop, and noise ratings for each type of air outlet and inlet.
   3. Schedule of diffusers, registers, and grilles indicating drawing designation, model number, size, and accessories furnished.
   4. Assembly Drawing: For each type of air outlet and inlet; indicate materials and methods of assembly of components.

1.5 QUALITY ASSURANCE

A. NFPA Compliance: Install diffusers, registers, and grilles according to NFPA 90A, "Standard for the Installation of Air-Conditioning and Ventilating Systems."

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Krueger
2. Metalaire
3. Price
4. Titus

B. Performance characteristics, specific models, material, features, dimensions and finishes of diffusers, registers, and grilles are scheduled on Drawings.

2.2 SOURCE QUALITY CONTROL

A. Testing: Test performance according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas where diffusers, registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install diffusers, registers, and grilles level and plumb, according to manufacturer's written instructions, Coordination Drawings, original design, and referenced standards.

B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Coordinate with architectural Reflected Ceiling Plans. Locate devices where indicated, as much as practical. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

C. Install diffusers, registers, and grilles with airtight connection to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.3 ADJUSTING

A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

3.4 CLEANING

A. After installation of diffusers, registers, and grilles, inspect exposed finish. Clean exposed surfaces to remove burrs, dirt, and smudges. Replace diffusers, registers, and grilles that have damaged finishes.

END OF SECTION 233713

SECTION 238126

SPLIT-SYSTEM AIR-CONDITIONING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes split system air conditioning and heat pump units consisting of separate evaporator fan and compressor condenser components. Units are designed for exposed or concealed mounting, and may be connected to ducts.

1.3 SUBMITTALS

A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.

B. Specification Compliance Review:
   1. Manufacturers and bidders must provide the consulting engineer with a Compliance Review of the Specifications and Addenda's. The Compliance Review shall be a paragraph-by-paragraph review of the Specifications and schedule with the following information; "C", "D", or "E" marked in the margin of the original Specifications and any subsequent Addenda's. If the manufacturer or bidder does not provide the Compliance Review to the engineer for review, with the submittal, the submittal will be subject to rejection as non-compliant.
      a. "C" Comply with no exceptions.
      b. "D" Comply with deviations. For each and every deviation, provide a numbered footnote with reasons for the proposed deviation and how the intent of the Specification can be satisfied.
      c. "E" Exception, do not comply. For each and every exception, provide a numbered footnote with reasons and possible alternatives. Non-compliance with the specifications is grounds for rejection as unacceptable. A bid from any alternative or listed equipment manufacturer with any number of exceptions will be reason for rejection for non-compliance without further review.
      d. Unless a deviation or exception is specifically noted in the Compliance Review, the manufacturer shall provide full compliance with entire specification. Deviations or exceptions taken in letters or cover letters in a bid document, subsidiary documents, by omission or by contradiction do not release the manufacturer or bidder from being in complete compliance, unless the exception or deviation has been specifically noted in the Compliance Review and approved by the consulting engineer.
      e. Equipment manufacturers or bidders that do not meet the specifications thru the above process will be subject to rejection without further review.

C. Shop Drawings: Diagram power, signal, and control wiring.

D. Samples for Initial Selection: For units with factory-applied color finishes.

E. Field quality-control test reports.

F. Operational and Maintenance Data: For split-system air-conditioning units to include in emergency operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of split-system units and are based on the specific system indicated. Refer to Specification Section “Product Requirements.”

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Energy-Efficiency Ratio (EER): Equal to or greater than prescribed by ASHRAE 90.1,”Energy Efficient Design of New Buildings except Low-Rise Residential Buildings.”

D. Coefficient of Performance: Equal to or greater than prescribed by ASHRAE 90.1, “Energy Efficient Design of New Buildings except Low-Rise Residential Buildings.”

E. Units shall be designed to operate with HCFC-free refrigerants.

1.5 COORDINATION

A. Coordinate size and location of concrete bases for units. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork are specified in Specification Section “Special Conditions for All Mechanical Work.”

B. Coordinate size, location, and connection details with roof curbs, equipment supports, and roof penetrations specified in Specification Section “Special Conditions for All Mechanical Work.”

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Carrier Air Conditioning; Div. of Carrier Corporation
2. Lennox Industries, Inc.
3. Trane Company (The); Unitary Products Group.
4. York International Corp.
5. JCI

2.2 CONCEALED EVAPORATOR-FAN COMPONENTS

A. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
1. Insulation: Faced, glass-fiber duct liner.
2. Drain Pans: Galvanized steel, with connection for drain; insulated.

B. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.

C. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contractors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.

D. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.

E. Fan Motors:
1. Special Motor Features: Multitapped, multispeed with internal thermal protection and permanent lubrication.

F. Disposable Filters: 1 inch (25 mm) thick, in fiberboard frames.

G. Wiring Terminations: Connect motor to chassis wiring with plug connection.

2.3 WALL-MOUNTING, EVAPORATOR-FAN COMPONENTS

A. Cabinet: Enameled steel with removable panels on front and ends, and discharge drain pans with drain connection.

B. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal expansion valve.

C. Electric Coil: Helical, nickel chrome, resistance wire heating elements with refractory ceramic support bushings; automatic reset thermal cutout; built in magnetic contactors; manual reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.

D. Fan: Direct drive, centrifugal fan.

E. Fan Motors:
1. Special Motor Features: Multitapped, multispeed with internal thermal protection and permanent lubrication.

F. Filters: Permanent, cleanable.

2.4 AIR-COOLED, COMPRESSOR-CONDENSER COMPONENTS

A. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.

B. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation. Compressor motor shall have thermal- and current sensitive overload devices, start capacitor, relay, and contactor.
1. Compressor Type: Scroll
2. Manual reset high pressure switch and automatic reset low pressure switch.
3. Refrigerant Charge: R-410.
4. 1 Compressor per unit

C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with liquid sub-cooler. Coil shall be provided with a metal hail guard of either louvered construction or ½" x ½" wire mesh.

D. Heat Pump Components: Reversing valve and low temperature air cut-off thermostat.

E. Fan: Aluminum propeller type, directly connected to motor.

F. Motor: Permanently lubricated, with integral thermal overload protection.

G. Coordinate with drawing schedule for additional requirements.

2.5 ACCESSORIES

A. Unit shall have local control unless specified to be part of central control system.

B. Low-Voltage Control Wiring: Provide plenum-rated cabling (six-conductor) per manufacturer.

C. Thermostat: Low-voltage, programmable, with the following functions and features:
   1. Auto changeover (heat/cool).
   2. Seven-day programmable with three (3) different occupied settings per day.
   3. Large backlit liquid crystal display indicating temperature, setpoint temperature, time setting, operating mode, and cool/heat mode.
   4. Three (3) security levels with keypad lockout.
   5. Non-volatile memory.
   6. Four-hour override/setback.
   7. Seven-day holiday setback.

D. Automatic reset timer to prevent rapid cycling of compressor.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install units level and plumb.

B. Install evaporator fan components using manufacturer's standard mounting devices securely fastened to building structure.

C. Install ground mounting, compressor condenser components on 4-inch- (100-mm-) thick, reinforced concrete base; 4 inches (100 mm) larger on each side than unit. Concrete, reinforcement, and formwork are specified in Specification Section "Special Conditions for All Mechanical Work." Coordinate anchor installation with concrete base.

D. Install compressor condenser components on equipment supports specified in Specification Section "Special Conditions for All Mechanical Work." Anchor units to supports with removable, cadmium plated fasteners.

E. Install condensing unit on Korfund or equal pads and secure to housekeeping pad.

F. Charge unit with manufacturer required refrigerant and amount.

G. Support refrigerant piping from structure with hangers and saddles.

H. Insulate refrigerant lines with Armaflex. Provide aluminized jacket for exterior insulation.

I. Install t-stat in room on wall not in airflow stream. Connect t-stat to compressor/evaporator.

J. Provide condensate overflow switch to de-energize unit.

K. Provide and install plenum rated control cabling between condensing unit and evaporator.

3.2 CONNECTIONS

A. Connect condensate line to unit. Route condensate to floor drain. Support piping from structure with pipe hangers. Insulate condensate line with Armaflex.

B. Connect unit to controls system. Controls shall alarm with unit failure.

C. Piping installation requirements are specified in other Mechanical and Plumbing Sections.

D. Install piping adjacent to unit to allow service and maintenance.

E. Duct Connections: Duct installation requirements are specified in Specification Section "Metal Ducts." Drawings indicate the general arrangement of ducts. Connect supply and return ducts to split system air conditioning units with flexible duct connectors. Flexible duct connectors are specified in Specification Section "Duct Accessories."

F. Ground equipment according to Specification Section "Grounding and Bonding."

G. Electrical Connections: Comply with requirements in electrical specification sections for power wiring, switches, and motor controls. Install control wiring in conduit per electrical specification sections. All cabling shall be plenum rated. Disconnects shall be provided for the evaporator and condensing unit. Provide conduit and conductors from condensing unit to evaporator in conduit. Minimum #10 wire.

3.3 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:
   1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
   2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
   3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 238126

SECTION 238560

INTAKE AND RELIEF VENTILATORS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following types of roof-mounting intake and relief ventilators:
   1. Roof hoods.
   2. Goosenecks

B. Related Sections include the following:
   1. Specification Section “Louvers and Vents” for ventilator assemblies provided as part of the general construction.
   2. Specification Section “Power Ventilators” for roof-mounting exhaust fans.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Intake and relief ventilators shall be capable of withstanding the effects of gravity loads, wind loads, and thermal movements without permanent deformation of components, noise or metal fatigue, or permanent damage to fasteners and anchors.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For intake and relief ventilators. Include plans, elevations, sections, details, and ventilator attachments to curbs and curb attachments to roof structure.

C. Welding certificates.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain ventilators through one source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

B. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

C. Product Options: Drawings indicate size, profiles and dimensional requirements of intake and relief ventilators and are based on the specific equipment indicated. Refer to Section “Product Requirements.”
   1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect’s approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

D. Welding: Qualify procedures and personnel according to the following:
   1. AWS D1.2, “Structural Welding Code-Aluminum.”

2. AWS D1.3, “Structural Welding Code-Sheet Steel.”

1.6 COORDINATION

A. Coordinate installation of roof curbs and roof penetrations. These items are specified in Section "Roof Accessories."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 MATERIALS

A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T5 or T-52.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), Alloy 3003 or 5005 with temper as required for forming or as otherwise recommended by metal producer for required finish.

C. Galvanized-Steel Sheet: ASTM A 653/A 653M, G90 (Z275) zinc coating, mill phosphatized.

D. Stainless-Steel Sheet: ASTM A 666, Type 304, with No. 4 finish.

E. Fasteners: Same basic metal and alloy as fastened metal or 300 Series stainless steel, unless otherwise indicated. Do not use metals that are incompatible with joined materials.
1. Use types and sizes to suit unit installation conditions.

F. Post-Installed Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed, for masonry, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.3 FABRICATION, GENERAL

A. Factory or shop fabricate intake and relief ventilators to minimize field splicing and assembly. Disassemble units to the minimum extent as necessary for shipping and handling. Clearly mark units for reassembly and coordinated installation.

B. Fabricate frames, including integral bases, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.

C. Fabricate units with closely fitted joints and exposed connections accurately located and secured.

D. Fabricate supports, anchorages, and accessories required for complete assembly.

E. Perform shop welding by AWS-certified procedures and personnel.

2.4 ROOF HOODS

A. Manufacturers:

1. Greenheck.
2. Loren Cook Company.

B. Factory or shop fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figures 5-6 and 5-7.

C. Materials: Aluminum sheet, minimum 0.063-inch- (1.6-mm-) thick base and 0.050-inch- (1.27-mm-) thick hood; suitably reinforced.

D. Roof Curbs: Galvanized-steel sheet; with mitered and welded comers: 1-1/2-inch- (40-mm-) thick, rigid fiberglass insulation adhered to inside walls; and 1-1/2-inch (40-mm) wood nailer. Size as required to fit roof opening and ventilator base.
1. Configuration: Self-flashing without a cant strip, with mounting flange.
2. Overall Height: 12 inches (300 mm).

E. Bird Screening: Aluminum, 1/2-inch- (12.7-mm-) square mesh, 0.063-inch (1.6-mm) wire.

F. Insect Screening: Aluminum, 18-by-16 (1.4-by-1.6-mm) mesh, 0.012-inch (0.30-mm) wire.

2.5 GOOSENECKS

A. Factory or shop fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 5-5; with a minimum of 0.052-inch- (1.3-mm-) thick, galvanized-steel sheet.

B. Roof Curbs: Galvanized-steel sheet; with mitered and welded comers: 1-1/2-inch (40-mm-) thick, rigid fiberglass insulation adhered to inside walls; and 1-1/2-inch (40-mm) wood nailer. Size as required to fit roof opening and ventilator base.
1. Configuration: Self-flashing without a cant strip, with mounting flange.
2. Overall Height: 12 inches (300 mm)

C. Bird Screening: Galvanized steel, 1/2-inch- (12.7-mm-) square mesh, 0.041-inch (1.04-mm) wire.

D. Insect Screening: Aluminum, 18-by-16 (1.4-by-1.6-mm) mesh, 0.012-inch (0.30-mm) wire.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install intake and relief ventilators level, plumb, and at indicated alignment with adjacent work.

B. Secure intake and relief ventilation to roof curbs with cadmium-plated hardware. Use concealed anchorages where possible.

C. Install goosenecks on curb base where throat size exceeds 9 by 9 inches (230 by 230 mm).

D. Install intake and relief ventilators with clearances for service and maintenance.

E. Install perimeter reveals and openings of uniform width for sealants and joint fillers as indicated.

F. Install concealed gaskets, flashings, joint fillers and insulation as installation progresses. Comply with Section “Joint Sealants” for sealants applied during installation.

G. Label intake and relief ventilators according to requirements specified in Specification Section “Mechanical Identification.”

H. Protect galvanized and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.

I. Repair finishes damaged by cutting, welding, soldering and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations and refinish entire unit or provide new units.

3.2 CONNECTIONS

A. Duct installation and connection requirements are specified in other Mechanical Sections. Drawings indicate general arrangement of ducts and duct accessories.

3.3 ADJUSTING

A. Adjust damper linkages for proper damper operation.

END OF SECTION 238560

SECTION 238561

AIR FILTERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes factory-fabricated air-filter devices and media used to remove particulate matter from air for HVAC applications.

1.3 SUBMITTALS

A. Product Data: Include dimensions; shipping, installed, and operating weights; required clearances and access; rated flow capacity, including initial and final pressure drop at rated airflow; efficiency and test method; fire classification; furnished specialties; and accessories for each model indicated.

B. Shop Drawings: Include plans, elevations, sections and details to illustrate component assemblies and attachments.
   1. Show filter rack assembly, dimensions, materials and methods of assembly of components.
   2. Include setting drawings, templates and requirements for installing anchor bolts and anchorages.
   3. Wiring Diagrams: Detail wiring for power, signal and control systems and differentiate between manufacturer-installed and field-installed wiring.

C. Maintenance Data: for each type of filter and rack to include in maintenance manuals specified in Division 1.

1.4 QUALITY ASSURANCE

A. Electronic Air Cleaners and Electrical Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100 by a testing agency acceptable to authorities having jurisdiction.

B. Comply with NFPA 90A and NFPA 90B.

C. ASHRAE Compliance: Comply with provisions of ASHRAE 52.1 for method of testing and rating air-filter units.

D. Comply with NFPA 70 for installing electrical components.

1.5 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. Complete a “minimum” of three (3) complete sets of “construction” filters consisting of standard commercial 2" thick throwaway type filters fiberglass media type filters equal to American Air Filter “5700" Industrial filters shall be provided, installed and maintained prior to initial equipment start up, through construction and until final acceptance of the facility for operation by the Owner.

C. One complete set of “permanent” filters (the filters indicated to be provided for “permanent installation in the filter racks, frames, etc. shall be installed, by the Contractor, at time of final acceptance of the

air handling units by the Owner. Provide and deliver to the Owner at the project site, one (1) additional complete set of “permanent” filters for each filter rack, frame, etc. Delivery shall occur prior to final acceptance of the air handling systems by the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
   1. Air Filters and Filter-Holding Systems:
      a. AAF International.
      b. Continental Air Filter Div.; NiCon Filter Corp.
      c. Farr Co.
      d. Flanders Filters, Inc.
   2. Filter Gages:
      a. Airguard Industries, Inc.
      b. Dwyer Instruments Inc.

2.2 DISPOSABLE PANEL FILTERS

A. Description: Factory-fabricated, viscous-coated, flat-panel type, disposable air filters with holding frames.

B. Media: Interlaced glass fibers sprayed with nonflammable adhesive.

C. Frame: Cardboard frame with perforated metal retainer.
   1. Frame: Galvanized steel with metal grid on outlet side, steel rod grid on inlet side, hinged, and with pull and retaining handles.
   2. Duct-Mounting Frames: Welded, galvanized steel with gaskets and fasteners and suitable for bolting together into built-up filter banks.

2.3 EXTENDED-SURFACE, DISPOSABLE PANEL FILTERS

A. Description: Factory-fabricated, dry, extended-surface filters with holding frames.

B. Media: Fibrous material formed into deep-V-shaped pleats and held by self-supporting wire grid.

C. Media and Media-Grid Frame: Galvanized steel.

D. Duct-Mounting Frames: Welded, galvanized steel with gaskets and fasteners, and suitable for bolting together into built-up filter banks.

2.4 EXTENDED-SURFACE, NONSUPPORTED-MEDIA FILTERS

A. Description: Factory-fabricated, dry, extended-surface, self-supporting filters with holding frames.
   1. Media: Fibrous material constructed so individual pleats are maintained in tapered form by flexible internal supports under rated-airflow conditions.
   2. Filter-Media Frame: Galvanized steel.
   3. Duct-Mounting Frames: Welded galvanized steel with gaskets and fasteners, and suitable for bolting together into built-up filter banks.

2.5 AIR HANDLING UNIT MANUFACTURER FRAMES

A. Refer to Air Handling Unit Specifications and Drawings for Filter Frames to be provided as part of the Air Handling Unit Equipment.

2.6 FRONT- AND REAR-ACCESS FILTER FRAMES

A. Framing System: Aluminum framing members with access for either upstream (front) or downstream (rear) filter servicing, cut to size and prepunched for assembly into modules. Vertically support filters prevent deflection of horizontal members without interfering with either filter installation or operation.

B. Prefilters: Incorporate a separate track, removable from front or back.

C. Sealing: Factory-installed, positive-sealing device for each row of filters to ensure seal between gasketed filter elements to prevent bypass of unfiltered air.

2.7 SIDE-SERVICE HOUSINGS

A. Description: Factory-assembled, side-service housings, constructed of galvanized steel, with flanges to connect to duct system.

B. Prefilters: Integral tracks to accommodate 2-inch50-mm disposable or washable filters.

C. Access Doors: Continuous gaskets on perimeter and positive-locking devices. Arrange so filter cartridges can be loaded from either access door.

D. Sealing: Incorporate positive-sealing gasket material on channels to seal top and bottom of filter cartridge frames to prevent bypass of unfiltered air.

2.8 FILTER GAGES

A. Description: Diaphragm type with dial and pointer in metal case, vent valves, black figures on white background, and front recalibration adjustment.
   1. Diameter: 4-1/2 inches.
   2. Range: 0- to 2.0-inch wg.

B. Manometer-Type Filter Gage: Molded plastic with epoxy-coated aluminum scale, logarithmic-curve tube gage with integral leveling gage, graduated to read from 0- to 3.0-inch wg, and accurate within 3 percent of full scale range.

C. Accessories: Static-pressure tips, tubing, gage connections, and mounting bucket.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install filter frames according to manufacturer's written instructions.

B. Position each filter unit with clearance for normal service and maintenance. Anchor filter holding frames to substrate.

C. Install filters in position to prevent passage of unfiltered air.

D. Install filter gage for each filter bank.

E. Install filter gage static-pressure tips upstream and downstream from filters to measure pressure drop through filter. Mount filter gages on outside of filter housing or filter plenum in an accessible position. Adjust and level inclined gages.

F. Coordinate filter installations with duct and air-handling unit installations.

G. Electrical wiring and connections are specified in Electrical Sections.

H. Ground equipment.
   1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.2 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components, filter and filter-frame installation, and electrical wiring. Report results in writing.

B. Operate automatic roll filters to demonstrate compliance with requirements. Test for leakage of unfiltered air while system is operating. Correct malfunctioning units, then retest to demonstrate compliance. Remove and replace units that cannot be corrected with new units and retest.

3.3 CLEANING

A. After completing system installation and testing, adjusting, and balancing air-handling and air-distribution systems, clean filter housings and install new filter media.

END OF SECTION 238561

SECTION 260005

ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of selected portions of building or structure.
   2. Demolition and removal of selected site elements.
   3. Salvage of existing items to be reused or recycled.

B. Related Sections include the following:
   1. Division 1 Section “Summary” for use of premises, phasing, and Owner-occupancy requirements.
   2. Division 1 Section “Photographic Documentation” for preconstruction photographs taken before selective demolition operations.
   3. Division 1 Section “Temporary Facilities and Controls” for temporary construction and environmental-protection measures for selective demolition operations.
   4. Division 1 Section “Construction Waste Management and Disposal” for disposal of demolished materials.
   5. Division 1 Section “Cutting and Patching” for cutting and patching procedures.
   6. Division 2 Section “Building Demolition” for demolition of entire buildings, structures, and site improvements.
   7. Division 31 Section 31 10 00 “Site Clearing” for site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

A. Remove or Demolish: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner cleaned, packaged, and ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner’s property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.
   1. Coordinate with Owner’s representative, who will establish special procedures for removal and salvage.

1.5 SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shut-off, capping, and continuation of utility services.
   4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
   5. Means of protection for items to remain and items in path of waste removal from building.

B. Inventory: After selective demolition is complete, submit a list of items that have been salvaged.

C. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
   1. Comply with submittal requirements in Division 1 Section "Construction Waste Management and Disposal."
   2. Dispose of ballasts and lamps in accordance with current EPA Standards.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI A10.6 and NFPA 241.

C. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   5. Review areas where existing construction is to remain and requires protection.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is unknown whether hazardous materials will be encountered in the Work.
   1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Trace circuits feeding existing to-remain portions of the building. Do not demolish circuits in these areas. If circuits are in both “to remain” and “to be removed” areas, demolish back to nearest to-remain J-Box.

F. Provide to the Engineer a diagram and index of circuits traced in the “to remain” areas.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
   1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section “Summary.”

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
      a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Division 1 Section “Temporary Facilities and Controls.”

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
   3. Maintain adequate ventilation when using cutting torches.
   4. Dispose of demolished items and materials promptly.

B. Removed and Salvaged items:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner’s storage area designated by Owner.
   5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition [and cleaned] and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner’s property, remove demolished materials from Project site and legally dispose of them in an EPA- approved landfill.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner’s property and legally dispose of them.

END OF SECTION 260005

SECTION 260015

GENERAL CONDITIONS FOR ALL ELECTRICAL WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including Conditions of the Contract (General and Supplementary Conditions) and Division 1 specification sections, apply to work of this section.

B. The requirements of this section apply to all sections of electrical, signal, and life safety, and all sections that are installed by the electrical contractor to include electrical work done under the mechanical contractor.

1.2 DESCRIPTION OF WORK

A. This section covers the general provisions of the electrical specifications applicable to the following systems:
   1. Electrical power and lighting to include generators, UPS Systems, and passive electrical generating equipment (solar).
   2. All Special Systems (fire alarm, security, telephone, data, television, and annunciators associated with power).
   3. Control wiring associated with electrical or mechanical equipment.

B. The use of the word “electrical” in any specification contained within the electrical, signal, or life safety division sections shall include all aspects of each systems complete install. This shall be extended to mechanical or plumbing signal systems.

C. The use of the word “life safety” shall refer to all fire alarm, fire protection, and mass notification systems installed by the electrical contractor.

D. The use of the word “mechanical” shall refer to both mechanical and plumbing.

E. The use of the word “pipe” shall refer to all electrical raceway.

1.3 DRAWINGS

A. These specifications are accompanied by drawings of the building and details of the installations showing the locations of equipment, lighting, panels, etc. The drawings and these specifications are complementary to each other, and what is called for by one shall be as binding as if called for by both.

B. Drawings and specification conflicts shall be identified as early as possible to ensure conflict resolution prior to installation. The contractor shall not install any equipment with known conflicts or pending information requests. The contractor shall contact the Engineer of Record or their representative for information clarification prior to installing any item that is in question. The contractor shall not install any equipment that is not consistent with the manufacturers approved installation instructions unless directed by the engineer.

C. In all cases all installations shall be at least in accordance with all the approved codes and their local amendments. The drawings and specifications may exceed local code allowances and the most stringent applies. The existence or allowance of a practice or product by code does not supersede requirements of the drawings and specifications. In other words, just because it is allowed by code does not mean that it is allowed on this project.

D. If any departures from the drawings are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted to the Owner's Representative for approval. No departures shall be made without prior written approval by the Owner's Representative.

E. There are intricacies of construction which are impractical to specify or indicate in detail; however, in such cases, the current rules of good practice and applicable specifications shall govern. In all cases the requirements specified in the NEC and local jurisdiction shall be followed.

F. It is the Contractor's responsibility to properly use all information found on the Architectural, Structural, Mechanical, and Electrical drawings and applicable shop drawings where such information affects his work. The contractor shall review the entire construction document set both prior to bid and construction.

G. All dimensional information related to new structures shall be taken from the appropriate drawings. All dimensional information relative to existing facilities shall be taken from actual measurements made by the Contractor on the site.

H. Any duplicate circuiting listed on the drawings shall be bid as multiple circuits with the intention of the next available circuit and breaker to be used. The contractor shall bring this to the attention of the engineer for clarification and updating the drawings. The new circuit numbers shall be annotated on both the panel schedules and the record drawings. The contractor is not required to follow the exact circuit numbers on the panel schedules (balancing phases, wiring convenience, or conduit routing installation), however, the contractor is responsible for keeping the panel schedules accurate and up to date in addition to ensuring the circuit numbers are identified correctly.

I. Any installation that is not in compliance with these requirements shall be corrected at the contractors cost and responsibility.

1.4 BIDDING

A. The contractor is responsible for bidding complete and working systems. In the event that some part of the system is not included in the construction document or the specifications and it is a necessary part of the system to work properly, the contractor shall include that work as part of the bid amount. This includes, but not limited to:
   1. Power for equipment shown on the drawings. Examples include, but are not limited to:
      a. Equipment Panels
      b. Controllers
      c. Electronic Devices
      d. Mechanical Equipment
      e. Plumbing Equipment
   2. Cabling to communicate with the head end equipment. Examples include, but are not limited to:
      a. Generator to Annunciator
      b. Generator and ATS
      c. Security
      d. Access Control
      e. Switching
      f. Equipment starters and the switching locations
      g. Monitoring equipment

B. The contractor is not responsible for interpreting additional accessory options that are not included in the drawings or specifications or equipment that is not shown or indicated as part of the entire contract documents or specifications.

C. The contractor shall review the entire set of specifications and contract documents for all equipment and connections requiring electrical work.

D. Equipment Substitutions or Proposed Equivalents:

1. Contractor shall submit proposed substitutions or equivalents to the Architect or engineer during the bidding process prior to any final dates for questions as indicated on the bid forms or RFP's and provide a reasonable time to complete to comparison. All changes to the documents indicated a deviation from the specifications or drawings shall be part of the addenda process or written notification from the engineer of record, architect, owner, or a designated representative. Reasonable time for review is minimum one working week. The contractor shall retain the written notification of approval (if not published in an addenda) for purposes of future verification.
2. The contractor is responsible for providing full comparison information for the products to be substituted. Incomplete information is subject to immediate rejection.
3. Bids taken for equipment that is not approved is under the contractor's own risk. Should the equipment be rejected under the post bid submittal process, the contractor is responsible for providing the specified equipment at no cost to the owner.
4. Under no circumstances should the contractor accept bids for non-specified equipment from vendors who do not have prior approval or "speculate" that it will be approved. This is subject to immediate rejection and the specified equipment shall be required to be installed.
5. No response from the architect, owner, or engineer shall not be considered an approval.

1.5 CONSTRUCTION REQUIREMENTS

A. The architectural, structural, and electrical plans and specifications and other pertinent documents issued by the Architect are a part of these specifications and the accompanying electrical drawings and shall be complied with in every respect. All the above is included in the Contract Documents and shall be examined by all bidders. Failure to comply shall not relieve the Contractor of responsibility or be used as a basis for additional compensation because architectural, structural, or mechanical details were not included in the electrical drawings.

B. It is the intent of the Contract Documents to provide an installation complete in every respect. In the event that additional details or special construction may be required for work indicated or specified in this section or work specified in other sections, it shall be the responsibility of the Contractor to provide same as well as to provide material and equipment usually furnished with such systems or required to complete the installation, whether mentioned or not.

C. The Contractor shall be responsible for fitting his material and apparatus into the building and shall carefully lay out his work at the site to conform to the structural conditions, to avoid all obstructions, to comply with Codes, to facilitate the work of other trades, to conform to the details of the installation supplied by the manufacturer of the equipment to be installed, and thereby to provide an integrated satisfactory operating installation.

D. The mechanical, electrical, and associated drawings are necessarily diagrammatic in character and do not show every connection in detail or every pipe or conduit in its exact location. These details are subject to the requirements of ordinances and also structural and architectural conditions. It shall be the contractor's responsibility to coordinate with other disciplines to facilitate their equipment installation.

E. The Contractor shall carefully investigate structural and finish conditions and shall coordinate the separate trades in order to avoid interference between the various phases of work. Work shall be laid out so that it will be concealed in furred chases and above suspended ceilings, etc. in finished portions of the building, unless specifically noted to be exposed. Work shall be installed to avoid crippling of structural members; therefore, inserts to accommodate hangers shall be set before concrete is poured, and proper openings through floor, walls, beams, etc. shall be provided as hereinafter specified or as otherwise indicated or required. All work shall be installed parallel or perpendicular to the lines of the building unless otherwise noted.

F. Conduit and equipment are generally intended to be installed true and square to the building construction and located as high as possible against the structure in a neat and workmanlike manner. The plans do not show all required offsets, elbows, and other location details. Work shall be

concealed in all finished areas. Conduit is intended to be installed with factory fittings or bent in a professional, workmanlike manner.

G. All parts of equipment requiring adjustment shall be easily accessible. Equipment shall be so located and installed as to permit convenient and safe maintenance and future replacement. The trade furnishing the equipment shall be responsible for notifying the Contractor, who shall notify the Owner's Representative prior to ordering same in the event that equipment specified and/or proposed is incompatible with this requirement.

H. Location of Lighting and Outlets in Rooms:
   1. All lighting, plumbing, acoustical tile, modular lighting outlets, diffusers, sprinkler heads, grilles, registers, and other devices shall be referenced to coordinated, established data points and shall be located to present symmetrical arrangements with these points and to facilitate the proper arrangements of acoustical tile panels and other similar panels with respect to the mechanical outlets and electrical lighting and devices. Those mechanical and electrical outlets shall be referenced to such features as wall and ceiling furring's, balanced border widths, masonry joints, etc. Outlets in acoustical tile shall occur symmetrically in tile joints or in the centers of whole tiles. The final determination of the exact location of each outlet and the arrangements to be followed shall be acceptable to the Owner's Representative.
   2. The drawings show diagrammatically the locations of the various outlets and apparatus. Exact locations of these outlets and apparatus shall be determined by reference to the general plans and to all detail drawings, equipment drawings, roughing-in drawings, etc. by measurements at the building, and in cooperation with the other trades. The Owner reserves the right to make any reasonable change in location of any outlet or apparatus before installation, without additional cost to the Owner or the Architect. Contractor shall coordinate work with architectural reflective ceiling plan.

I. The Contractor, by submitting a bid on this work, sets forth that he has the necessary technical training and ability, and that he will install his work in a satisfactory and workmanlike manner which is up to the best standards of the trade, complete and in good working order. If any of the requirements of the plans and specifications are impossible of performance, or if the installation when made in accordance with such requirements will not perform satisfactorily, he shall report same to the Owner's Representative for correction promptly after discovery of the discrepancy.

J. No extra compensation will be allowed for extra work or change caused by failure to comply with the above requirements.

1.6 JOB CONDITIONS

A. Submittal of bid implies bidder has read paragraphs of the specifications and will be bound by their conditions.

B. Contractor Qualifications: A minimum of five years' experience installing commercial electrical power lighting and special systems, similar to those described in these specifications, and make available at the owner or engineer's request a list of five previous projects including name of project and contact person names and phone numbers as a separate document in addition to the bid or proposal submitted.

C. Contractor must be licensed and hold a current contracting license that has been valid for a minimum of five years in the local State.

D. Contractor must be able to bond work for performance of work being bid and provide a written statement from the bonding agency proposed to be used for this project as a separate document in addition to the bid or proposal submitted. The bonding agency proposed to be used shall have a Best's insurance rating of A or A+.

1.7 INSPECTION OF THE SITE

A. The Contractor shall visit the site, verifying all existing items indicated on drawings and/or specified, and familiarize himself with the existing work conditions, hazards, grades, actual formations, soil conditions, structures, utilities, equipment, systems, facilities, and local requirements. The submission of bids shall be deemed evidence of such visits. All proposals shall take these existing conditions into consideration, and the lack of specific information shall not relieve the Contractor of any responsibility.

1.8 PERMITS, UTILITY CONNECTIONS, AND INSPECTIONS

A. Fees and Costs: The contractor shall obtain and pay for all permits, utility connections, utility extensions, and/or relocations and pay all costs required by the utility, including inspection fees, for all work included therein.

B. Compliance: The Contractor shall comply in every respect with all requirements of local inspection departments, Board of Fire Underwriters, local ordinances and codes, and utility company requirements. In no case does this relieve the Contractor of the responsibility of complying with these specifications and drawings where specified conditions are of a higher quality than the requirements of the above-specified offices. Where requirements of the specifications and drawings are below the requirements of the above offices having jurisdiction, the Contractor shall make installations in compliance with the requirements of the above offices.

C. Utilities: The Contractor shall check with the various utility companies involved in this project and shall provide complete in all respects the required utility relocations, extensions, modifications, and/or changes. Contractor shall verify the location of all existing utilities with the applicable Utility Company. The Contractor shall be responsible for all damages to existing utilities caused by his construction work, whether indicated on drawings or not, and repair all damage to existing utilities as acceptable to the Utility Company concerned.

D. Utility Services:
   1. Power for the building service shall be obtained from local utility service. Contractor shall coordinate with the local utility for shutdowns and transformer installations. Contractor shall coordinate underground feeders with other underground piping and mark his conduit clearly. Contractor shall install feeders to the building transformer in accordance with utility company requirements.
   2. Contractor shall coordinate meter location and provide access in accordance with local utility requirements.
   3. Transformer and ductbank rough-ins shall be in accordance with Utility provider requirements.

E. Contractor Temporary Power: The contractor shall obtain temporary power in their name, from the local utility for the construction trailer and any equipment needed to perform his work. The contractor shall be responsible for the installation and removal of the temporary service at the conclusion of the project.

F. Certification: Prior to final acceptance, the Contractor shall furnish a certificate of acceptance from the inspection departments having jurisdiction over the work for any and all work installed under this Contract. Any additional labor costs incurred as a result of a substitution shall be the Contractor's responsibility.

1.9 EXISTING FACILITIES

A. The Contractor shall be responsible for loss or damage to the existing facilities caused by him and his workmen and shall be responsible for repairing or replacing such loss or damage. The Contractor shall send proper notices, make necessary arrangements, and perform other services required for the care, protection, and in-service maintenance of all electrical and special systems for the new and existing facilities. The Contractor shall erect temporary barricades, with necessary safety devices, as required to protect personnel from injury, removing all such temporary protection upon completion of

the work. Barricades shall clearly indicate with signage that which they are protecting. Contractor shall observe all OSHA rules.

B. The Contractor shall provide temporary or new services to all existing facilities as required to maintain their proper operation when normal services are disrupted as a result of the work being accomplished under this project.

C. Where existing construction is removed to provide working and extension access to existing utilities, Contractor shall remove doors, piping, conduit, outlet boxes, wiring, light fixtures, and equipment, etc. to provide this access and shall reinstall same upon completion of work in the areas affected.

D. Where partitions, walls, floors, or ceilings of existing construction are indicated to be removed, all Contractors shall remove and reinstall in locations approved by the Architect/Engineer all devices required for the operation of the various systems installed in the existing construction. This is to include but is not limited to temperature controls system devices, electrical switches, relays, fixtures, piping, conduit, etc.

E. Outages of services as required by the new installation will be permitted but only at a time approved by the Owner. The Contractor shall allow the Owner two weeks in order to schedule required outages. The time allowed for outages will not be during normal working hours unless otherwise approved by the Owner. All costs of outages, including overtime charges, shall be included in the contract amount. Unless otherwise scheduled by the Owner, planned shutdowns of the existing facilities shall occur between 6 p.m. Friday through 5 am Monday. The existing building shall be ready for morning start-up by 5 am Monday.

1.10 DEMOLITION AND RELOCATION

A. The Contractor shall modify, remove, and/or relocate all materials and items so indicated on the drawings or required by the installation of new facilities. All removals and/or dismantling shall be conducted in a manner as to produce maximum salvage. Salvage materials shall remain the property of the Owner and shall be delivered to such destination or otherwise disposed of as directed by the Owner. Materials and/or items scheduled for relocation and which are damaged during dismantling or reassembly operations shall be repaired and restored to good operative condition. The Contractor may, at his discretion, and upon the approval of the Owner, substitute new materials and/or items of like design and quality in lieu of materials and/or items to be relocated.

B. All items which are to be relocated shall be carefully removed in reverse to original assembly or placement and protected until relocated. The Contractor shall clean and repair and provide all new materials, fittings, and appurtenances required to complete the relocations and to restore to good operative order. All relocations shall be performed by workmen skilled in the work and in accordance with standard practice of the trades involved.

C. When items scheduled for relocation and/or reuse are found to be in damaged condition before work has been started on dismantling, the Contractor shall call the attention of the Owner to such items and receive further instructions before removal. Items damaged in repositioning operations are the Contractor’s responsibility and shall be repaired or replaced by the Contractor as approved by the Owner, at no additional cost to the Owner.

D. Service lines and wiring to items to be removed, salvaged, or relocated shall be removed to points indicated on the drawings, specified, or acceptable to the Owner. Service lines and wiring not scheduled for reuse shall be removed to the points at which reuse is to be continued or service is to remain. Such services shall be sealed, capped, or otherwise tied off or disconnected in a safe manner acceptable to the Owner. All disconnections or connections into the existing facilities shall be done in such a manner as to result in minimum interruption of services to adjacent occupied areas. Services to existing areas or facilities which must remain in operation during the construction period shall not be interrupted without prior specific approval of the Owner as hereinbefore specified.

1.11 SUBMITTAL DATA

A. General: As soon as practical and within 30 days after the date of award of contract and before purchasing or starting installation of any materials or equipment, the Contractor prepare or cause to be prepared shop drawings, product data, materials and equipment lists, diagrams, data, samples, and other submittals as required by the contract documents, hereinafter referred to as "Submittal Data." The Contractor shall review and approve all submittal data for compliance with the contract documents, manufacturer's recommendations, adequacy, clearances, code compliance, safety, and coordination with associated work.

B. The Contractor shall submit approved submittal data to the Owner's Representative for review and comment as to general conformance with the design concept and general compliance with information given in the contract documents. Owner's Representative's review shall not include review of quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with other trades or work, or construction safety and precautions, all of which are the sole responsibility of the Contractor. The reviewers shall make every effort to "catch" discrepancies and identify these to the contractor prior to ordering equipment. However, it shall remain the contractor's responsibility to order and install the equipment as listed in the drawings and specifications. At the owner's representative's discretion a detailed submittal may be required.

C. Substitutions shall be clearly identified as such in the submittal by a cover sheet indicating that items are different from what is specified or scheduled. It shall be the contractor responsibility to provide complete substitution information so an accurate comparison can be made.

D. Detail Submittals: Materials and equipment requiring detailed submittal data shall be submitted with sufficient data to indicate that all requirements of the specifications have been met and samples shall be furnished when requested. All manufacturer's data used as part of the submittal shall have all non-applicable features crossed out or deleted in a manner that will clearly indicate exactly what is to be furnished. The detailed submittals shall be accompanied by the same number of sets of pictorial and descriptive data derived from the manufacturer's catalogs and sales literature or incorporated in the shop drawings. The Contractor may provide a detailed submittal on any item even though not required by the Owner's Representative.

E. The Engineer's review of Shop Drawings and Brochures shall not relieve the Contractor of the responsibility for dimensions, errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the Engineer's noting some errors but overlooking others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the submittal data review.

F. The Contractor shall clearly and specifically identify and call to the attention of the Owner's Representative any deviation from the contract documents for which Owner acceptance is desired. The responsibility for such a deviation accepted by the Owner shall remain with the Contractor.

G. Timeliness: The burden of timeliness in the complete cycle of submittal data is on the Contractor. The Contractor shall allow a minimum of four (4) weeks' time frame for the submittal cycle of each submission by the Owner's Representative. The Contractor is responsible for allowing sufficient time in the construction schedule to cover the aforementioned cycles of data processing, including time for all re-submission cycles on non-conforming materials, equipment, etc. covered by the data submitted. Construction delays and/or lack of timeliness in the above regard are the responsibility of the Contractor and will not justify any request for scheduled construction time extensions or extra compensation.

H. Work performed in accordance with approved submittal data that is not in accordance with the Contract Documents and did not have the specific acceptance of the Owner's Representative shall be replaced at Contractor's cost.

I. Submittals shall be provided in the following format:

1. The submittal brochures shall be in pdf format. The first page shall be titled “ELECTRICAL SUBMITTAL INFORMATION” and shall list the name and location of project, the Owner, the Engineer(s), the General Contractor, and the Subcontractors installing equipment represented in the brochure.
2. A table of contents will follow the first page and shall list all of the sections contained in the specification manual. Each section will be tabbed and will include its’ respective brochures. All brochures will be three-hole punched and folded (if required). Each submittal section will correspond to the appropriate specification section number.
3. Provide submittal data for all materials to be used on this project as indicated in each specification manual section.
4. Brochures submitted shall contain only information which is relevant to the particular equipment or materials to be furnished. Do not submit catalogs that describe several different items other than those items to be used unless all irrelevant information is marked out or relevant information is clearly marked.
5. Brochures: Brochures submitted to the Engineer shall be published by the Manufacturers and shall contain complete and detailed engineering and dimensional information to show that the equipment will fit into the allotted space.
6. Any submittal that is disapproved must be resubmitted within two (2) weeks following notification of such disapproval. If no satisfactory material is submitted within the two-week period, the Engineer reserves the right to require the Contractor to furnish items exactly as described in the Contract Documents.
7. No allowances will be made for submittals which are not made in a timely fashion or which are turned down because they do not meet the specifications. Should delivery problems arise due to the above, affecting the completion time of the project, the Contractor will furnish and install acceptable alternates until the proper materials arrive and then replace the alternate materials with the approved materials, all at no cost to the Owner, Architect, or Engineer. If the Contractor is not able to furnish an acceptable alternate until the proper materials arrive, he will assume all costs for furnishing and installing all alternates as directed by the Engineer.
8. Submittal shall have the certification information as listed hereafter.
9. Shop Drawings:
    a. All shop drawings shall have the certification as listed hereafter.
    b. Each Shop Drawing shall indicate in the lower right hand corner and each Brochure shall indicate on the front cover the following: Title of the Sheet or Brochure; name and location of the building; names of the Engineer, Contractor, Manufacturer, Supplier, Vendor, etc., the date of submittal; and the date of each correction and revision. So far as is practical, each Shop Drawing and/or Brochure shall bear a cross-reference note to the sheet number or numbers of the Contract Drawings and Specifications showing the same work. Shop Drawings shall be prepared as follows:
        1) Shop Drawings: Drawings shall be newly prepared and not reproduced from the Contract Documents, drawn to a scale that can be easily read and shall contain sufficient plans, elevations, sections, and isometrics to describe clearly the items in question. Drawings shall be prepared by a draftsman skilled in this type of work. All equipment layouts and similar Shop Drawings shall be drawn to at least ⅛-inch = 1'-0" scale.
        2) All Shop Drawings shall indicate the equipment actually purchased. The elevation, location, support points, load imposed on the structure at support and anchor points, shall be indicated. All beam penetrations and slab penetrations shall be indicated and sized and shall be coordinated. All Design Drawing space allocations shall be maintained, such as ceiling height, chase walls, equipment room size, etc., unless proper written authorization is required from the Engineer to change them. All associated equipment shall be coordinated and clearly shown on the Shop Drawings.
10. Submittal data for each section must be complete. Partial submittals, or submittals not in the specified format, will be rejected and returned to the Contractor without further review.

J. All equipment installed on this project shall have **local (within 125 miles)** representation, local factory-authorized service, and a local stock of repair parts. This requirement is essential and will be

strictly reviewed by the Owner's Representative prior to concurrence with the Contractor's approval for all submittals covered by electrical division sections.

K. Physical Size of Equipment: Space is critical; therefore, equipment of larger sizes than shown, even though of approved manufacturer, will not be acceptable unless it can be demonstrated that ample space exists for proper installation, operation, and maintenance.

L. These paragraphs related to electrical divisions submittal data rescind, amend, and supersede any provisions to the contrary contained in the Project Manual.

1.12 CERTIFICATION OF SUBMITTAL DATA

A. The Contractor shall provide the following certification with all submittal data furnished to the Owner's Representative for review and comment.

Project Title:

Description of Submittal Data:

This is to certify that the above-described submittal data has been reviewed and is approved for compliance with the Contract Documents, manufacturer's recommendation, adequacy, clearances, code compliance, safety, and coordination with other trades and/or work except as follows: (list "none" or itemize and explain). In addition, the Contractor shall submit to the Owner's Representative a signed statement from each representative certifying as follows:

EXCEPTIONS:

"I certify that the materials and/or equipment listed below have been personally inspected by the undersigned authorized manufacturer's representative and is properly installed and operating in accordance with the manufacturer's recommendations and are asbestos free."

_____

Name and Company

1.13 ACCEPTANCE OF MATERIALS AND EQUIPMENT

A. Owner's Manual: After the submittals have been accepted the Contractor is requested to include a minimum of three (3) additional copies for insertion in the project's Owner's Manuals at the completion of the project.

B. **NOTICE: The Contractor is responsible for providing materials and equipment that conform to the requirements of the project manual in every respect unless a deviation has been "accepted" in writing. Removal of any nonconforming materials and equipment and the replacement with conforming materials and equipment shall be at the Contractor's sole expense, regardless of when nonconformance was discovered. If the owner or owner's representative elects to keep the equipment it shall be contractors responsibility to provide any additional connections or services required to make the equipment function as specified or required by the manufacturer. The contractor shall coordinate with other subs for any different material requirements (wire size, breakers, cooling, mounting requirements, etc.).**

C. Approval of materials and equipment shall be based on manufacturer's published data and shall be tentatively subject to the submission of complete shop drawings which comply with the contract documents. Approval is also dependent upon the existence of adequate and acceptable clearances for entry, servicing, and maintenance.

D. Approval of materials and equipment under this provision shall not be construed as authorizing any deviations from the specifications, unless the attention of the Owner's Representative has been directed in writing to the specific deviations. Data submitted shall not contain unrelated information unless all pertinent information is properly identified.

1.14 SHOP DRAWINGS

A. As soon as practicable after the award of contract and approval of materials and equipment, but prior to installation, complete and detailed shop drawings of the following shall be submitted for review and comment:
   1. Equipment arrangements.
   2. Fire alarm system.
   3. Data drops.
   4. Security system.
   5. Equipment foundations.
   6. Factory-fabricated equipment and materials.
   7. Anchors.
   8. Control.
   9. Interlock.
   10. Switch gear configuration.
   11. Other details as directed by the Owners Representative. Composite drawings of areas requiring coordination between trades shall be provided and expedited to eliminate conflicts and to ensure maximum cooperation and work progress.

B. Work performed without benefit of reviewed and approved shop drawings will not be recommended for payment by the Engineer until such time as the shop drawings are submitted, reviewed, and approved. Any work performed without the benefit of reviewed and approved shop drawings may require removal, relocation, and/or replacement at the Contractors sole expense in order to resolve conflicts between the various systems and provide the performance specified.

C. All installation of equipment, fixtures, terminal devices, etc. shall be made in accordance with approved composite shop drawings. The Contractor shall modify installation and relocate installed work to provide code clearances, service access, and eliminate conflict with other systems.

D. Separate and submit shop drawings per building and floor. Do not combine buildings into one submittal.

1.15 SITE OBSERVATION

A. Site observation by the Architect, Engineer, and/or Owner's Representative is for the express purpose of verifying compliance by the Contractor with the contract documents, and shall not be construed as construction supervision nor indication of approval of the manner or location in which the work is being performed as being a safe practice or place.

1.16 SUPERVISION

A. In addition to the Superintendent required under the conditions of the contract, each subcontractor shall keep a competent superintendent or foreman on the job at all times.

B. It shall be the responsibility of each superintendent to study all plans and familiarize himself with the work to be done by other trades. He shall coordinate his work with other trades and, before material is fabricated or installed, make sure that his work will not cause an interference with another trade. Where interferences are encountered, they shall be resolved at the jobsite by the superintendents involved. Where interferences cannot be resolved without major changes to the plans, the matter shall be referred to the Owner's Representative for comments.

1.17 OPERATION PRIOR TO COMPLETION

A. When any piece of electrical equipment is operable and it is to the advantage of the Contractor to operate the equipment, he may do so, providing that he properly supervises the operation and has the written permission of the Owner's Representative to do so. The contractor shall energize the power distribution in a timely manner to facilitate completion of other trades work. Electrical lighting shall be energized after ceiling has been completed. New permanent fixtures shall not be used as temporary under any circumstances. The warranty period shall not commence, however, until such time as the equipment is operated for the beneficial use of the Owner or date of substantial completion, whichever occurs first.

B. Regardless of whether or not the equipment has or has not been operated, the Contractor shall properly clean the equipment, properly adjust, and complete all deficiency list items before final acceptance by the Owner. The date of acceptance and the start of the warranty may not be the same date.

1.18 MANUFACTURER'S RECOMMENDATIONS

A. The manufacturer's published directions shall be followed in the delivery, storage, protection, installation, piping, and wiring of all equipment and material. The Contractor shall promptly notify the Owner's Representative, in writing, of any conflict between the requirements of the contract documents and the manufacturer's directions and shall obtain the Owner's Representative's comments before proceeding with the work. Should the Contractor perform any such work that does not comply with the manufacturer's directions or applicable comments from the Owner's Representative, he shall bear all costs arising in connection with the correction of such deficiencies.

1.19 CHECKING AND TESTING MATERIALS AND/OR EQUIPMENT

A. Before final acceptance of the work, an authorized representative of the manufacturer of the installed materials and/or equipment shall personally inspect the installation and operation of his materials and/or equipment to determine that it is properly installed and in proper operating order. Testing and checking shall be accomplished during the course of the work where required by work being concealed, and at the completion of the work otherwise. In addition, the Contractor shall submit to the Owner's Representative a signed statement from each representative certifying as follows:

> "I certify that the materials and/or equipment listed below have been personally inspected by the undersigned authorized manufacturer's representative and is properly installed and operating in accordance with the manufacturer's recommendations and are asbestos free."

1.20 OPERATING AND MAINTENANCE INSTRUCTION

A. The Contractor shall prepare for the owner's manual hereinafter specified complete sets of operating and maintenance instruction's, control and interlock diagrams, manuals, parts lists, etc. for each item of equipment. These are to be assembled as hereinafter specified for owner's manual.

B. In addition, the Contractor shall provide the service of a competent engineer or a technician acceptable to the Owner's Representative to instruct a representative of the Owner in the complete and detailed operation of all equipment and systems. These instructions shall be provided for a period of sufficient duration to fully accomplish the desired results. Upon completion of these instructions, a letter of release will be required, acknowledged by the Owner, stating the dates of instruction and personnel to whom instructions were given.

C. Additional diagrams, operating instructions, etc. shall be provided as specified hereinafter in the other sections of these specifications.

1.21 MATERIAL AND EQUIPMENT SCHEDULES

A. Contractor shall refer to both drawings and specification for schedules. Where reference is made to items “scheduled on drawings” or “scheduled in specifications,” same shall include schedules contained in both the drawings and the specifications. The Contractor’s attention is directed to the various specification sections and drawings for schedules.

1.22 APPLICABLE CODES AND STANDARDS

A. The installation shall meet the minimum standards prescribed in the latest editions of the following listed codes and standards, which are made a part of these specifications, except as may be hereinafter specifically modified in these specifications and associated drawings.
   1. National Fire Protection Association Standards (NFPA):
      a. NFPA No. 10, Portable Fire Extinguishers
      b. NFPA No. 54, National Fuel and Gas Code
      c. NFPA No. 70, National Electrical Code
      d. NFPA No. 101, Life Safety Code
      e. NFPA No. 255, Method of Test of Surface Burning Characteristics of Building Materials
   2. American National Standards Institute (ANSI):
   3. American Society of Mechanical Engineers (ASME): Section IV, V, CSD-1
   4. American Society of Testing Materials (ASTM): All applicable manuals and standards.
   5. National Electrical Manufacturers’ Association (NEMA): All applicable manuals and standards.
   6. State Occupational Safety Act: All applicable safety standards.
   7. Occupational Safety and Health ACT (OSHA): National Sanitation Foundation, Standard No. 2
   8. Americans with Disabilities Act, 1990
   9. State jurisdiction Accessibility Standards
   10. American Gas Association (AGA)
   11. Underwriters Laboratories, Inc. (UL)
   12. Applicable State Building Codes (Uniform Building Codes, as amended):
   13. All County codes related to mechanical, electrical, plumbing, and system equipment; piping; conduit; wiring; etc. furnished and installed under these specifications.
   14. All City ordinances related to mechanical, electrical, plumbing, and systems and equipment; piping; conduit; wiring; etc. furnished and installed under these specifications.
   15. Refer to specification sections heretofore bound for additional codes and standards.

B. All materials and workmanship shall comply with all applicable city, state, and national codes, specifications, and industry standards. All materials shall be listed by the Underwriters Laboratories, Inc. as conforming to its standards and so labeled in every case where such a standard has been established for the particular type of material in question.

C. The contract documents are intended to comply with the aforementioned rules and regulations; however, some discrepancies may occur. Where such discrepancies occur, the Contractor shall immediately notify the Owner’s Representative in writing of said discrepancies and apply for an interpretation. Should the discovery and notification occur after the execution of a contract, any additional work required for compliance with said regulations shall be paid for as covered by Division 1 of these contract documents, providing no work or fabrication of materials has been accomplished in a manner of noncompliance. Should the Contractor fabricate and/or install materials and/or workmanship in such a manner that does not comply with the applicable codes, rules, and regulations, the Contractor who performed such work shall bear all costs arising in correcting these deficiencies to comply with said rules and regulations.

1.23 DEFINITIONS

A. Refer to the condition of the contract for Division 1 for additional requirements regarding definitions.

B. Where “as required” is used in these specifications or on the drawings, it shall mean “that situations exist that are not necessarily described in detail or indicated that may cause the Contractor certain complications in performing the work described or indicated. These complications entail the normal coordination activities expected of the Contractor where multiple trades are involved and new or

existing construction causes deviations to otherwise simplistic approaches to the work to be performed. The term shall not be interpreted to permit an option on the part of the Contractor to achieve the end result."

C. Where "and/or" is used in these specifications or on the drawings, it shall mean "that situations exist where either one or both conditions occur or are required and shall not be interpreted to permit an option on the part of the Contractor.

D. Unless specifically indicated otherwise elsewhere in these specifications or on the drawings the word "furnish" or any of its derivatives shall be understood to indicate the purchase, delivery, storage and protection of an item at the job site in a location and manner suitable for use by the recipient who will be responsible for installation of this item. The word "install" or any of its derivatives shall be understood to indicate taking receipt of an item, properly mounting it, and providing the related utilities (electrical, communication, etc.) for proper and complete operation of the item. Installation shall also include calibration, programming and operational testing of said item. The word "provide" or any of its derivatives shall be understood to indicate both furnishing and installing an item.

1.24 SUBSTANTIAL COMPLETION

A. Refer to Division 1 for additional requirements for substantial completion.

B. Substantial completion shall be defined as the level of project completion where the owner is ready to occupy the building. The contractor shall have ensured that all mechanical, electrical, plumbing, and building systems (elevators, automatic doors, hardware, security, etc.) are complete and in fully functional working order. This level of completion does not absolve the contractor from the requirements of final inspection or final acceptance. The contractor shall ensure there are no life safety issues unresolved with the project at the time of substantial completion.

C. All "punch" list items shall have been resolved or shall be identified as pending resolution. Items listed as unresolved shall be either pending information or direction from the owner or owner's representative or shall be awaiting parts or supplies that are "on order". The contractor at the owner's discretion shall produce documentation of the part or supply on order status.

1.25 FINAL INSPECTION

A. Refer to Division 1 for additional requirements for final inspection.

B. It shall be the responsibility of the Contractor to personally conduct a careful inspection, assuring himself that the work on the project is ready for final acceptance and developing his own "punchlists," before calling upon the Owner's Representative to make a final inspection. Failure of the Contractor to conduct such inspections and provide the Owner's Representative with a copy of his "punchlists" prior to the final inspection shall be adequate cause for the Owner's Representative to cancel any Contractor-requested final inspection.

C. In order not to delay final acceptance of the work, the Contractor shall conduct his own "final inspections" prior to requesting the Owner's Representative to "final" the project; will have all necessary bonds, guarantees, receipts, affidavits, etc. called for in the various articles of this specification prepared and signed in advance; and together with a letter of transmittal listing each paper included, shall deliver the same to the Owner's Representative at or before the time of said final inspection. The Contractor is cautioned to check over each bond, receipt, etc. before preparing same for submission to see that the terms check with the requirements of the specifications.

D. The final inspection will be made jointly by the Owner's Representative and the Owner.

1.26 REQUIREMENTS FOR FINAL ACCEPTANCE

A. Requirements for final acceptance shall include but not be limited to the Contractor accomplishing the following:
   1. Construction: Complete all construction.
   2. Deficiency Lists: Correct all deficiencies listed at time of Substantial Completion.
   3. Owner's Manual: Submit at least 30 days prior to final acceptance one (1) copy of the owner's manual for the Owner's Representative's review and comments. Following acceptance, prepare three (3) copies of bound and indexed owner's manual, to be delivered at the time of final acceptance, which shall include but not be limited to the following:
      a. System operating instructions.
      b. System control drawings.
      c. System interlock drawings.
      d. System maintenance instructions.
      e. Manufacturers', suppliers', and subcontractors' names, addresses, and telephone numbers, both local representatives and manufacturers' service headquarters.
      f. Equipment operating and maintenance instructions and parts lists.
      g. Manufacturers' certifications (see Checking and Testing Materials and/or Equipment, this section).
      h. Contractor's warranty.
      i. Acceptance certificates of authorities having jurisdiction.
      j. Log of all tests made during course of work.
      k. Owner's acknowledgment of receipt of instruction, enumerating items in owner's manual.
      l. List of manufacturers' guarantees executed by the Contractor.
      m. Owner's acknowledgment of items of equipment or accessories indicated or specified to be turned over to Owner.
   4. Instructions:
      a. Verbal, as herein specified.
      b. Posted, framed under glass or plastic laminated:
         1) System operating instructions.
         2) System control drawings.
         3) System interlock drawings.
   5. Record Drawings: Deliver the specified record drawings to the Owner's Representative.

1.27 RECORD DRAWINGS

A. The Contractor shall maintain a set of contract drawings at the job site on which he shall indicate the installed locations of all equipment, electrical lighting, data drops, fire alarm devices, PA system devices, security devices, outlets, and electrical feeders. These drawings shall be used for reference or construction and shall not leave the field office. Upon completion of the work, the Contractor shall obtain and pay for Mylar's and/or disks (if available as CAD files) of the contract drawings from the Owner's Representative and transfer the above information to these Mylar's to provide "Record Drawings." The above-mentioned prints and "Record Drawings" shall then be delivered to the Owner's Representative. Refer to paragraph entitled "Record "Drawings" of the Supplemental General Conditions.

1.28 ALLOWANCES

A. Refer to Division 1 for allowances.

1.29 ALTERNATE PROPOSALS

A. Alternate proposals are summarized in Division 1 and on the bid proposal form. Refer to all sections of the specifications and the drawings to determine the exact extent and scope of the various alternate proposals as each pertains to the work of the various trades.

1.30 WARRANTY

A. General: All work performed (including equipment and materials furnished) under the various sections of these specifications shall be 100% warranted, for a period of one (1) year from the date of substantial completion thereof, against defective materials, design, and unauthorized substitution. Upon receipt of note of failure of any part of the guaranteed equipment and/or facilities during the guaranty period, the affected part(s) or facilities shall be replaced promptly with new parts, etc. by and at the expense of the Contractor. Further, the Contractor shall properly obtain, execute, and forward any and all manufacturer's warranties on equipment furnished under the Contract. Refer to Division 1 for additional requirements.

B. Extended Period: The Contractor shall provide all extended time warranties available from the manufacturer of the equipment provided as standard at no additional cost. This includes all extended warranties where specified with certain equipment as directed in other sections of this Specification.

1.31 SPARE PARTS

A. Spare Parts Data: As soon as practicable after approval of materials and equipment and, if possible, not later than four months prior to the date of beneficial occupancy, the Contractor shall furnish spare parts data for each different item of equipment listed. The data shall include a complete list of parts and supplies with current unit prices and sources of supply, a list of parts and supplies that are either normally furnished at no extra cost with the purchase of the equipment or specified hereinafter to be furnished as part of the Contract, and a list of additional items recommended by the manufacturer to assure efficient operation for a period of 120 days at the particular installation. The foregoing shall not relieve the Contractor of any responsibilities under the warranty specified.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

A. All materials, unless otherwise specified, shall be current United States manufacture, new, free from all defects, and of the best quality. Foreign goods specifically approved for use by the Owner's Representative prior to bidding may be furnished.

B. Materials and equipment shall be installed in accordance with the manufacturer's recommendations and the best standard practice for the type of work involved. All work shall be executed by electricians skilled in their respective trades, and the installations shall present a neat, precise appearance.

C. The responsibility for the furnishing and intended installation of the proper electrical equipment and/or material as intended rests entirely upon the Contract. The Contractor shall request advice and supervisory assistance from the representative of specific manufacturers during the installation.

2.2 MATERIAL AND EQUIPMENT REQUIREMENTS

A. Manufacturer's Instructions: The manufacturer's published instructions shall be followed for preparing, assembling, installing, erecting, and cleaning manufacturer materials or equipment, unless otherwise indicated. The Contractor shall promptly notify the Owner's Representative in writing of any conflict between the requirements of the Contract Documents and the manufacturer's direction and shall obtain the clarification of the Owner's Representative before proceeding with the work. Should the Contractor perform any such work that does not comply with the manufacturer's directions or such clarification by the Owner's Representative, he shall bear all costs arising in connection with the correction of the deficiencies.

B. Storage at Site: The Contractor shall not receive material or equipment at the jobsite until there is suitable space provided to properly protect equipment from rust, drip, humidity, and dust damage from surrounding work. All new or relocated equipment shall be stored inside or protected from the

environment. Equipment that is not properly stored shall be replaced by the contractor at no cost to the owner.

C. Capacities shall be not less than those indicated and shall be such that no component or system becomes inoperative or is damaged because of startup or other overload conditions.

D. Conformance to Agency Requirements: Where materials or equipment are specified to be approved, listed, tested, or labeled by the Underwriters Laboratories, Inc., or constructed and/or tested in accordance with the standards as listed in the NEC, the Contractor shall submit proof that the items furnished under this section of the specifications conform to such requirements. The label of the Underwriters Laboratories, Inc. applied to the item will be acceptable as sufficient evidence that the items conform to such requirements.

E. Nameplates: Each major component of equipment shall have the manufacturer's name, address, and model-identification number embossed on a plate securely attached to the item of equipment. All data on nameplates shall be legible at the time of Final Inspection. All equipment starters and disconnects shall be tagged with the equipment designated mark and circuit.

F. Prevention of Rust: Standard factory finish will be acceptable on equipment specified by model number otherwise surfaces of ferrous metal shall be given a rust-inhibiting coating. The treatment shall withstand 200 hours in salt-spray fog test, in accordance with Method 6061 of Federal Standard No. 141. Immediately after completion of the test, the specimen shall show no signs of wrinkling or cracking and no signs of rust creepage beyond 1/8 inch on either side of the scratch mark. Where rust inhibitor coating is specified hereinafter, any treatment that will pass the above test is acceptable unless a specific coating is specified, except that coal tar or asphalt-type coatings will not be acceptable unless so stated for a specific item. Where steel is specified to be hot-dip galvanized, mill-galvanized sheet steel may be used provided all raw edges are painted with a zinc-pigmented paint conforming to Military Specification MIL-P-26915.

G. Protection of Connections: Switches, breaker handles, keys setscrews, handles and other parts not listed for normal occupied operation (light switches, etc.) shall be located accessible to but out of paths to prevent their accidental shutoff.

H. Verifications of Dimensions: The Contractor shall be responsible for the coordination and proper relation of his work to the building structure and to the work of all trades. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working conditions, to verify all dimensions in the field, and to advise the Owner's Representative of any discrepancy before performing any work. Adjustments to the work required in order to facilitate a coordinated installation shall be made at no additional cost to the Owner, Architect, or Engineer.

I. Standard Products: Materials and equipment to be provided shall be the standard catalog products of manufacturers regularly engaged in the manufacture of products conforming to these specifications and shall essentially duplicate materials and equipment that have been in satisfactory use at least two years.

2.3 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. No substitution of materials or equipment herein specified or called for on the drawings will be permitted, except by written permission of the Owner's Representative. Where several makes of equipment or material are mentioned, any item named may be bid upon provided it meets space, capacity specifications, finish, usage (switching, ballasts, similar operation), and looks and functions as what was specified.

B. Do not submit substitutions that do not match in whole what was specified or scheduled. Deviations from scheduled or specified items are installed at the contractor's risk and are subject to replacement if the owner/engineer deems the product different from the specified item.

C. If the specified item is no longer available, it is the contractors responsibility to contact the architect/engineer and notify that the item is not available and suggest a suitable substitution that matches in whole the form, function, and appearance of the scheduled or specified item.

D. Refer to Conditions of the Contract and Division 1 for additional requirements regarding substitutions.

2.4 FLAME SPREAD AND SMOKE DEVELOPED PROPERTIES OF MATERIALS

A. Plenum cable, conduit, insulation, equipment support and mounting hardware, tapes, adhesives, core materials, jackets, and other materials in concealed locations, including any above-ceiling area, shall have a flame spread rating not over 25 without evidence of continued progressive combustion and a smoke developed rating no higher than 50. Flame spread and smoke developed ratings shall be in accordance with NFPA Standard No. 255.

2.5 MOTORS

A. The Contractor shall provide all motors required for equipment supplied under each portion of the work. Motors shall be built in accordance with the latest ANSI, IEE, and NEMA standards, shall be fully coordinated with the equipment served, shall be of sizes and electrical characteristics scheduled.

2.6 STARTING EQUIPMENT

A. Each motor shall be provided with proper starting equipment. This equipment, unless hereinafter specified or scheduled to the contrary, shall be provided by the trade furnishing the motor. All motor starting equipment provided by any one trade shall be of the same manufacture unless such starting equipment is an integral part of the equipment on which the motor is mounted.

2.7 SLEEVES, INSERTS, AND FASTENINGS

A. General: Proper openings through floors, masonry walls, roofs, etc. for the passage of conduits shall be provided. All conduit through floors and walls must pass through sleeves, except conduit that is cast-in-place. Sleeves shall be set in new construction before concrete is poured, as cutting holes through any part of the concrete will not be permitted unless acceptable to the Owner's Representative.

B. Materials: Sleeves shall be of standard weight galvanized iron pipe, except heavy-gauge galvanized iron sleeves may be utilized in concrete pours where acceptable to the Owner's Representative for size and metal gauge. Sleeves in fittings, grade beams, and where pipes enter or leave the building or pass through concrete or masonry shall be Schedule 40 PVC along the pipe route from the underground installation to the insulating coupling installed above ground.

2.8 FOUNDATIONS

A. General: All special foundations and supports required for the proper installation of equipment and pipe shall be provided as hereinafter specified and under the section of the specifications covering the equipment, unless otherwise indicated on the drawings.

B. Concrete foundations for the support of equipment such as floor-mounted transformers, switchgear, equipment, etc. shall be not less than 5 inches high and 4 inches beyond the equipment, unless otherwise noted, and shall be poured in forms built of new dressed lumber. All corners of the foundations shall be neatly chamfered by means of sheet metal or triangular wood strips nailed to the form. Foundation bolts shall be placed in the forms when the concrete is poured, the bolts being correctly located by means of templates. Allow 1 inch below the equipment bases for alignment and grouting. Foundations for equipment located on the exterior of the building shall be provided as indicated. Foundations shall be constructed in accordance with approved shop drawings and shall be

reinforced with #4 bars at 12 inches on center both ways (minimum). Refer to Division 3: Concrete Work for materials, placement, etc. Coordinate with the equipment manufacturer for heavy (greater than 1000 pounds) pieces of equipment.

2.9 ACCESS DOORS

A. General: Provide wall, ceiling, or duct access doors for unrestricted access to all concealed items of electrical equipment.

B. Manufacturers shall be Inland-Milcor, Bilco, Miami Carey, or approved equal.

C. UL labeled when in fire-rated construction, one and one-half hour rating.

D. Equipment access doors shall be of sufficient size to remove/replace equipment and provide routine maintenance as necessary, unless otherwise noted. All doors shall have wedge-type latches except where cylinder locks are otherwise indicated or specified. Doors shall be set flush with adjacent finish surfaces. Exterior doors shall be provided with cylinder locks.

E. Access doors into ductwork shall be 14-gauge insulated galvanized steel with 16-gauge galvanized gasketed steel frame and cam-type locks. Access door shall be a minimum of 12" $\times$ 12" in size.

2.10 CONDITION OF MATERIALS

A. All materials required for the installation of the electrical systems shall be new and unused. Any material or equipment damaged in transit from the factory, during delivery to premises, while in storage on premises, while being erected and installed, or while being tested, until time of final acceptance, shall be replaced by this Contractor without extra cost to Owner.

PART 3 - EXECUTION

3.1 SPACE AND EQUIPMENT ARRANGEMENTS

A. The size of electrical equipment indicated on the drawings is based on the dimensions of a particular manufacturer. While other manufacturers will be acceptable, it is the responsibility of the Contractor to determine whether the equipment he proposes to furnish will fit in the space. Shop drawings shall be prepared when required by the Owner’s Representative to indicate a suitable arrangement.

B. All equipment shall be installed in a manner to permit access to all surfaces.

3.2 LARGE APPARATUS

A. Any large piece of apparatus which is to be installed in any space in the building, and which is too large to permit access through stairways, doorways, or shafts shall be brought to the job and placed in the space before the enclosing structure is completed. Following placement in the space, such apparatus shall be thoroughly, completely protected from damage as hereinafter specified.

3.3 HOISTING, SCAFFOLDING, AND TRANSPORTATION

A. Provide hoisting and scaffolding facilities as required to set materials and equipment in place.

3.4 PROTECTION

A. The Contractor shall take such precautions as may be necessary to properly protect all materials and equipment from damage from the time of delivery until the completion of work. This shall include the erection of all required temporary shelters and supports to adequately protect any items stored in the open on the site from the weather, the ground and surrounding work; the cribbing of any items above the floor of the construction; and the covering of items in the uncompleted building with tarpaulins or other protective covering. Failure on the part of the Contractor to comply with the above will be sufficient cause for the rejection of the items in question.

B. The Contractor shall protect existing facilities, the work of others, and the premises from any and all damages that may be made possible by the execution of work.

C. Equipment and materials shall be protected from rust both before and after installation. Any equipment or materials found in a rusty condition at the time of final inspection must be cleaned of rust and repainted as specified elsewhere in these specifications.

3.5 COOPERATION BETWEEN TRADES AND WITH OTHER CONTRACTORS

A. Each trade, subcontractor, and/or Contractor must work in harmony with the various trades, subcontractors, and/or Contractors on the job as may be required to facilitate the progress to the best advantage of the job as a whole. Each trade, subcontractor, and/or Contractor must pursue its work promptly and carefully so as not to delay the general progress of the job. This Contractor shall work in harmony with Contractors working under other contracts on the premises.

B. It shall be the responsibility of each trade to cooperate fully with the other trades on the job to help keep the jobsite in a clean and safe condition. At the end of each day's work, each trade shall properly store all of its tools, equipment, and materials and shall clean its debris from the job. Upon the completion of the job, each trade shall immediately remove all of its tools, equipment, any surplus materials, and all debris caused by its portion of the work.

3.6 PRECEDENCE OF MATERIALS

A. These specifications and the accompanying drawings are intended to cover systems which will not interfere with the structural design of the building, which will fit into the several available spaces, and which will ensure complete and satisfactory systems. Each subcontractor and/or trade shall be responsible for the proper fitting of his material and apparatus into the building.

B. The work of the various trades shall be performed in the most direct and workmanlike manner without hindering or handicapping the work of other trades. Piping interferences shall be handled by giving precedence to pipe lines which require a stated grade for proper operation. Where space requirements conflict, the following order or precedence shall, in general, be observed:
   1. Building lines.
   2. Structural members.
   3. Soil and drain piping.
   4. Condensate drains.
   5. Vent piping.
   6. Supply, return, and outside air ductwork.
   7. Exhaust ductwork.
   8. HVAC water and steam piping.
   9. Steam condensate piping.
   10. Fire protection piping.
   11. Natural gas piping.
   12. Domestic water (cold and hot).
   13. Refrigerant piping.
   14. Electrical conduit.

3.7 CONNECTIONS FOR OTHERS

A. This Contractor shall rough-in for and make all electrical connections to all fixtures, equipment, machinery, etc. provided by others in accordance with detailed roughing-in drawings provided by the equipment suppliers, by actual measurements of the equipment connections, or as detailed.

B. After the equipment is set in place, this Contractor shall make all final connections and shall provide all required conduit, fittings, whips, connectors, etc.

C. The Mechanical Contractors will set in place, ready for connection, all motors to be provided under their Contracts. The Mechanical Contractors will furnish and deliver all starter and control equipment not shown in motor control centers for any motors which they furnish. The Mechanical Contractor shall be responsible for the complete installation of all automatic temperature control systems, including wire, conduit, and interlocking connections.

D. The Electrical Contractor shall connect all motors and shall set in place all control devices, furnishing supports if and as necessary, and shall furnish and install all interconnecting line voltage wiring and make all connections ready for operation between motors, starters, and disconnect switches, as required. The Electrical Contractor shall furnish and install all motor control centers, including breakers, starters, etc. The Contractor shall refer to the Mechanical drawings and specifications for his scope of the connections to equipment furnished under these Contracts.

3.8 INSTALLATION METHODS

A. Where to Conceal: All conduits shall be concealed in chases, walls, furred spaces, below suspended floors, or above the ceilings of the building unless otherwise indicated. All concealed conduit shall be run in a professional manner, and parallel or perpendicular to the building lines.

B. Where to Expose: In mechanical rooms, only where necessary, conduit may be run exposed. All exposed conduit shall be run in the neatest, most inconspicuous manner, and parallel or perpendicular to the building lines. Conduit shall be bent in a manner as to run parallel to other conduits and not cross at angles.

C. Support: All conduit shall be adequately and properly supported from the building structure by means of hangers or clamps to walls as herein specified.

D. Maintaining Clearance: Where limited space is available above the ceilings and below concrete beams or other deep projections, conduit shall be sleeved through the projection where it crosses, rather than hung below them, in a manner to provide maximum above-floor clearance. Sleeves shall be as herein specified. Approval shall be obtained from the Owner’s Representative for each penetration.

E. All conduits, etc. shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. All conduits run exposed in machinery and equipment rooms shall be installed parallel to the building lines. Conduits in furred ceilings and in other concealed spaces may be run at angles to the construction but shall be neatly grouped and racked indicating good workmanship. All conduit openings shall be kept closed until the systems are closed with final connections.

F. Special Requirements:
   1. The Contractor shall study all construction documents and carefully lay out all work in advance of fabrication and erection in order to meet the requirements of the extremely limited spaces. Where conflicts occur, the Contractor shall meet with all involved trades and the Owner’s Representative and resolve the conflict prior to erection of any work in the area involved.
   2. All conduit not directly buried in the ground or installed outside shall be considered as “interior.”
   3. Prior to the installation of any ceiling material, gypsum, plaster, or acoustical board, the Contractor shall notify the Owner’s Representative so that arrangements can be made for an inspection of the above-ceiling area about to be “sealed off.” The Contractor shall give as

much advance notice as possible up to ten (10) working days, but in no case less than five (5) working days.

4. The purpose of this inspection is to verify the completeness and quality of the installation of the electrical systems and any other special above-ceiling systems, such as data, fire alarm, security. The ceiling supports (tee bar or lath) should be in place so that access panel and light fixture locations are identifiable and so that clearances and access provisions may be evaluated.
5. No ceiling material shall be installed until the deficiencies listed from this inspection have been corrected to the satisfaction of the Owner's Representative.

3.9 CUTTING AND PATCHING

A. General: Cut and patch walls, floors, etc. resulting from work in existing construction or where made necessary by failure to provide proper openings or recesses in new construction.

B. Methods of Cutting: Openings cut through concrete and masonry shall be made with masonry saws and/or core drills and at such locations acceptable to the Owner's Representative. Impact-type equipment will not be used except where specifically acceptable to the Owner's Representative. Openings in concrete for pipes, conduits, outlet boxes, etc. shall be core drilled to exact size. Determine location of embedded conduit and reinforcing bars prior to cutting.

C. Restoration: All openings shall be restored to "as-new" condition under the appropriate specification section for the materials involved, and shall match remaining surrounding materials and/or finishes.

D. Masonry: Where openings are cut through masonry walls, provide and install lintels or other structural supports to protect the remaining masonry. Adequate supports shall be provided during the cutting operation to prevent any damage to the masonry occasioned by the operation. All structural members, supports, etc. shall be of the proper size and shape, and shall be installed in a manner acceptable to the Owner's Representative.

E. Plaster: All mechanical work in area containing plaster shall be completed prior to the application of the finish plaster coat. Cutting of finish plaster coat will not be permitted.

F. Weakening: No cutting, boring, or excavating which will weaken the structure shall be undertaken.

3.10 SLEEVES, INSERTS, AND FASTENINGS

A. Sleeves: The minimum clearance between horizontal conduit and sleeve shall be ¼ inch, except that the minimum clearance shall be ½ inch where piping contacts the ground. Sleeves through floors shall extend ¾ inch above the floor; sleeves through walls and partitions shall be installed flush with exposed surfaces. Sleeves are not required for piping indicated to the cast-in-concrete slabs-on-fill.

B. Inserts: Suitable concrete inserts for conduit and equipment hangers shall be set and properly located for all conduit and equipment to be suspended from concrete construction.

C. Fasteners: Fastening of pipes, conduits, etc. in the building shall be as follows:
1. To wood members: by wood screws.
2. To masonry and concrete: by threaded metal inserts, metal expansion screws, or toggle bolts, whichever is appropriate for the particular type of masonry or concrete.
3. To steel: machine screws or welding (when specifically permitted or directed), or bolts.

D. Weatherproofing: The annular space between a conduit and its sleeve in exterior walls or through floor to below grade shall be filled with polyurethane foam rods 50% greater in diameter than the space as backing and fill material and made watertight with a permanent elastic polysulfide compound. Seal both surfaces of wall or floor with a fire-resistant sealant.

3.11 FLOOR AND CEILING PLATES

A. Except as otherwise noted, provide one-piece chrome-plated brass floor and ceiling plates (or escutcheons) around all pipes, conduits, etc. passing through walls, floors, or ceilings in any spaces, except underfloor and attic spaces. Plates shall be sized to fit snugly against the outside of the conduit. Plates will not be required for piping where sleeves extend ¾ of an inch above finish floor and are concealed. Plates shall be one piece.

3.12 FIRE AND SMOKE PARTITION, WALL, AND/OR FLOOR PENETRATIONS

A. Conduit passing through fire- or smoke-rated floors, partitions, walls, or other barriers within a UL-listed assembly which shall maintain the rating of the applicable wall, floor, partition, or barrier. Flexible conduit shall not be used in rated walls. Provide connections between “hard” pipe and flexible whips on either side of wall. Fireproof around conduits.

B. The Contractor shall review the architectural and structural drawings and determine the location of the fire-rated building elements. Where these elements are penetrated, UL-listed fire-rated penetration assemblies approved by the local authority shall be provided in accordance with the manufacturer’s instructions to obtain the required rating.

3.13 METAL BUILDING SYSTEMS/ELECTRICAL SUPPORTS

A. Metal building systems are required to be designed by the manufacturer to accommodate and support the electrical systems indicated on the electrical drawings and specifications.

B. The metal building systems manufacturer is required to provide the following:
   1. Framed openings through the roofs with supports, roof curbs, and flashings for roof-mounted equipment, fans, vents, and air intakes.
   2. Structural support for piping, conduits, and suspended equipment consisting of beam, joists, purlins, and/or blocking above and perpendicular to conduit routes and equipment hangers at intervals not to exceed 8 feet.
   3. Structural support for suspended ceilings and light fixtures, including associated raceways.

C. The electrical trade shall:
   1. Provide all routes, weights, installation heights, opening locations, etc. for all equipment, conduits, sleeves, etc. to the metal building system manufacturer and coordinate requirements for structural supports, hangers, attachments, etc. with the metal building systems manufacturer.
   2. Provide all supporting devices (hangers, attachments, brackets, cross beams, etc.) to attach to the metal building structural system.

3.14 CONDUIT SUPPORT

A. Conduit Support: All conduits throughout the building, both horizontal and vertical, shall be adequately supported from the construction to line of grade, with proper provision for expansion, contraction, vibration elimination, and anchorage. Vertical conduits shall be supported from floor lines with riser clamps sized to fit the lines and to adequately support their weight. At the bases of lines, where required for proper support, provide anchor base fittings or other approved supports.

B. Conduit shall not be supported from any other system.

3.15 HANGERS

A. General: Each hanger shall be properly sized to fit the supported pipe or to fit the outside of the insulation on lines where specified.

B. Attachment:
   1. The load on each hanger and/or insert shall not exceed the safe allowable load for any component of the support system, including the concrete which holds the inserts. Reinforcement at inserts shall be provided as required to develop the strength required.
   2. Where pipes are supported under steel beams, approved-type beam clamps shall be used.
   3. Where conduit is supported under wood joists, hanger rods shall be attached to joists with side beam brackets or angle clips.

C. Spacing: All hangers shall be so located as to properly support horizontal lines without appreciable sagging of these lines. All PVC shall be supported at intervals recommended by the manufacturer, or as otherwise specified or indicated.

D. Trapezes: Where multiple lines are run horizontally at the same elevation and grade, they may be supported on trapezes of Kindorf, Elcen, or approved equal, channel-suspended on rods or pipes. Trapeze members including suspension rods shall each be properly sized for the number, size, and loaded weight of the lines they are to support.

E. Ceiling-Mounted Devices: All lighting and devices or assemblies mounted in lay-in-type ceilings and which are supported by the ceiling grid, directly or indirectly, and which weigh in excess of 2 lbs., shall be provided with at least two 12-gauge minimum wire supports connected securely between the device or assembly and the structure, to serve as a safety support in the event of the collapse of or a disturbance in the support of the ceiling system that might cause the device or assembly to fall through the ceiling. This includes, but is not limited to, light fixtures, J-boxes, and heavy speakers. Provide additional support as required where the weight of the device or assembly will exceed the safe limits of the wire supports.

F. Perforated strap iron or wire will not be acceptable as hanger material.

G. Miscellaneous: Provide any other special foundations, hangers, and supports indicated on the drawings, specified elsewhere herein, or required by conditions at the site. Hangers and supporting structures for suspended equipment shall be provided as required to support the load from the building structure in a manner acceptable to the Owner's Representative.

3.16 ACCESS DOORS

A. Provide in walls, floors, and ceilings to permit access to all equipment and piping requiring service or adjustment. Examples of such equipment needing access are disconnects, actuators, contacts, and equipment needing periodic or replacement maintenance.

B. Use panels equal to Milcor Style M for masonry and drywall construction, equal to Milcor Style K for plastered masonry walls and ceilings. Stainless steel panels shall be used in ceramic tile or glazed structural tile.

C. Access doors located outside or in a moisture-laden environment (e.g., toilet room, dressing area, shower area, etc.) shall be stainless steel.

3.17 ROOF PENETRATIONS AND FLASHING

A. The contractor shall obtain from the Owner all warranty requirements for new or existing roofing systems and shall have all work on roof penetrations, curbs or equipment supports performed by a subcontractor acceptable to the Owner and the new or existing roofing system installer and manufacturer in order that all roofing system and materials warranties are preserved.

B. Pipe and conduit ducts, pitch pockets, curb bases, and flashing compatible with the roofing installation shall be provided for roof penetrations. Provide framing or other support around all openings through roof as required to preserve the structural integrity of the roof system and make the penetration weathertight.

C. Roof curbs for all roofs except standing seam metal roofs shall be provided by the equipment supplier supplying the roof-mounted equipment, etc., and such curbs shall be installed by the roofing trades. Contractor shall coordinate all roof curb requirements with all trades and the roofing trades at the earliest possible stage of the project.

D. Roof curbs for standing seam metal roofs shall be provided by the roofing trades. Curb base size, height, and type shall be coordinated with the roofing trades at the earliest possible stage of the project.

E. Flashing for pipe and conduit penetrations of standing seam metal roofs shall be provided and installed by the roofing trades.

F. See Division 7: Thermal and Moisture Protection for metal roof curbs, flashing, etc.

3.18 ROOFTOP EQUIPMENT

A. Install all starters and disconnects within 5 feet of equipment being served.

B. Mount starters and disconnects on the equipment only if allowed or recommended by the manufacturer. Otherwise, mount disconnects on unistrut-style framing in an “L” configuration. Secure unistrut to roof with a flashed wood nailer. Provide cross bracing.

C. Run “hard” conduit (IMC) through conduit curb to starter or disconnect. Install IMC from starter or disconnect to equipment. Flexible watertight conduit is acceptable only for equipment on a vibration-type (spring) curb or that has movement. This does not include AHU, chillers, fans on factory non-spring curbs, package units, or other internally isolated rooftop equipment.

3.19 TESTS AND INSPECTIONS

A. Refer to conditions of the contract and Division 1 for additional requirements regarding tests and inspections.

B. General: The Contractor shall make all tests deemed necessary by the inspection departments of the authority having jurisdiction, Board of Underwriters, etc. He shall provide all equipment, materials, and labor for making such tests. Fuel and electrical energy for system operational tests following beneficial occupancy by the Owner will be paid for by the Owner.

C. Other: Additional tests specified hereinafter under the various specification sections shall be made.

D. Notification: The Owner’s Representative shall be notified at his office 36 hours prior to each test and other specifications requirements requiring action on the part of the Owner, Architect, Engineer, and/or Owner’s Representative.

E. Test Logs: All tests which the Contractor conducts shall have pertinent data logged by the Contractor at the time of testing. Data shall include date, time, personnel, description and extent of system tested, test conditions, test results, specified results, and any other pertinent data. Data shall be delivered to the Owner’s Representative as specified under “Requirements for Final Acceptance.

F. Inspections: In general, an inspection by the Owner’s Representative shall be required prior to closing up any work and prior to beneficial occupancy or final project completion. The closing up of work includes, but is not limited to, conduit installations prior to backfilling; electrical and fire protection work prior to placement of concrete; or closing up walls and overhead electrical and fire protection work prior to installation of the ceiling.

3.20 CLEANING AND PAINTING

A. The contractor shall at all times keep the premises free from accumulations of waste material or rubbish. Debris shall be removed from the site and from any street or alley adjacent to the site.

B. Thoroughly clean and touch up the finish on all parts of the materials and equipment. Exposed parts in equipment rooms, and all other spaces except sealed chases and attics shall be thoroughly cleaned of cement, plaster, and other materials, and all oil and grease spots shall be removed. Such surfaces shall be carefully wiped and all cracks and corners scraped out.

C. Exposed metal work which is not galvanized shall be carefully brushed down with steel brushes to remove rust and other spots and left smooth and clean and then painted with a suitable rust resistant primer. Exposed metal work includes work exterior to the building; exposed in mechanical or electrical equipment rooms and storage rooms; and other areas where occupants could see the work, whether normally occupied or not.

D. All other painting shall be accomplished under the Painting Section of Division 9 of the specifications.

E. At completion of the project, the Contractor shall remove all tools, scaffolding, and surplus materials. Contractor shall leave the area “broom clean”. Before final acceptance, vacuum all panels, switchboards, starters, and other electrical devices. Wipe clean all fixture lenses and reflectors, all panelboard and switchboard interior and exterior surfaces, being careful to remove all stray paint, construction materials, dust, and particles. Touch-up all marred surfaces to restore existing conditions to those provided by the manufacturer.

3.21 IDENTIFICATION AND LABELING

A. General: The Contractor shall make it possible for the personnel operating and maintaining the equipment and systems in this project to readily identify the various pieces of equipment, disconnects, panels, etc. by marking them. All disconnects/starters/panels shall be labeled for the equipment they serve. Marks shall be the same as the drawings.

3.22 COORDINATION OF WORK

A. The light fixture grid layout as indicated on the drawings must be maintained. This Contractor shall refer to all light fixture plans and details indicated on the drawings.

B. The electrical trades shall locate all junction boxes, pull boxes, conduits, etc. to avoid interference with the diffusers, dampers, grilles, etc. The mechanical trades shall furnish to all other trades copies of approved ductwork shop drawings to assist in the coordination of the rough-in and installation of all items of work.

C. The order of space allocation priority in plan and in elevation shall be as follows.
1. 1st Light Fixtures, at Ceiling Soffit + 6"
2. 2nd Grade Plumbing Waste and Vent Systems
3. 3rd Ductwork
4. 4th Pressurized Piping Systems
5. 5th Electrical Conduit
6. 6th Ceiling Support System, where required

3.23 DISCHARGE OF WASTES FROM CONSTRUCTION SITE

A. The Contractor shall comply with all applicable provisions of local, state, and federal laws regarding the discharge of wastes into sewer and waterways. Special caution shall be exercised to prevent the discharge of wastes which contain oil, tar, asphalt, roofing compound, kerosene, gasoline, paint, mud, cement, lime, or other materials which would degrade the water quality of the receiving water course.

B. Disposal of Lamps and Ballasts: The proper disposal of all ballasts and lamps from the demolition of lighting fixtures as part of this project will be the responsibility of the Electrical Contractor. All lamps and ballasts found to contain hazardous contaminants will be removed from the site and transported to a licensed disposal facility by a contractor licensed in this field. All work shall be performed in accordance with current state and Federal rules and regulations pertaining to the processing of contaminated waste materials. A certificate of proper disposal from the licensed waste contractor shall be provided to the Engineer.

3.24 OPERATING AND MAINTENANCE MANUAL

A. The Contractor shall furnish indexed operating and maintenance manuals with complete technical data for each electrical system, piece of equipment, and material installed under this Contract.

B. The manuals shall be identified on the cover as “Operating and Maintenance Manual” and shall list the name and location of project, the Owner, the Engineers, the General Contractor, and the Subcontractors installing equipment represented in the brochure.

C. Two (2) copies of the manual, bound in three-ring hardback binders shall be provided. One copy shall be completed and delivered to the Engineer prior to the time that system and equipment tests are performed. The second copy shall be delivered prior to final acceptance. The manual shall have a Table of Contents and shall be grouped in tabbed sections according to the specification sections. Each section shall be organized as follows:
   1. Approved engineering submittals with complete performance and technical data.
   2. Manufacturer’s local representative and/or distributor's name and address.
   3. Manufacturer’s installation instructions and brochures.
   4. Manufacturer’s operating and maintenance brochures.
   5. Manufacturer’s installation wiring diagram.
   6. Contractor’s field wiring diagram, if different.
   7. Manufacturer’s brochure listing recommended spare parts.
   8. Manufacturer’s brochure listing replacement part numbers and descriptions.

D. Provide a final section entitled, “Warranties and Guarantees”, for all equipment as well as Contractor’s warranty.

3.25 CONDITIONS OF EQUIPMENT AT FINAL ACCEPTANCE

A. At the time of acceptance, the Contractor shall have inspected all installed systems to assure the following has been completed:
   1. Fixtures are operating, and lenses and reflectors are free of dust, debris, and fingerprints.
   2. Panelboards have all conductors neatly formed, bundled, and made-up tight. Cans shall be vacuum cleaned and surfaces cleaned of stray paint, dust, grease, and fingerprints. All circuit directories to be neatly typed and in place.
   3. Wall plates and exposed switch and receptacle parts to be clean, free of paint, plaster, etc.
   4. Safety and disconnect switches and motor starters to be vacuum cleaned of debris and dust, and all surfaces free of stray paint, grease, and fingerprints.
   5. Switchgear, transformers, and system devices shall be cleaned internally and externally and have all surfaces restored to original surface conditions.
   6. Touch-up all scratched surfaces using paint matching the existing equipment paint. Where paint cannot be matched, the entire surface shall be repainted in a color and manner approved by the Engineer.

END OF SECTION 260015

SECTION 260050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Raceways.
2. Building wire and connectors.
3. Supporting devices for electrical components.
4. Electricity-metering components.
5. Concrete equipment bases.
6. Electrical demolition.
7. Cutting and patching for electrical construction.
8. Touchup painting.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. FMC: Flexible metal conduit.

C. IMC: Intermediate metal conduit.

D. LFMC: Liquidtight flexible metal conduit.

E. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

A. Product Data: For electricity-metering equipment.

B. Shop Drawings: Dimensioned plans and sections or elevation layouts of electricity-metering equipment.

C. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devised, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate chases, slots, inserts, sleeves, and openings with general construction work and arrange in building structure during progress of construction to facilitate the electrical installations that follow:

1. Set inserts and sleeves in poured-in-place concrete, masonry work, and other structural components as they are constructed.

B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.

C. Coordinate electrical service connections to components furnished by utility companies.
1. Coordinate installation and connection of exterior underground and overhead utilities and services, including provision for electricity-metering components.
2. Comply with requirements of authorities having jurisdiction and of utility company providing electrical power and other services.

D. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces. Access doors and panels are specified in Division 8 Section “Access Doors.”

E. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

F. Where electrical identification markings and devices will be concealed by acoustical ceilings and similar finishes, coordinate installation of these items before ceiling installation.

PART 2 - PRODUCTS

2.1 RACEWAYS

A. See Section “Raceways and Boxes.”

2.2 CONDUCTORS

A. See Section “Conductors and Cables.”

2.3 SUPPORTING DEVICES

A. Material: Cold-formed steel, with corrosion-resistant coating acceptable to authorities having jurisdiction.

B. Metal items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.

C. Slotted-Steel Channel Supports: Flange edges turned toward web, and 9/16-inch- diameter slotted holes at a maximum of 2 inches o.c., in webs.

D. Nonmetallic Channel and Angle Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- diameter holes at a maximum of 8 inches o.c., in at least one surface.
1. Fittings and Accessories: Products of the same manufacturer as channels and angles.
2. Fittings and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.

E. Raceways and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.

F. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.

G. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for nonarmored electrical cables in riser conduits. Plugs have number and size of conductor gripping holes as required to suit individual risers. Body constructed of malleable-iron casting with hot-dip galvanized finish.

H. Expansion Anchors: Carbon-steel wedge or sleeve type.

I. Toggle Bolts: All-steel springhead type.

2.4 EQUIPMENT FOR UTILITY COMPANY'S ELECTRICITY METERING

A. Current-Transforming Cabinets: Comply with requirements of electrical power utility company.

B. Meter Sockets: Comply with requirements of electrical power utility company.

C. Modular Meter Centers: Factory-coordinated assembly of a main meter center circuit-breaker unit with wireways, tenant meter socket modules, and tenant branch circuit breakers arranged in adjacent vertical sections complete with interconnecting buses.
   1. Housing: NEMA 250, Type 3R enclosure
   2. Tenant Branch Circuit Breakers: Series combination rated to protect circuit breakers in downstream panelboards that have 10,000-A interrupting capacity, minimum.

D. Provide power utility company communication conduit to meter.

E. Relocate communication conduit with meter as required to maintain minimum utility company clearances.

2.5 EQUIPMENT FOR ELECTRICITY METERING BY OWNER

A. Meter: Electronic kilowatt-hour/demand measuring to record electricity used and highest peak demand over a time period according to electric utility. Meter is designed for used on the type and rating of circuit indicated for its application.
   1. Kilowatt-Hour Display: Digital liquid crystal.
   2. Kilowatt-Demand Display: Digital, liquid-crystal type to register highest peak demand.
   3. Enclosure: NEMA 250, Type 1, Minimum, with hasp for padlocking or sealing.
   4. Memory Backup: Self-contained to maintain memory throughout power outages of 72 hours, minimum.
   5. Sensors: Current-sensing type, with current or voltage output, selected for optimum range and accuracy for the ratings of the circuits indicated for this application.
      a. Type: Solid core.
   6. Accuracy: Nationally recognized testing laboratory certified to meet ANSI C12.16 specifications.
   7. Demand Signal Communication Interface: Match signal to building automation system input that conveys data on instantaneous/integrated demand level measured by meter used for load switching to control demand.

B. Current-Transformer Cabinets: Listed or recommended by metering equipment manufacturer for use with sensors indicated.

C. Available Metering Equipment Manufacturers: Subject to compliance with requirement, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. E-MON Corporation.
   2. National Meter Industries, Inc.
   3. Osaki Meter Sales, Inc.

2.6 CONCRETE BASES

A. Concrete: 3000-psi, 28-day compressive strength as specified in Division 3 Section “Cast-in-Place Concrete.”

2.7 TOUCHUP PAINT

A. For Equipment: Equipment manufacturer’s paint selected to match installed equipment finish.

B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.1 ELECTRICAL EQUIPMENT INSTALLATION

A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide the maximum possible headroom.

B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.

C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.

D. Right of Way: Give to raceways and piping systems installed at a required slope.

E. Mount all non-wall mounted equipment minimum of:
1. Two (2) inches off the wall for switchboards, free standing distribution boards, disconnects, panels and all other non-vibrating equipment.
2. Minimum of four (4) inches for vibrating equipment to include transformers.

3.2 ELECTRICAL SUPPORTING DEVICE APPLICATION

A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, U-channel system components.

B. Dry Locations: Steel materials.

C. Support Clamps for PVC Raceways: Click-type clamp system.

D. Selection of Supports: Comply with manufacturer’s written instructions.

E. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of 200-lb design load.

3.3 SUPPORT INSTALLATION

A. Install support devices to securely and permanently fasten and support electrical components. Supports for electrical raceways, boxes, equipment, fire alarm / public address / data / special system(s) / other low-voltage enclosures, and other entities encompassing wiring or devices of any voltage shall be connected to a recognized structural element. [Note: For purposes of MEP work, ceiling grid shall **NOT** be considered a structural element unless prior written approval is given by Engineer on a case-by-cases basis.]

B. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.

C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.

D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.

E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.

F. Install ¼-inch-diameter or larger threaded steel hanger rods, unless otherwise indicated.

G. Spring-steel fasteners specifically designed for supporting single conduits or tubing may be used instead of malleable-iron hangers for 1½ inch and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings and for fastening raceways to slotted channel and angle supports.

H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.

I. Simultaneously install vertical conductor supports with conductors.

J. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers. If bar hangers are used for alignment, attach bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches from the box. Support the box and raceway from structural supports.

K. Install metal channel racks for mounting cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.

L. Where exterior electrical equipment is mounted on unistrut racks and the top of the mounted equipment is taller than 60” above the mounting surface, provide rear triangular support for unistrut rack angled 30 degrees connected 2/3 way up the rack and mounted to the same structure as the unistrut rack. If mounting on a roof assembly support for the rear support shall go through the roof at 90 degrees.

M. Install sleeves for cable and raceway penetrations of concrete slabs and walls. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.
   1. Exception: Sleeves are not required for core-drilled penetrations where the hole is the same size as the outer conduit dimension. Tape or wrap conduit in contact with the concrete and firecaulk as required to maintain fire rating.

N. Provide x-ray scans for all penetrations through concrete floors that are post tension.

O. Securely fasten electrical items and their supports to the building structure, unless otherwise indicated. Perform fastening according to the following unless other fastening methods are indicated:
   1. Wood: Fasten with wood screws or screw-type nails.
   2. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
   3. New Concrete: Concrete inserts with machine screws and bolts.
   4. Existing Concrete: Expansion bolts.
   5. Steel: Welded threaded studs or spring-tension clamps on steel.
      a. Field Welding: Comply with AWS D1.1.
   6. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or other items.

7. Light Steel: Sheet-metal screws.
8. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.

3.4 UTILITY COMPANY ELECTRICITY-METERING EQUIPMENT

A. Install equipment according to utility company's written requirements. Provide grounding and empty conduits as required by utility company.

3.5 FIRESTOPPING

A. Apply firestopping to cable and raceway penetrations of fire-rated floor and wall assemblies to achieve fire-resistance rating of the assembly. Firestopping materials and installation requirements are specified in Division 7 Section "Firestopping."

3.6 CONCRETE BASES

A. Construct concrete bases of dimensions indicated, but not less than 6 inches larger, in both directions, than supported unit and bollards.

B. Follow supported equipment manufacturer's anchorage recommendations and setting templates for anchor-bolt and tie locations, unless otherwise indicated. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Sections "Cast-in-Place Concrete," "Concrete Reinforcement," and "Concrete Formwork."

C. Bollards: Provide bollards around utility provider pad mount transformer. Protect equipment on road or driveway sides.

D. Provide bollards around owner genset if within 10 feet of roadway.

E. Provide 36 inch concrete pads in front of exterior switchboards full length of switchboard.

F. Provide 30 inch concrete pads in front of ground mounted disconnect racks.

3.7 DEMOLITION

A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.

B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.

C. Abandoned Work: Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.

D. Remove demolished material from Project site.

E. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

3.8 CUTTING AND PATCHING

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.

B. Repair and refinish disturbed finish materials and other surfaces to match adjacent undisturbed surfaces. Install new fireproofing where existing firestopping has been disturbed. Repair and refinish materials and other surfaces by skilled mechanics of trades involved.

3.9 FIELD QUALITY CONTROL

A. Inspect installed components for damage and faulty work, including the following:
   1. Raceways.
   2. Building wire and connectors.
   3. Supporting devices for electrical components.
   4. Electrical identification.
   5. Electricity-metering components.
   6. Concrete bases.
   7. Electrical demolition.
   8. Cutting and patching for electrical construction.
   9. Touchup painting.

B. Test Owner's electricity-metering installation for proper operation, accuracy, and usability of output data.
   1. Connect a load of known kW rating, 1.5 kW minimum, to a circuit supplied by the metered feeder.
   2. Turn off circuits supplied by the metered feeder and secure them in the "off" condition.
   3. Run the test load continuously for eight hours, minimum, or longer to obtain a measurable meter indication. Use a test load placement and setting that ensure continuous, safe operation.
   4. Check and record meter reading at end of test period and compare with actual electricity used based on test load rating, duration of test, and sample measurements of supply voltage at the test load connection. Record test results.
   5. Repair or replace malfunctioning metering equipment or correct test setup; then retest. Repeat for each meter in installation until proper operation of entire system is verified.

3.10 REFINISHING AND TOUCHUP PAINTING

A. Refinish and touch up paint. Paint materials and application requirements are specified in Division 9 Section "Painting."
   1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
   2. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.
   3. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
   4. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.11 CLEANING AND PROTECTION

A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.

B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION 260050

SECTION 260519

CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

B. Related Sections include “Control/Signal Transmission Media” for transmission media used for control and signal circuits.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For testing agency.

C. Field Quality-Control Test Reports: From Contractor.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, all conductors shall be listed for the application, temperature, and insulation rating to which they are intended.

2.2 CONDUCTORS AND CABLES

A. Refer to Part 3 “Conductor and Insulation Applications” Article for insulation type, cable construction, and ratings.

B. Conductor Material:
   1. Copper complying with NEMA WC-70.
   2. Solid conductors, sizes 10 and 12, uncoated copper per ASTM B3.
   3. Stranded conductor, all other sizes, uncoated copper per ASTM B3, ASTM B787, and ASTM B8.

C. Conductor Insulation Types: Type THHN-THWN and complying with NEMA WC-70.

1. Rated for sunlight resistance all colors.
2. Conductors shall be color coded for voltage and phase as per NEC and any local amendments.
3. Larger conductors shall have taped color coding.
4. Size, rating, temperature, and type shall be permanently marked on conductor jacket.
5. Insulation shall be PVC, heat and moisture resistant, flame retardant compound as per UL-83 and UL-1063.
6. Jacket shall be polyamide outer nylon covering per UL-83 and UL-1063.

D. Rated for sunlight resistance all colors.

2.3 CONNECTORS

A. Wire Connectors Size 6-14 AWG:
1. Description: Factory-fabricated UL listed connected and of size, ampacity rating, material, type, and class for application and service indicated.
2. Provide self-locking square wire spring grab screw on wire connectors sized as per NEC and the number of conductors to be connected.
3. Thermoplastic deep shell design, with wings on smaller connectors, rated for application temperature, Minimum 105 degrees C.
4. Copper to copper connection, 600V.
5. Provide high temp wire connectors for all high temperature equipment applications.

B. Push-in wire connectors are Not Approved and shall not be used for any power or lighting circuits above 50V.

C. Pre-Insulated Multi-Conductor Connectors Dry Location for conductors larger than #6.
1. UL Listed rated for 90 degree C, insulated with high dialectric plastisol or equal, UV resistance, Polaris, NSI, or equal.
2. Dual rating for copper and/or aluminum.
3. Provide correct type based upon wire stranding (fine or coarse).
4. Supplied with removable plugs.

D. Pre-Insulated Multi-Conductor Connectors Wet or submersible Dry Location for conductors larger than #6.
1. UL Listed rated for 90 degree C, insulated with 125 mils rubber or equal, UV resistance, Polaris, NSI, or equal.
2. Dual rating for copper and/or aluminum.
3. Provide correct type based upon wire stranding (fine or coarse).
4. Supplied with removable plugs.

E. Pre-insulated single conductor in-line connector for conductors larger than #6 Dry Location.
1. UL Listed rated for 90 degree C, insulated with high dialectric plastisol or equal, UV resistance, Polaris, NSI or equal.
2. Dual rating for copper and/or aluminum.
3. Provide correct type based upon wire stranding (fine or coarse).
4. Supplied with removable plugs.

2.4 ALTERNATES

A. Blue Jacketed steel MC Cable is only permitted for 6 foot (maximum) lighting whips. It shall be used for no other purpose.

B. AC cable is not permitted at all.

PART 3 - EXECUTION

3.1 CONDUCTOR AND INSULATION APPLICATIONS

A. Service Entrance: Type THHN-THWN, single conductors in raceway.

B. Exposed Feeders: Type THHN-THWN, suitable for use in air return plenums.

C. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and in Crawlspaces: Type THHN-THWN, single conductors in raceway.

E. Exposed Branch Circuits, including in Crawlspaces: Type THHN-THWN, single conductors in raceway.

F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.

G. Branch Circuits Concealed in Concrete and below Slabs-on-Grade: Type THHN-THWN, single conductors in raceway.

H. Underground Feeders and Branch Circuits: Type THHN-THWN, single conductors in raceway.

I. Cord Drops and Portable Appliance Connections: Type SO, hard service cord.

J. Fire Alarm Circuits: Power-limited, fire-protective, signaling circuit cable.

K. Class 1 Control Circuits: Type THHN-THWN, in raceway.

L. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.2 INSTALLATION

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Minimum line voltage conductor size is #12.

C. Neutrals shall not be shared on any single pole circuit.

D. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.

F. Install without damaging conductors/cable, shield, or jacket.
   1. Do not bend conductors/cable, in handling or installation, to smaller radii than minimum recommended by manufacturer.
   2. All new installation cabling shall be one piece without breaks or splices except at device connections.

G. Conductor/Cable extensions if indicated: Provide splices and connectors suitable for the environment and conductors. Each conductor to be individually extended using either pre-insulated in-line connectors or hydraulically crimped butt connectors with 3m Scotchcast™ resin kits to complete the insulation. Connector and insulation shall be suitable for environment. All splice and tap connectors shall be compatible with cable material. Make no splices except at indicated splice points.

H. Conductor/Cable splits: Provide multi-conductor pre-insulated connectors suitable for environment with specific number of connectors to split. Provide with wireway or pull box for access. Torque to manufacturers specific requirements. Provide configuration per connections. For service wireways, provide with in-tap-out for future use.

I. Pull conductors/cables without exceeding manufacturer's recommended pulling tensions.
   1. Pull simultaneously if more than one is being installed in same raceway.
   2. Use pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation.
   3. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage media or raceway.

J. Provide pull boxes as per NEC.

K. Provide junction or pull boxes at all splice points.

L. Support cables according to Section “Basic Electrical Materials and Methods.”

M. Seal around cables penetrating fire-rated elements according to Section “Firestopping.”

N. Identify and color-code conductors and cables according to Section “Electrical Identification” and adhere to local color code requirements.

3.3 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturers published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
   1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

3.4 FIELD QUALITY CONTROL

A. Testing: Engage a qualified testing agency to perform the following field quality-control testing:
   1. After installing conductors and cables and before electrical circuitry has been energized, test for compliance with requirements.
   2. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.

B. Test Reports: Prepare a written report to record the following:
   1. Test procedures used.
   2. Test results that comply with requirements.
   3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION 260519

SECTION 260526

GROUNDING AND BONDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

B. Related Sections include Section “Lightning Protection” for additional grounding and bonding materials.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For firms and persons specified in “Quality Assurance” Article.

C. Field Test Reports: Submit written test reports to include the following:
   1. Test procedures used.
   2. Test results that comply with requirements.
   3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Testing agency as defined by OSHA in 29 CFR 1910.7 or a member company of the International Electrical Testing Association and that is acceptable to authorities having jurisdiction.
   1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
   1. Comply with UL 467.

C. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Grounding Conductors, Cables, Connectors, and Rods:
      a. Apache Grounding/Erico Inc.
      b. Boggs, Inc.

c. Chance/Hubbell.
d. Copperweld Corp.
e. Dossert Corp.
f. Erico Inc.; Electrical Products Group.
g. Framatome Connectors/Burndy Electrical.
h. Galvan Industries, Inc.
i. Harger Lightning Protection, Inc.
j. Hastings Fiber Glass Products, Inc.
k. Heary Brothers Lightning Protection, Co.
l. Ideal Industries, Inc.
m. ILSCO.
n. Kearney/Cooper Power Systems.
o. Korns: C.C. Korns Co.; Division of Robroy Industries.
p. Lightning Master Corp.
q. Lyncole XIT Grounding.
r. O-Z/Gedney Co.; a business of the EGS Electrical Group.
s. Raco, Inc.; Division of Hubbell.
t. Robbins Lightning, Inc.
u. Salisbury: W.H. Salisbury & Co.
v. Superior Grounding Systems, Inc.
w. Thomas & Betts, Electrical.

2.2 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Section “Conductors and Cables.”

B. Material: Copper.

C. Equipment Grounding Conductors: Insulated with green-colored insulation.

D. Isolated Ground Conductors: Insulated with green-colored insulation with yellow stripe. On feeders with isolated ground, use colored tape, alternating bands of green and yellow tape to provide a minimum of three bands of green and two bands of yellow.

E. Grounding Electrode Conductors: Stranded cable.

F. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.

G. Bare Copper Conductors: Comply with the following:
1. Solid Conductors: ASTM B 3.
2. Assembly of Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.

H. Copper Bonding Conductors: As follows:
1. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG copper conductor, ¼ inch in diameter.
2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
3. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1_inches wide and 1/16 inches thick.
4. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1_inches wide and 1/16 inches thick.

I. Ground Conductor and Conductor Protector for Wood Poles: As follows:
1. No. 4 AWG minimum, soft-drawn copper conductor.
2. Conductor Protector: Half-round PVC or wood molding. If wood, use pressure-treated fir, or cypress or cedar.

J. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulators.

2.3 CONNECTOR PRODUCTS

A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.

B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.

C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.

2.4 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel.

B. Ground Rods: Sectional type; copper-clad steel.
1. Size: ¾ by 120 inches.

C. Test Wells: Provide handholes for test wells.

PART 3 - EXECUTION

3.1 APPLICATION

A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.

B. In raceways, use insulated equipment grounding conductors.

C. Exothermic-Welded Connections: Use for connections to structural steel, ground rods, and for underground connections, except those at test wells.

D. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.

E. Ground Rod Clamps at Test Wells: Use bolted pressure clamps with at least two bolts.

F. Grounding bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
1. Use insulated spacer; space 1 inch from wall and support from wall 6 inches above finished floor, unless otherwise indicated.
2. At doors, route the bus up to the top of the door frame, across the top of the doorway, and down to the specified height above the floor.

G. Underground Grounding Conductors: Use tinned-copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade or bury 12 inches above duct bank when installed as part of the duct bank.

3.2 EQUIPMENT GROUNDING CONDUCTORS

A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.

B. Install equipment grounding conductors in all feeders and circuits.

C. Busway Supply Circuits: Install insulated equipment grounding conductor from the grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

D. Computer Outlet Circuits: Install insulated equipment grounding conductor in branch-circuit runs from computer-area power panels or power-distribution units.

E. X-Ray Equipment Circuits: Install insulated equipment grounding conductor in circuits supplying x-ray equipment.

F. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate grounding conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.

G. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure and install a separate equipment grounding conductor. Isolate equipment grounding conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.

H. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.

I. Air-Duct Equipment Circuits: Install an equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners and heaters. Bond conductor to each unit and to air duct.

J. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate equipment grounding conductor to each electric water heater, heat-tracing, and antifrost heating cable. Bond conductor to heater units, piping, connected equipment, and components.

K. Signal and Communication Systems: For telephone, alarm, voice and data, and other communication systems, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
   1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a ¼-x2x12-inch grounding bus.
   2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

L. Metal Poles Supporting Outdoor Lighting Fixtures: Provide a grounding electrode in addition to installing a separate equipment grounding conductor with supply branch-circuit conductors.

M. Common Ground Bonding with Lightning Protection System: Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor and install in conduit.

3.3 COUNTERPOISE

A. Ground the steel framework of the building with a driven ground rod at the base of every corner column and at intermediate exterior columns at distances not more than 60 feet apart. Provide a grounding conductor (counterpoise), electrically connected to each ground rod and to each steel column, extending around the perimeter of the building. Use tinned-copper conductor not less than No. 2/0 AWG for counterpoise and for tap to building steel. Bury counterpoise not less than 18 inches below grade and 24 inches from building foundation.

3.4 INSTALLATION

A. Ground Rods: Install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes.
   1. Drive ground rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.
   2. Interconnect ground rods with grounding electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make connections without exposing steel or damaging copper coating.

B. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

C. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.

D. Metal Water Service Pipe: Provide insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes by grounding clamp connectors. Where a dielectric main water fitting is installed, connect grounding conductor to street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

E. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding clamp connectors.

F. Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fans, blowers, electric heaters, and air cleaners. Use braided-type bonding straps.

G. Bond each aboveground portion of gas piping system upstream from equipment shutoff valve.

H. Install one test well for each service at the ground rod electrically closest to the service entrance. Set top of well flush with finished grade or floor.

I. Ufer Ground (Concrete-Encased Grounding Electrode): Fabricate according to NFPA 70, Paragraph 250-81(c), using a minimum of 20 feet of bare copper conductor not smaller than No. 4 AWG. If concrete foundation is less than 20 feet long, coil excess conductor within the base of the foundation. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts. Extend grounding conductor below grade and connect to building grounding grid or to a grounding electrode external to concrete.

3.5 CONNECTIONS

A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
   1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
   2. Make connections with clean, bare metal at points of contact.
   3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
   4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.

5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

C. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

D. Noncontact metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically non-continuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.

E. Connections at Test Wells: Use compression-type connectors on conductors and make bolted- and clamped-type connections between conductors and ground rods.

F. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturers published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

G. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

H. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.6 UNDERGROUND DISTRIBUTION SYSTEM GROUNDING

A. Duct Banks: Install a grounding conductor with at least 50 percent ampacity of the largest phase conductor in the duct bank.

B. Manholes and Handholes: Install a driven ground rod close to wall and set rod depth so 4 inches will extend above finished floor. If necessary, install ground rod before manhole is placed and provide a No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive tape or heat-shrunk insulating sleeve from 2 inches above to 6 inches below concrete. Seal floor opening with waterproof, nonshrink grout.

C. Connections to Manhole Components: Connect exposed-metal parts, such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields as recommended by manufacturer of splicing and termination kits.

D. Pad-Mounted Transformers and Switches: Install two ground rods and counterpoise circling pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Use tinned-copper conductor not less than No. 2 AWG for counterpoise and for taps to equipment ground pad. Bury counterpoise not less than 18 inches below grade and 6 inches from the foundation.

3.7 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing:
   1. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.
   2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells. Measure ground resistance not less than two full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests, by the fall-of-potential method according to IEEE 81.
   3. Provide drawings locating each ground rod and ground rod assembly and other grounding electrodes, identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
      a. Equipment Rated 500 kVA and Less: 10 ohms.
      b. Equipment Rated 500 to 1000 kVA: 5 ohms.
      c. Equipment Rated More Than 1000 kVA: 3 ohms.
      d. Substations and Pad-Mounted Switching Equipment: 5 ohms.
      e. Manhole Grounds: 10 ohms.

   4. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

3.8 GRADING AND PLANTING

A. Restore surface features, including vegetation, at areas disturbed by Work of this Section. Reestablish original grades, unless otherwise indicated. If sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, cable laying, and other activities to their original condition. Include application of topsoil, fertilizer, lime, seed, sod, sprig, and mulch. Comply with Division 2 Section “Landscaping.” Maintain restored surfaces. Restore disturbed paving as indicated.

END OF SECTION 260526

SECTION 260533

RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

B. Related Sections include the following:
   1. Division 7 Section “Firestopping” for firestopping materials and installation at penetrations through walls, ceilings, and other fire-rated elements.
   2. Section “Basic Electrical Materials and Methods” for supports, anchors, and identification products.
   3. Section “Wiring Devices” for devices installed in boxes and for floor-box service fittings.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. ENT: Electrical nonmetallic tubing.

C. FMC: Flexible metal conduit.

D. IMC: Intermediate metal conduit.

E. LFMC: Liquidtight flexible metal conduit.

F. LFNC: Liquidtight flexible nonmetallic conduit.

G. RNC: Rigid nonmetallic conduit.

H. PVC-GRS: PVC-Coated galvanized rigid steel.

1.4 SUBMITTALS

A. Product Data:
   1. For surface raceways, wireways and fittings.
   2. Floor boxes.
   3. Hinged-cover enclosures and cabinets.
   4. Conduit spacers.
   5. Conduit rack supports.

B. Shop Drawings: Show fabrication and installation details of components for raceways, fittings, boxes, enclosures, and cabinets.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
   2. Refer to 3.1, RACEWAY APPLICATION, for materials to be used.

2.2 METAL CONDUIT AND TUBING

A. Available Manufacturers:
   1. AFC Cable Systems, Inc.
   2. Alflex, Inc.
   3. Anamet Electrical, Inc.; Anaconda Metal Hose.
   4. Calbond / Atkore
   5. Electri-Flex Co.
   6. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
   7. Republic Conduit.
   8. Manhattan/CDT/Cole-Flex.
   9. O-Z Gedney; Unit of General Signal.
   10. Wheatland Tube Co.
   11. Perma-Cote
   12. Plasti Bond
   13. KorKap

B. Rigid Steel Conduit: ANSI C80.1.

C. IMC: ANSI C80.6.

D. PVC--Coated Steel Conduit and Fittings: UL514b NEMA RN 1.

E. PVC- Coated IMC and Fittings: ETL PVC-001 NEMA RN 1 UL6.

F. EMT: ANSI C80.3.

G. FMC: Zinc-coated steel. Non UL listed FMC is not allowed for any line voltage (greater than 70V) system.

H. LFMC: Flexible steel conduit with PVC jacket.

I. Fittings: NEMA FB 1; compatible with conduit and tubing materials. Provide fittings factory matched with conduit types.
   1. Indoor Fittings: Steel Set Screw or Steel Compression
   2. Outdoor Fittings: Threaded fittings on IMC or Rigid Conduit
   3. Outdoor Fittings: Compression fittings with gaskets on all transitions to flexible conduit.
   4. Die cast fittings are not acceptable anywhere.
   5. Provide factory fittings with MC cable where allowed.
   6. EMT crimp type fittings are not acceptable.

2.3 NONMETALLIC CONDUIT AND TUBING

A. Available Manufacturers:
   1. American International.
   2. Anamet Electrical, Inc.; Anaconda Metal Hose.
   3. Amco Corp.
   4. Cantex, Inc.
   5. Certainteed Corp.; Pipe & Plastics Group.
   6. Condux International.
   7. ElecSYS, Inc.
   8. Electri-Flex Co.
   9. Lamson & Sessions; Carlon Electrical Products.
   10. Manhattan/CDT/Cole-Flex.
   11. RACO; Division of Hubbell, Inc.
   12. Thomas & Betts Corporation.

B. ENT: NEMA TC 13.

C. RNC: NEMA TC 2, Schedule 40 and Schedule 80 PVC.

D. LFNC: UL 1660.

E. Fittings: NEMA TC 3; match to conduit or tubing type and material. Provide fittings factory matched with conduit types.
   1. Indoor/Outdoor Fittings: Compression.
   2. Outdoor Fittings: Compression fittings with gaskets on all transitions to flexible conduit.

2.4 METAL WIREWAYS

A. Available Manufacturers:
   1. Hoffman.
   2. Square D.

B. Material and Construction: Sheet metal sized and shaped as indicated, NEMA 1.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

E. Wireway Covers: Hinged type, or as indicated.

F. Finish: Manufacturer's standard enamel finish.

2.5 NONMETALLIC WIREWAYS

A. Available Manufacturers:
   1. Hoffman.
   2. Lamson & Sessions; Carlon Electrical Products.

B. Description: Fiberglass polyester, extruded and fabricated to size and shape indicated, with no holes or knockouts. Cover is gasketed with oil-resistant gasket material and fastened with captive screws treated for corrosion resistance. Connections are flanged, with stainless-steel screws and oil-resistant gaskets.

C. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.

D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

E. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

2.6 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating.
   1. Available Manufacturers:
      a. Airey-Thompson Sentinel Lighting; Wiremold Company (The).
      b. Thomas & Betts Corporation.
      c. Walker Systems, Inc.; Wiremold Company (The).
      d. Wiremold Company (The); Electrical Sales Division.

B. Surface Nonmetallic Raceways: Two-piece construction, manufactured of rigid PVC compound with matte texture and manufacturer's standard color.
   1. Available Manufacturers:
      a. Butler Manufacturing Co.; Walker Division.
      b. Enduro Composite Systems.
      c. Hubbell, Inc.; Wiring Device Division.
      d. Lamson & Sessions; Carlon Electrical Products.
      e. Panduit Corp.
      f. Walker Systems, Inc.; Wiremold Company (The).
      g. Wiremold Company (The); Electrical Sales Division.

C. Types, sizes, and channels as indicated and required for each application, with fittings that match and mate with raceways.

D. Provide raceway base, cover, base coupling, coupling covers, angle fittings, end caps at ends, and entrance end fittings. Provide divider wall throughout raceway. Provide device brackets and snap-on bezels at all devices shown on drawings. Provide blank covers at all non-used bezels.

E. Provide raceway full length, mounted as per drawings or 6" above counters if height is not indicated, as shown on drawings. Provide elbows and raceway to 6 inches above ceiling if risers are indicated on the drawings.

2.7 BOXES, ENCLOSURES, AND CABINETS

A. Available Manufacturers:
   1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
   2. Emerson/General Signal; Appleton Electric Company.
   3. Erickson Electrical Equipment Co.

4. Hoffman.
5. Hubbell, Inc.; Killark Electric Manufacturing Co.
6. O-Z/ Gedney; Unit of General Signal.
7. RACO; Division of Hubbell, Inc.
8. Stahlin
9. Scott Fetzer Co.; Adalet-PLM Division.
10. Spring City Electrical Manufacturing Co.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.

D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

F. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

G. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.

H. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

2.8 FACTORY FINISHES

A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard prime-coat finish ready for field painting.

B. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors:
1. Exposed: Rigid steel or IMC.
2. Concealed: Rigid steel or IMC.
3. Underground Secondary, Single Run: PVC Schedule 40 with long radius elbows.
4. Underground Secondary, Grouped: PVC Schedule 40 with long radius elbows.
5. Underground Primary: PVC Schedule 80 with long radius elbows.
6. Primary Risers: PVC Schedule 80. With long radius elbows.
7. Underground Data: PVC Schedule 40 with long radius elbows.
8. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFNC.
9. Boxes and Enclosures: NEMA 250, Type 3R.
10. Under Canopies: IMC with sealed fittings.
11. Penetrations though exterior walls: RMC or IMC

12. Embedded in Concrete: Only in Approved locations – wrapped RMC or IMC.
13. Coastal or Corrosive Locations or where specifically indicated on drawings: ETL PVC-001 PVC-GRS

B. Indoors:
1. Exposed in Mechanical/Electrical/Unfinished Spaces: EMT.
2. Exposed in Finished Spaces: Metal Surface Raceway painted/finished to match space finishes.
3. Concealed: EMT.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC; except use LFNC in damp or wet locations or with water equipment.
5. Damp or Wet Locations: Sealed EMT with sealed fittings.
6. Underfloor: Sealed EMT with sealed fittings or IMC.
7. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
   a. Damp or Wet Locations: NEMA 250, Type 4, nonmetallic.

C. Minimum Raceway Size: 1/2-inch for single 20A or less circuits; otherwise, 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating using the manufacturer's PVC touch up compound after installing conduits.

E. Install nonferrous conduit or tubing for circuits operating above 60 Hz.

F. Aluminum conduit will not be accepted on this project.

3.2 INSTALLATION

A. Conduit Routing:
1. All branch circuit conduit shall be run overhead unless specifically directed by the engineer.
   a. Exceptions:
      1) Conduit to floor boxes.
      2) Conduit to locations otherwise inaccessible overhead (exposed or not).
      3) Conduit to exterior slab locations without overhead cover.
      4) Conduit to column mounted lighting, devices, or equipment inaccessible from above.
2. Panel feeder conduits may be run in the floor or underfloor ONLY IF indicated on the drawings or directed by the engineer.
3. Service secondary conduits may be run underfloor or in-ground.
4. Conduit for exterior equipment or lighting may be run underfloor or in-ground.
5. All conduit serving any equipment or devices (to include panels, transformers, and switchboards, or any other electrical distribution equipment) within the perimeter of the building shall be run within the perimeter of the building. Conduit shall not run across courtyards or underground from one section of the building to another section of the contiguous building.
   a. Exception: Service entrance conduit.
6. All conduit shall be run at right angles or parallel to the building lines to the limits that the structure will allow. Raceways shall not be run diagonal or curved.

B. Installation of the PVC Coated Conduit System shall be performed in accordance with the Manufacturer's Installation Manual. To assure correct installation, the installer shall be certified by Manufacturer to install coated conduit

C. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

D. Install raceways as high as possible and coordinate installation with other equipment.

E. Install raceways to equipment mounted on the floor away from walls from overhead down to the equipment or disconnects. Do not run across the floor creating a tripping hazard. Rack support conduit at the disconnect.

F. Provide clear access to all pull and j-boxes. Provide access doors over hard (non-lay-in ceilings) to all pull boxes. Minimum access required 1.5x (times) box cover size or 18 inches.

G. Label all j-box and pull box covers with circuits contained within box.

H. Under no circumstances shall power and data or any signal below 50V be shared in the same raceway, tray, channel, or sleeve.

I. Install raceways for power conductors (any conductor over 50V) 12 inches from any signal/communications conductor (data, fiber optics, telephone, fire alarm, PA, community antenna and radio distribution (CATV), low power or network powered broadband communications, systems controls, and any other system operating under 50V) not in conduit on J-hooks.

J. Install raceways for power conductors (any conductor over 50V) 12 inches from communications raceways. Communications raceways include; data, fiber optics, telephone, fire alarm, PA, community antenna and radio distribution (CATV), low power or network powered broadband communications, systems controls, and any other system operating under 50V.
   1. Exception: Data and power raceways shall be permitted to be 2 inches apart only at the wall drop to the devices. Above the ceiling or overhead the minimum 12 inch spacing shall be maintained.
   2. Exception: Listed dual channel power poles
   3. Exception: Within the surface raceways. When not within the surface raceway, the power and communications raceways shall be 12 inches apart.
   4. Underground: Data and power conduit/raceway shall be allowed in the same trench only if specifically allowed by the engineer and then there shall be a minimum of 12 inches of fill between the power and communications raceways. Magnetic marking tape shall be placed above the level of the highest (closest to grade) raceway.

K. Exterior Exposed Raceways:
   1. See application schedule for raceway types.
   2. Provide non-flexible raceways through roofs to disconnects, panels, or receptacles as per application schedule.
   3. Provide transitions from non-flexible raceways to flexible raceways within 3 feet of the equipment.
      a. Exception: Flexible raceways may exceed 3 feet only to accommodate the drip legs.
   4. Penetrate roofing membranes with approved methods only for the type of roof used. See roofing or architectural details.
   5. Provide chem-curbs on built-up roofs unless otherwise directed from roofing or architectural details.
   6. Support all exposed raceway on roofs with manufactured neoprene blocks with integral galvanized channel, conduit hangers as part of a manufactured assembly with galvanized channel (portable pipe hangers or equal), or approved method as per architectural.
   7. Exposed raceways on roofs shall not be unsupported in any areas nor attached directly to the roof.
   8. Provide roof hoods for multiple conduits through roofs as indicated.
   9. Provide drip legs for all exterior exposed raceways from disconnects to equipment.

L. Buried Raceways:
   1. See application schedule for raceway types.
   2. Label all buried conduits.
   3. Provide spacers between all buried conduits for a neat and uniform installation. Conduit shall not be “stacked” on top of each other without manufactured spacers.

4. IF telecommunications conduits and power conduits (only under 600V) are allowed in the same trench by owner or engineer, provide a minimum of 12 inches of compacted earth between the conduit racks. Provide magnetic marking tape between the communications conduits and the power conduits.
5. Under NO circumstances shall power conduits over 600V be in the same trench as the communications conduits.
6. All communications conduits shall have long radius elbows 10x the conduit diameter, but no less than 30", rising up into the building or communications equipment.
7. Provide concrete encasement for all primary building feeders unless directed by utility company.
8. Provide concrete encasement for all secondary building feeders unless otherwise noted.
9. Provide pull strings/tape (per size and distance) for all empty conduits.
10. Minimum depth of primary or medium voltage conduits 42 inches. (600V and above).
11. Minimum depth of secondary or low voltage conduits 30 inches. (0 to 600V).
12. All 90 degree changes in direction shall be long radius.
13. Provide metal backed marking tape at 12 inches below grade and 6 inches above all buried raceways.
14. Clean and swab out all conduits prior to installing conductors.
15. Any metallic conduit coming in contact with concrete, asphalt or earth, insulate with approved tape or asphalt paint.

M. All underfloor conduits shall be supported as per NEC.
1. See application schedule for conduit types.
2. All conduit supports shall be anchored to structure.
3. Provide support for multiple conduits with galvanized kindorf rack, conduit straps, all thread rod to angles, and mount angles to structure.
4. ONLY IF specifically directed by owner or engineer to use RNC underfloor;
   a. Provide support for conduit 2" and below every 48 inches.
   b. Provide support for 2-1/2" and above every 60 inches.

N. Complete raceway installation before starting conductor installation.

O. Support raceways as specified in Section "Basic Electrical Materials and Methods."

P. Install temporary closures to prevent foreign matter from entering raceways during construction. Remove prior to completion of conduit.

Q. Sleeves: Provide metallic raceway sleeves through walls or floors for all conductors/cabling not in raceways. Provide bushings at both ends of sleeves prior to installing any conductors or wiring. Firestop as per opening fire rating requirements.

R. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above the finished slab.

S. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and keep straight legs of offsets parallel, unless otherwise indicated.

T. Firestop: Firestop all raceway penetrations in rated walls. Provide intumescent fill in all sleeve openings. Contractor shall be responsible for all wall repair and damage. Excessive firestop for holes too large (½ inch beyond the edge of the raceway) is unacceptable. Holes shall be repaired with suitable wall materials to maintain the integrity of the wall construction.

U. Cut openings in walls as per the outer edges of the raceway. Openings made with hammers or other wall damaging tools are not acceptable. Holes too large (½ inch beyond the edge of the raceway) are unacceptable and shall be repaired with suitable wall materials to maintain the integrity of the wall construction. Contractor shall be responsible for repair to match existing.

V. Provide manufactured elbows of conduit type specified for PVC raceways. Field constructed elbows are not allowed. Rigid Non-metallic tubing shall not have any field fabricated 90 degree bends. Provide manufactured elbows at all 90 degree changes in direction.

W. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
   1. Install concealed raceways with a minimum of bends in the shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.

X. Raceways Embedded in Slabs are allowed ONLY where specifically called out or ALLOWED by structural and electrical engineer: Install in middle one-third of slab thickness where practical and leave at least 2 inches of concrete cover on the top and bottom.
   1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
   2. Space raceways laterally to prevent voids in concrete.
   3. Run raceways parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.

Y. Expansion Joints: Provide flexible connections suitable for use with conduit type for all conduit in structural expansion joints or independent slabs that are within another structural assembly.

Z. Raceways Through Slabs to Interior Spaces: Install where practical and leave at least 2 inches from any walls unless required to come up in the wall. Coordinate with grade or perimeter beams prior to installation.
   1. Secure raceways to concrete with conduit clamps.
   2. Change from nonmetallic raceways to rigid steel conduit or IMC before rising above the floor.
      a. Exception: Raceways from below grade into transformers and switchgear enclosures shall be RNC with bushings.
      b. Exception: Raceways from below grade for telephone boards and data/signal equipment shall be RNC with bushings.
   3. Tape conduit from minimum 3 inches below transition to 3 inches above the floor so that no portion of the rigid steel conduit or IMC is in contact with the concrete.

AA. Raceways Through Floors: Install where practical and leave at least 2 inches from any walls. Coordinate with grade or perimeter beams prior to installation.
   1. Secure raceways to concrete with conduit clamps.
   2. Provide sleeve seals for conduit penetrations through floors. Provide firestopping at all floor penetrations.

BB. Install ALL exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
   1. Run parallel or banked raceways together on common supports.
   2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
   3. Install conduit as high as possible.
   4. Flexible cable or raceway for general circuiting is allowed exposed in mechanical or electrical spaces only. Not allowed in finished spaces.
      a. Exception: As equipment connection only.

CC. Join raceways with fittings designed and approved for that purpose and make joints tight.
   1. Use insulating bushings to protect conductors.

DD. Tighten set screws of threadless fittings with suitable tools.

EE. Terminations:
   1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.

2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.

FF. Install pull tape/wires in empty raceways.
1. For raceways under 2 inches and under less than 100 feet, use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
2. Raceways under 2 inches and over 100 feet without intermediate pull boxes, provide mule tape. With intermediate pull boxes use pull wire.
3. For raceways over 2 inches and use mule tape.
4. Sleeves under 36 inches do not require pull tape/wire.

GG. Telephone and Signal System Raceways, 2-Inch Trade Size and Smaller: In addition to above requirements, install raceways in maximum lengths of 150 feet and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.

HH. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Label boxes “seal-off”. Install raceway sealing fittings at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

II. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.

JJ. Flexible Connections: Use maximum of 72 inches of flexible conduit for recessed and semi-recessed lighting fixtures if not using MC Cable for lighting whips; for equipment subject to vibration, noise transmission, or movement, and for all motors indoors of non-water operating equipment. Use LFNC in damp or wet locations or to any water operating equipment. Install separate ground conductor across flexible connections.

KK. Prime and Paint exposed conduit in finished spaces, unless pre-painted surface raceways is provided, as per owner/architect. Provide with paintable surface.

LL. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.

MM. Wiring Device Box mounting:
1. Provide stud to stud box bracket support for all wiring devices (receptacles, switches, data/communications, thermostats, pull stations, pushbuttons, or other user interactive devices)
2. Trim box bracket adjustment rods to fit between studs with smaller than standard spacing width
3. Install so boxes shall be flush with walls and extension brackets are not required.
4. Screw brackets into studs with manufacturer approved hardware

NN. Floor Boxes:
1. Set floor boxes level. Grout around floor box to fill in area around box opening.
2. Trim after installation to fit flush with finished floor surface.
3. Ground floor box with circuit grounding conductor.
4. Coordinate covers with floor finishes. Provide covers with inserts for tile or carpet.
5. Floor boxes shall be flush with finish floor.

OO. Install hinged-cover enclosures and cabinets plumb. Support at each corner.

PP. Cap all un-used/spare conduits. Does not include sleeves.

QQ. Wireways or gutters above panelboards, switchboards, distribution boards, or any other circuit distributing panel shall not be wider than 1.5x (times) the width of the panel or panels if adjoining.

RR. Under no circumstances shall wireways, pull boxes, or gutters wrap the room and be used as a channel for circuits, unless specifically called out by the engineer or per manufacturers shop drawings.

3.3 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
   1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
   2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.
   3. Provide cover over conduits during storage to prevent dirt and debris from entering conduits during storage.

3.4 CLEANING

A. After completing installation of exposed, factory-finished raceways and boxes, inspect exposed finishes and repair damaged finishes.

B. Remove debris from conduits prior to capping any spare conduits.

C. Blow-out empty conduits that are future spares in any exterior or underground installation prior to capping.

3.5 RECORD

A. Record the location of all spare conduits buried for future use by the owner.

END OF SECTION 260533

SECTION 260553

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes electrical identification materials and devices required to comply with ANSI C2, NFPA 70, OSHA standards, and authorities having jurisdiction.

1.3 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

B. Schedule of Nomenclature: An index of electrical equipment and system components used in identification signs and labels.

C. Samples: For each type of label and sign to illustrate color, lettering style, and graphic features of identification products.

1.4 QUALITY ASSURANCE

A. Comply with ANSI C2.

B. Comply with NFPA 70.

C. Comply with ANSI A13.1 and NFPA 70 for color-coding.

PART 2 - PRODUCTS

2.1 RACEWAYS AND CABLE LABELS

A. Comply with ANSI A13.1, Table 3, for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
   1. Color: Black letters on orange field.
   2. Legend: Indicates voltage and service.

B. Adhesive Labels: Preprinted, flexible, self-adhesive vinyl with legend over laminated with a clear, weather- and chemical-resistant coating.

C. Pretensioned, Wraparound Plastic Sleeves: Flexible, preprinted, color-coded, acrylic band sized to suit the diameter of the line it identifies and arranged to stay in place by pretensioned gripping action when placed in position.

D. Colored Adhesive Tape: Self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

E. Underground-Line Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape.
   1. Not less than 6 inches wide by 4 mils thick.

2. Compounded for permanent direct-burial service.
3. Embedded continuous metallic strip or core.
4. Printed legend indicating type of underground line.

F. Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.

G. Aluminum, Wraparound Marker Bands: Bands cut from 0.014-inch- thick aluminum sheet, with stamped or embossed legend, and fitted with slots or ears for permanently securing around wire or cable jacket or around groups of conductors.

H. Plasticized Card-Stock Tags: Vinyl cloth with preprinted and field-printed legends. Orange background, unless otherwise indicated, with eyelet for fastener.

I. Aluminum-Faced, Card-Stock Tags: Weather-resistant, 18-point minimum card stock faced on both sides with embossable aluminum sheet, 0.002 inch thick, laminated with moisture-resistant acrylic adhesive, punched for fasteners, and preprinted with legends to suit each application.

J. Brass or Aluminum Tags: 2×2×0.05-inch metal tags with stamped legend, punched for fastener.

2.2 NAMEPLATES AND SIGNS

A. Safety signs: Comply with 29 CFR, Chapter XVII, Part 1910.145.

B. Engraved Plastic Nameplates and Signs: Engraving stock, melamine plastic laminate, minimum 1/16 inch thick for signs up to 20 sq. in. and 1/8 inch thick for larger sizes.
1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.

C. Baked-Enamel Signs for Interior Use: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for the application. ¼-inch grommets in corners for mounting.

D. Exterior, Metal-Backed, Butyrate Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for the application. ¼-inch grommets in corners for mounting.

E. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32, stainless-steel machine screws with nuts and flat and lock washers.

2.3 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Cable Ties: fungus-inert, self-extinguishing, one-piece, self-locking, Type 6/6 nylon cable ties.
1. Minimum Width: 3/16 inch.
2. Tensile Strength: 50 lb minimum.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: According to color-coding.

B. Paint: Formulated for the type of surface and intended use.
1. Primer for Galvanized Metal: Single-component acrylic vehicle formulated for galvanized surfaces.
2. Primer for Concrete Masonry Units: Heavy-duty-resin block filler.
3. Primer for Concrete: Clear, alkali-resistant, binder-type sealer.
4. Enamel: Silicone-alkyd or alkyd urethane as recommended by primer manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Identification Materials and Devices: Install at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Lettering, Colors, and Graphics: Coordinate names, abbreviations, colors, and other designations with corresponding designations in the Contract Documents or with those required by codes and standards. Use consistent designations throughout Project.

C. Sequence of Work: If identification is applied to surfaces that require finish, install identification after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before applying.

E. Install painted identification according to manufacturer's written instructions and as follows:
1. Clean surfaces of dust, loose material, and oily films before painting.
2. Prime surfaces using type of primer specified for surface.
3. Apply one intermediate and one finish coat of enamel.

F. Color Banding Raceways and Exposed Cables: Band exposed and accessible raceways of the systems listed below:
1. Bands: Pretensioned, wraparound plastic sleeves; colored adhesive tape; or a combination of both. Make each color band 2 inches wide, completely encircling conduit, and place adjacent bands of two-color markings in contact, side by side.
2. Band Locations: At changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
3. Apply the following colors to the systems listed below:
    a. Fire Alarm System: Red.
    b. Fire-Suppression Supervisory and Control System: Red and yellow.
    c. Combined Fire Alarm and Security System: Red and blue.
    d. Security System: Blue and yellow.
    e. Mechanical and Electrical Supervisory System: Green and blue.
    f. Telecommunication System: Green and yellow.

G. Caution Labels for Indoor Boxes and Enclosures for Power and Lighting: Install pressure-sensitive, self-adhesive labels identifying system voltage with black letters on orange background. Install on exterior of door or cover.

H. Circuit Identification Labels on Boxes: Install labels externally.
1. Exposed Boxes: Pressure-sensitive, self-adhesive plastic label on cover.
2. Concealed Boxes: Plasticized card-stock tags.
3. Labeling Legend: Permanent, waterproof listing of panel and circuit number or equivalent.
4. Normal Power Circuits: Black lettering and numbers
5. Emergency Power Circuits: Red lettering and numbers

I. Paths of Underground Electrical Lines: During trench backfilling, for exterior underground power, control, signal, and communication lines, install continuous underground plastic line marker located directly above line at 6 to 8 inches below finished grade. Where width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches overall, use a single line marker. Install line marker for underground wiring, both direct-buried cables and cables in raceway.

J. Color-Coding of Secondary Branch Circuit Conductors: Use the following colors for service, feeder, and branch-circuit branch circuit conductors:
1. 120/208V 3 Phase Conductors:
    a. Phase A: Black.
    b. Phase B: Red.
    c. Phase C: Blue.
    d. Neutral: White.

e. Ground: Green.

2. 120/240V 3 Phase Conductors:
   a. Phase A: Black.
   b. Phase B: Orange (High Leg Only).
   c. Phase C: Blue.
   d. Neutral: White.
   e. Ground: Green.
3. 120/240V Single Phase Conductors:
   a. Phase A: Black.
   b. Phase B: Red or Blue.
   c. Neutral: White.
   d. Ground: Green.
4. 277/480V 3 Phase Conductors:
   a. Phase A: Purple.
   b. Phase B: Brown.
   c. Phase C: Yellow.
   d. Neutral: Gray.
   e. Ground: Green.
5. Factory apply color the entire length of conductors, except the following field-applied, color-coding methods may be used instead of factory-coded wire for sizes larger than No. 10 AWG:
   a. Colored, pressure-sensitive plastic tape in half-lapped turns for a distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Use 1-inch-wide tape in colors specified. Adjust tape bands to avoid obscuring cable identification markings.
   b. Colored cable ties applied in groups of three ties of specified color to each wire at each terminal or splice point starting 3 inches from the terminal and spaced 3 inches apart. Apply with a special tool or pliers, tighten to a snug fit, and cut off excess length.

K. Power-Circuit Identification: Metal tags or aluminum, wraparound marker bands for cables, feeders, and power circuits in vaults, pull and junction boxes, manholes, and switchboard rooms.
1. Legend: ¼-inch- steel letter and number stamping or embossing with legend corresponding to indicated circuit designations.
2. Tag Fasteners: Nylon cable ties.
3. Band Fasteners: Integral ears.

L. Apply identification to conductors as follows:
1. Conductors to Be Extended in the Future: Indicate source and circuit numbers.
2. Multiple Power or Lighting Circuits in the Same Enclosure: Identify each conductor with source, voltage, circuit number, and phase. Use color-coding to identify circuits' voltage and phase.
3. Multiple Control and Communication Circuits in the Same Enclosure: Identify each conductor by its system and circuit designation. Use a consistent system of tags, color-coding, or cable marking tape.

M. Apply warning, caution, and instruction signs as follows:
1. Warnings, Cautions, and Instructions: Install to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.
2. Emergency Operation: Install engraved laminated signs with white legend on red background with minimum 3/8-inch- high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

N. Equipment Identification Labels: Engraved plastic laminate. Install on each unit of equipment, including central or master unit of each system. This includes power, lighting, communication, signal, and alarm systems, unless units are specified with their own self-explanatory identification. Unless otherwise indicated, provide a single line of text with ½-inch- high lettering on 1½-inch-high label;

where two lines of text are required, use labels 2 inches high. Use white lettering on black field. Apply labels for each unit of the following categories of equipment using mechanical fasteners:

1. Panelboards, electrical cabinets, and enclosures.
2. Access doors and panels for concealed electrical items.
3. Electrical switchgear and switchboards.
4. Electrical substations.
5. Emergency system boxes and enclosures.
6. Motor-control centers.
7. Disconnect switches.
8. Enclosed circuit breakers.
9. Motor starters.
10. Push-button stations.
11. Power transfer equipment.
12. Contactors.
13. Remote-controlled switches.
14. Dimmers.
15. Control devices.
16. Transformers.
17. Inverters.
18. Rectifiers.
19. Frequency converters.
20. Battery racks.
21. Power-generating units.
22. Telephone switching equipment.
23. Clock/program master equipment.
24. Call system master station.
25. TV/audio-monitoring master station.
26. Fire alarm master station or control panel.
27. Security-monitoring master station or control panel.

END OF SECTION 260553

SECTION 260800

ELECTRICAL SYSTEMS COMMISSIONING

PART 1 – GENERAL

1.1 DESCRIPTION

A. The purpose of this section is to specify Division 26 responsibilities in the commissioning process which are being directed by the CxA. Other electrical systems testing may be required by other specification sections and under the direction of the CM.

B. The list of commissioned equipment and systems is found in Section 019100.1.3.C.

C. Commissioning requires the participation of Division 26 to ensure that all systems are operating in a manner consistent with the Contract Documents. The general commissioning requirements and coordination are detailed in Section 019100. Division 26 shall be familiar with all parts of Section 019100 and shall execute all commissioning responsibilities assigned to them in the Contract Documents.

D. Related Sections
1. Section “Submittal Procedures”
2. Section “Project Closeout”
3. Section “Warranties and Guarantees”
4. Section “Interior Lighting”
5. Section “Exterior Lighting”

1.2 RESPONSIBILITIES

A. Electrical Contractors. The commissioning responsibilities applicable to the electrical contractor are as follows (all references apply to commissioned equipment only):

Construction and Acceptance Phases
1. Include the commissioning cost of the electrical contractor in the contract price.
2. In each purchase order or subcontract written, include requirements for submittal data, O&M data, and training.
3. Attend a commissioning scoping meeting and other necessary meetings scheduled by the CxA to facilitate the Cx process.
4. Contractors shall provide normal cut sheets and shop drawing submittals to the CxA of commissioned equipment.
5. Provide additional requested documentation, prior to normal O&M manual submittals, to the CxA for development of start-up and functional testing procedures.
    a. Typically, this will include detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures and full warranty information, including all responsibilities of the Owner to keep the warranty in force clearly identified. In addition, the installation and checkout materials that are actually shipped inside the equipments and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the CxA.
    b. The Commissioning Agent may request further documentation necessary for the commissioning process.
    c. This data request may be made prior to normal submittals.
6. Provide a copy of the O&M manuals submittals of commissioned equipment, through normal channels, to the CxA for review and approval.
7. Provide limited assistance to the CxA in preparing a full start-up and initial checkout plan using manufacturer’s start-up procedures. Submit manufacturer’s detailed start-up procedures and

the full start-up plan and procedures and other requested equipment documentation to CxA for review. Refer to Section 019100 for further details on start-up plan preparation.

8. Perform all completed start-up and system operational checkout procedures in the presence of the CxA.
9. Address current A/E punch list items before functional testing.
10. Provide skilled technicians to execute starting of equipment and to execute the functional performance tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments, and problem-solving.
11. Perform functional performance testing under the direction of the CxA for specified equipment in Section 019100. Assist the CxA in interpreting the monitoring data, as necessary.
12. Correct deficiencies (difference between specified and observed performance) as interpreted by the CxA, CM and A/E and retest the equipment.
13. Prepare O&M manuals according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions.
14. During construction, maintain as-built red-line drawings for all drawings and final CxAD as-builts for contractor-generated coordination drawings. Update after completion of commissioning (excluding deferred testing). Prepare red-line as-built drawings for all drawings and final as-builts for contractor-generated coordination drawings.
15. Provide training of the Owner's operating personnel as specified.
16. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.

Warranty Period

1. Correct deficiencies and make necessary adjustments to O&M manual and as-built drawings for applicable issues identified in any seasonal testing.

1.3 RELATED WORK

A. Refer to Section 019100, Part 1.1 for a listing of all sections where commissioning requirements are found.

B. Refer to Section 019100 Part 1.3 C for systems to be commissioned.

PART 2 – PRODUCTS

2.1 TEST EQUIPMENT

A. Division 26 shall provide all test equipment necessary to fulfill the testing requirements of this Division.

PART 3 – EXECUTION

3.1 SUBMITTALS

A. Division 26 shall provide submittal documentation relative to commissioning as required in this Section Part 1 and Section 019100.

3.2 STARTUP

A. The electrical contractors shall follow the start-up and initial checkout procedures listed in the Responsibilities list in this section and in 019100. Division 26 has start-up responsibility and is required to complete systems and sub-systems so they are fully functional, meeting the design

objectives of the Contract Documents. The commissioning procedures and functional testing do not relieve or lessen this responsibility or shift that responsibility partially to the commissioning agent or Owner.

B. Functional testing is intended to begin after completion of the Field Installation Verifications and Operational Performance Tests. Functional testing shall not proceed prior to the completion of systems or sub-systems.

3.3 FUNCTIONAL PERFORMANCE TESTS

A. Refer to Section 019100 Part 1.3 for a list of systems to be commissioned and to Part 1.5 for a description of the process.

3.4 TESTING DOCUMENTATION, NON-CONFORMANCE AND APPROVALS

A. Refer to Section 019100 Part 3.7 for specific details on non-conformance issues relating to pre-functional checklists and tests.

3.5 OPERATIONS AND MAINTENANCE (O&M) MANUALS

A. Division 26 shall compile and prepare documentation for all equipment and systems covered in Division 26 and deliver to the GC for inclusion in the O&M manuals, according to this section and Division 1 Section “O&M Documentation,” prior to the training of owner personnel.

B. The CxA shall receive a copy of the O&M manuals for review.

C. Review and Approvals. Review of the commissioning related sections of the O&M manuals shall be made by the A/E and by the CxA. Refer to Division 1 Section “O&M Documentation” for details.

3.6 TRAINING OF OWNER PERSONNEL

A. The GC shall be responsible for training coordination and scheduling and ultimately to ensure that training is completed. Refer to Section 019100 for additional details.

B. The CxA shall be responsible for overseeing and approving the content and adequacy of the training of Owner personnel for commissioned equipment. Refer to Section 019100 for additional details.

C. Electrical Contractor. The electrical contractor shall have the following training responsibilities:

1. Provide the CxA with a training plan two weeks before the planned training according to the outline described in Section 019100, Part 3.9.
2. Provide designated Owner personnel with comprehensive training in the understanding of the systems and the operation and maintenance of each major piece of commissioned electrical equipment or system.
3. Training shall start with classroom sessions, if necessary, followed by hands on training on each piece of equipment, which shall illustrate the various modes of operation, including start-up, shutdown, fire/smoke alarm, power failure, etc.
4. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will be repaired or adjusted as necessary and the demonstration repeated.
5. The appropriate trade or manufacturer’s representative shall provide the instructions on each major piece of equipment.
6. The training sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.
7. Hands-on training shall include start-up, operation in all modes possible, including manual, shut-down and any emergency procedures and maintenance of all pieces of equipment.

8. The electrical contractor shall fully explain and demonstrate the operation, function and overrides of any local packaged controls, not controlled by the central control system.
9. Training shall occur after functional testing is complete, unless approved otherwise by the Project Manager.

3.7 DEFERRED TESTING

A. Refer to Section 019100, Part 3.6 for requirements of deferred testing.

3.8 WRITTEN WORK PRODUCTS

A. Written work products of Contractors will consist of the startup and initial checkout plan described in Section 019100.

END OF SECTION 260800

SECTION 261310

PULL AND JUNCTION BOXES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work covered by this Section includes furnishing of and paying for all materials, labor, services, equipment, licenses, taxes, other items, and appliances necessary for the execution, installation and completion of all work specified herein and/or shown on the drawings.

B. Pull and junction boxes of appropriate size and depth as indicated on the drawings and as specified hereinafter.

1.2 SUBMITTALS

A. Submittals for products furnished under this section are not required.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For interior work, provide galvanized sheet metal boxes of code thickness with lapped and welded joints, ¾-inch flanges, screw covers, etc.

B. For exterior work, provide galvanized sheet metal boxes of code thickness with lapped and welded joints, ¾-inch flanges, bolted covers with full gaskets forming a completely raintight assembly for above ground installations. Provide concrete boxes with screw fittings and drains for in ground pull boxes. Boxes shall be sized as per NEC or as indicated on the drawings.

C. See drawings for pull boxes requiring racks.

D. Boxes with concentric knockouts are not acceptable.

E. Provide ground terminal strip and ground pull box and circuits.

F. As shown on Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide junction boxes as shown on drawings and otherwise where required, sized according to number of conductors in box or type of service to be provided. Minimum junction box size 4 inches square and 2⅛ inches deep. Provide screw covers for junction boxes.

B. Use minimum 16-gauge steel for pull boxes and provide with screw cover.

C. Install boxes in conduit runs wherever necessary to avoid too long runs or too many bends. Do not exceed 100-foot runs without pull boxes.

D. Rigidly secure boxes to walls or ceilings. Conduit runs will not be considered adequate support.

E. Install boxes with covers in accessible locations.

F. Pull boxes, wireways or gutters above panelboards, switchboards, distribution boards, or any other circuit distributing panel shall not be wider than 1.5x (times) the width of the panel or panels if adjoining.

G. Under no circumstances shall wireways, pull boxes, or gutters wrap the room and be used as a channel for circuits, unless specifically called out by the engineer or per manufacturers shop drawings.

H. Observe maximum conductor fill as required by the National Electrical Code.

END OF SECTION 261310

SECTION 261320

FLOOR BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

B. Related Sections include the following:
   1. Division 7 Section “Firestopping” for firestopping materials and installation at penetrations through walls, ceilings, and other fire-rated elements.
   2. Section “Basic Electrical Materials and Methods” for supports, anchors, and identification products.
   3. Section “Wiring Devices” for devices installed in boxes and for floor-box service fittings.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. ENT: Electrical nonmetallic tubing.

C. FMC: Flexible metal conduit.

D. IMC: Intermediate metal conduit.

E. LFMC: Liquidtight flexible metal conduit.

F. LFNC: Liquidtight flexible nonmetallic conduit.

G. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

A. Product Data: For floor boxes and covers.

B. Shop Drawings: Show fabrication and installation details of components for raceways, fittings, boxes, and covers.

1.5 QUALITY ASSURANCE

A. Floor boxes, covers, above the floor fittings, and accessories shall be of the same manufacturer and be designed, manufactured, tested, and installed to comply with UL514 and NEC/NFPA 370-17(b), covers are suitable for tile and carpeted floors (UL 514A-scrub water test).

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

D. All floor boxes shall be of the same size and type as indicated on the drawings or specified herein. All floor box locations shall be coordinated with the architect/engineer.

1.6 COORDINATION

A. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 DESCRIPTION

A. Floor boxes shall be recessed metallic multi-function floor boxes suitable for installation in concrete above grade. Boxes shall allow for the activation of power, data, and communication in a single box. All connections shall be made below the floor, recessed inside the box. When the box is in use only the cords shall be visible.

2.2 MANUFACTURERS

A. Subject to compliance with the requirements equipment shall come from the following manufacturers:
   1. Hubbell, Inc.; Killark Electric Manufacturing Co.
   2. Walker Systems, Inc.; Wiremold Company (The).
   3. Hoffman
   4. Additional manufacturers need to submit to the design engineer 10 working days prior to bid for approval. Submittal shall include a comparison of the specified box and the submitted box with cutsheets. Approval shall be in writing from the engineer. No response is not an acceptable response.

2.3 RECESSED METAL BOXES

A. Material: Stamped steel with galvanized finish.

B. Size: Box depth shall not exceed 3½ inches and 13 inches square.

C. Adjustments: The box shall have vertical and angular adjustments of 1¼ inches before and ½ ⅝ inches after the pour.

D. Connections: Circuit connections shall be made through six (6) ¾-inch and six (6) 1¼-inch combination style concentric knockouts. Box shall have six (6) individual wiring chambers with barriers between power and low voltage conductors. Barriers shall have chamber plugs for future wiring changes.

E. Grounding: Provide six (6) #12 green grounding lead wires.

F. Box shall be Hubbell type LCFBSS or approved equal.

2.4 COVERS

A. Material: Covers/flange assemblies shall be reinforced with metal cover plate and mounted to the box. Cover shall be made of high impact reinforced nylon. Flanges and cable doors shall be made of thermoplastic. Covers shall be brown.

B. Operation: Cover shall be hinged to allow access to the connections inside the box. When the box is in use, cables shall exit through two cable doors located on opposite ends of the cover. When box is not in use cover shall lay flush with the floor. Cover shall be 180 degrees reversible and accept a carpet insert.

C. Cover shall be Hubbell LCFBCBR or approved equal.

2.5 ACCESSORIES

A. Provide ivory service plates for each chamber used. Provide appropriate service plate for chamber use (receptacle, twist lock, data, style-line). Provide metal blank plates for chambers not being used.

PART 3 - EXECUTION

3.1 BOX INSTALLATION

A. Install boxes in accordance with manufacturers written instructions.

B. Locate boxes to prevent moisture from entering or accumulating within them.

C. Support outlet boxes independently of conduit, as required by the National Electrical Code.

D. Provide boxes as shown on Drawings.

E. Effectively close unused openings in boxes with metal plugs or plates.

F. Set boxes so that front edges of plaster rings are flush with finished surfaces.

G. Secure boxes to surfaces upon which they are mounted or embed boxes in concrete masonry. Support boxes from structural members with approved braces.

H. Install blank device plates on outlet boxes left for future use.

I. Provide bushings in holes through which cords or conductors pass.

J. Install boxes so that the covers will be accessible at all times.

K. Observe maximum conductor fill as required by the National Electrical Code.

3.2 CONDUIT

A. Provide a minimum of two (2) 1-inch conduits to each floor box for circuits and low voltage. Coordinate location of stub up with walls. See Section “Raceways and Boxes” for stub up requirements.

3.3 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
   1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
   2. Repair damage to PVC or paint finishes with matching touch-up coating recommended by manufacturer.

3.4 CLEANING

A. After completing installation of exposed, factory-finished raceways and boxes, inspect exposed finishes and repair damaged finishes.

END OF SECTION 261320

SECTION 262416

PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes load centers and panel boards, overcurrent protective devices, and associated auxiliary equipment rated 600 V and less for the following types:
   1. Lighting and appliance branch-circuit panel boards.
   2. Distribution panel boards.
   3. Transient voltage surge suppressor panel boards.

B. Related Sections include Section “Fuses.”

1.3 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter (GFI).

C. RFI: Radio-frequency interference.

D. RMS: Root mean square.

E. SPDT: Single pole, double throw.

F. TVSS: Transient voltage surge suppressor.

1.4 SUBMITTALS

A. Product Data: For each type of panel board, overcurrent protective device, TVSS device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Specification Compliance Review:
   1. Manufacturers and bidders must provide the consulting engineer with a Compliance Review of the Specifications and Addenda’s. The Compliance Review shall be a paragraph-by-paragraph review of the Specifications and schedule with the following information; “C”, “D”, or “E” marked in the margin of the original Specifications and any subsequent Addenda’s. If the manufacturer or bidder does not provide the Compliance Review to the engineer for review, with the submittal, the submittal will be subject to rejection as non-compliant.
      a. “C” Comply with no exceptions.
      b. “D” Comply with deviations. For each and every deviation, provide a numbered footnote with reasons for the proposed deviation and how the intent of the Specification can be satisfied.
      c. “E” Exception do not comply. For each and every exception, provide a numbered footnote with reasons and possible alternatives. Non-compliance with the specifications is grounds for rejection as unacceptable. A bid from any alternative or listed equipment

manufacturer with any number of exceptions will be reason for rejection for non-compliance without further review.

d. Unless a deviation or exception is specifically noted in the Compliance Review, the manufacturer shall provide full compliance with entire specification. Deviations or exceptions taken in letters or cover letters in a bid document, subsidiary documents, by omission or by contradiction do not release the manufacturer or bidder from being in complete compliance, unless the exception or deviation has been specifically noted in the Compliance Review and approved by the consulting engineer.

e. Equipment manufacturers or bidders that do not meet the specifications thru the above process will be subject to rejection without further review.

C. Shop Drawings: For each panelboard and related equipment.

1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:
   a. Enclosure types and details for types other than NEMA 250, Type 1.
   b. Bus configuration, current, and voltage ratings.
   c. Short-circuit current rating of panelboards and overcurrent protective devices.
   d. UL listing for series rating of installed devices.
   e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
2. Wiring Diagrams: Diagram power, signal, and control wiring and differentiate between manufacturer-installed and field-installed wiring.

D. Field Tests Reports: Submit written test reports and include the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

E. Panel board Schedules: For installation in panel boards. Submit final versions after load balancing.

F. Maintenance Data: For panel boards and components to include in maintenance manuals specified in Division 1. In addition to requirements specified in Division 1 Section “Closeout Procedures,” include the following:

1. Manufacturer’s written instructions for testing and adjusting overcurrent protective devices.
2. Time-current curves, including selectable ranges for each type of overcurrent protective device.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Testing agency that is a member company of the International Electrical Testing Association and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NEMA PB 1.

D. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate layout and installation of panel boards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.

1.7 EXTRA MATERIALS

A. Keys: Six (6) spares of each type of panel board cabinet lock.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, the following:
   1. Panel boards, Overcurrent Protective Devices, Controllers, Contactors, and Accessories:
      a. Siemens
      b. Square D Co.
      c. Eaton
   2. Electronic Grade Panel boards:
      a. Liebert Corporation.
      b. Square D Co.
      c. Eaton
      d. Siemens

2.2 FABRICATION AND FEATURES

A. Enclosures: Flush- and surface-mounted cabinets as indicated on drawings. NEMA PB 1, Type 1, to meet environmental conditions at installed location.
   1. Outdoor Locations: NEMA 250, Type 3R.
   2. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
   3. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.

B. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.

C. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

D. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.

E. Directory Card: With transparent protective cover, mounted inside metal frame, inside panelboard door.

F. Bus: Hard-drawn copper, 98 percent conductivity. Aluminum is **NOT** acceptable.

G. Main and Neutral Lugs:
   1. Compression type suitable for use with conductor material on MLO panels.
   2. Mechanical type suitable for use with conductor material on MCB panels.

H. Equipment Ground Bus: Copper, Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.

I. Service Equipment Label: UL labeled for use as service equipment for panel boards with main service disconnect switches.

J. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.

K. Isolated Equipment Ground Bus: Adequate for branch-circuit equipment ground conductors; insulated from box, where indicated on drawings.

L. Extra-Capacity Neutral Bus: Neutral bus rated 200 percent of phase bus and UL listed as suitable for nonlinear loads, where indicated on drawings.

M. Split Bus: Vertical buses divided into individual vertical sections.

N. Skirt for Surface-Mounted Panel boards: Same gage and finish as panel board front with flanges for attachment to panel board, wall, and ceiling or floor.

O. Gutter Barrier: Arrange to isolate individual panel sections.

P. Feed-through Lugs: Compression type suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.

Q. Provide power meters (peak KW, phase amperage, and kWh) with digital displays in the panels where indicated on the drawings. Provide single enclosure large enough for all panel components. Remote mounted meters are not acceptable. Mount meters in the upper portion of the enclosure. Provide correct trim kit for panel and meter. Meter shall have:
   1. Phase Amperage
   2. Peak Phase Amperage or KW
   3. KWh
   4. Phase Voltage
   5. Data Output connection to building management system for monitoring
   6. Digital Display

2.3 PANEL BOARD SHORT-CIRCUIT RATING

A. UL label indicating series-connected rating with integral or remote upstream devices. Include size and type of upstream device allowable, branch devices allowable, and UL series-connected short-circuit rating.

B. Fully rated to interrupt symmetrical short-circuit current available at terminals.

C. See panel schedules for minimum rating.

2.4 LOAD CENTERS

A. Overcurrent Protective Devices: Plug-in, full-module circuit breaker.

B. Conductor Connectors: Mechanical type for main, neutral, and ground lugs and buses.

2.5 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANEL BOARDS

A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

B. Doors: Front mounted with concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.6 DISTRIBUTION PANEL BOARDS

A. Doors: Front mounted, except omit in fused-switch panelboards; secured with vault-type latch with tumbler lock; keyed alike. Square D I-Line or approved equal.

B. Main Overcurrent Protective Devices: Thermal magnetic circuit breaker.

C. Branch Overcurrent protective devices shall be one of the following:
   1. For Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.
   2. For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

2.7 ELECTRONIC GRADE PANEL BOARDS

A. Doors: Front mounted; secured with vault-type latch with tumbler lock; keyed alike. Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.

B. Main Overcurrent Devices: Thermal-magnetic circuit breaker.

C. Branch Overcurrent Protective Devices: Bolt-on circuit breakers.

D. Bus: Copper phase and neutral buses; 200 percent capacity neutral bus.

E. TVSS Device: IEEE C62.41, integrally mounted, plug-in-style, solid-state, parallel-connected, sine-wave tracking suppression and filtering modules.
   1. Minimum single-impulse current rating shall be as follows:
      a. Line to Neutral: 100,000 A.
      b. Line to Ground: 100,000 A.
      c. Neutral to Ground: 50,000 A.
   2. Protection modes shall be as follows:
      a. Line to neutral.
      b. Line to ground.
      c. Neutral to ground.
   3. EMI/RFI Noise Attenuation Using 50-ohm Insertion Loss Test: 55 dB at 100 kHz.
   4. Category C combination wave clamping voltage shall not exceed 600 V, line to neutral and line to ground on 120/208 V systems or 1000 V, line to neutral and line to ground on 277/480 V systems.
   5. UL 1449 clamping levels shall not exceed 400 V, line to neutral and line to ground on 120/208 V systems or 800 V, line to neutral and line to ground on 277/480 V systems.
   6. Withstand Capabilities: 3000 Category C surges with less than 5 percent change in clamping voltage.
   7. Accessories shall include the following:
      a. Form-C contacts, one normally open and one normally closed, for remote monitoring of system operation. Contacts to reverse position on failure of any surge diversion module.
      b. Audible contacts, one normally open and one normally closed, for remote monitoring of system operation. Contacts to reverse position on failure of any surge diversion module.
      c. Six-digit transient-counter set to total transient surges that deviate from the sine-wave envelope by more than 125 V.

2.8 OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents. Breakers shall be fully rated for panel AIC rating.
   1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
   2. GFCI Circuit Breakers: Single- and two-pole configurations with 30-mA trip sensitivity.

B. Molded-Case Circuit-Breaker Features and Accessories. Standard frame sizes, trip ratings, and number of poles.
   1. Lugs: Compression style, suitable for number, size, trip ratings, and material of conductors.
   2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
   3. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
   4. Communication Capability: Circuit-breaker-mounted communication module with functions and features compatible with power monitoring and control system.
   5. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
   6. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
   7. Auxiliary Switch: Two SPDT switches with “a” and “b” contacts; “a” contacts mimic circuit-breaker contacts, “b” contacts operate in reverse of circuit-breaker contacts.
   8. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.
   9. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.

C. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.

2.9 CONTROLLERS

A. Motor Controllers: NEMA ICS 2, Class A combination controller equipped for panelboard mounting and including the following accessories:
   1. Individual control-power transformers.
   2. Fuses for control-power transformers.
   3. Bimetallic-element overload relay.
   4. Melting-alloy overload relay.
   5. Indicating lights.
   6. Seal-in contact.
   7. Two convertible auxiliary contacts.
   8. Push buttons.
   9. Selector switches.

B. Contactors: NEMA ICS 2, Class A combination controller equipped for panelboard mounting and including the following accessories:
   1. Individual control-power transformers.
   2. Fuses for control-power transformers.
   3. Indicating lights.
   4. Seal-in contact.
   5. Two convertible auxiliary contacts.
   6. Push buttons.
   7. Selector switches.

C. Controller Disconnect Switches: Fused switch mounted adjacent to and interlocked with controller.
   1. Auxiliary Contacts: Integral with disconnect switches to de-energize external control-power source.

D. Contactors in Main Bus: NEMA ICS 2, Class A, mechanically held general-purpose controller.
   1. Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.

2.10 ACCESSORY COMPONENTS AND FEATURES

A. Accessory Set: Tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

B. Portable Test Set: To test functions of solid-state trip devices without removal from panel board.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install panel boards and accessories according to NEMA PB 1.1 and the NEC.

B. Provide minimum clearance in front of panelboards: 36 inches clearance in front of 120/208V and 42 inches in front of 277/480V panel boards.

C. Space panels 4 inches apart and provide spacing for future panels.

D. Locate Surge suppression above and adjacent to panelboard serving. Provide additional spacing between panelboards. Surge suppression to be no greater than 7 feet above finished floor.

E. Locate contactors adjacent to panelboards and provide additional spacing. Small contactor enclosures can be above and to the right or left of the panelboard. Contactor mounting height to be no greater than 7 feet above finished floor.

F. Coordinate with other equipment in the room.

G. Coordinate location of panelboards with transformers and conduit feeders.

H. Mounting Heights: Top of trim 74 inches above finished floor, unless otherwise indicated. Mount with at least 6 inches of clearance below panel board.

I. Mounting: Plumb and rigid without distortion of box. Mount recessed panel boards with fronts uniformly flush with wall finish.

J. Circuit Directory: Create a directory to indicate installed circuit loads after balancing panel board loads. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable. Use manufacturers supplied card and permanent slot location.

K. Install filler plates in unused spaces.

L. Provision for Future Circuits at Flush Panel boards: Stub four 1-inch empty conduits from panel board into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch empty conduits into raised floor space or below slab not on grade.

M. Provision for Future Circuits at Recessed panel boards: Stub four ¾” inch empty conduits from panel board into accessible ceiling space or space designated to be ceiling space in the future. Stub four ¾” inch empty conduits into raised floor space or below slab not on grade.

N. Wiring in Panel board Gutters: Arrange conductors into groups and bundle and wrap with wire ties after completing load balancing.

O. Where panelboard meters are indicated, provide power to the meter from the panel being served. Provide CT’s in the panel enclosure. Connect CT’s to the meter and verify operation of demand and voltage.

P. Wireways or gutters above panelboards, distribution boards, or any other circuit distributing panel shall not be wider than 1.5x (times) the width of the panel or panels if adjoining. Under no circumstances shall wireways, pull boxes, or gutters wrap the room and be used as a channel for circuits, unless specifically called out by the engineer or per manufacturers shop drawings.

Q. Where exterior panels are mounted on unistrut racks and the top of the mounted panel is taller than 60” above the mounting surface, provide rear triangular support for unistrut rack angled 30 degrees connected 2/3 way up the rack and mounted to the same structure as the unistrut rack. If mounting on a roof assembly support for the rear support shall go through the roof at 90 degrees.

3.2 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Section “Electrical Identification.”

B. Label and identify all breakers with permanent engraved labels for panel subfeeders and equipment connections on all distribution panelboards.

C. Panel board Nameplates: Label all panel boards with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws. Provide red nameplates for emergency or stand-by power branch fed panels. Nameplate shall include:
   1. Normal Power
      a. Panel Name
      b. Voltage “277/480", “120/208", or “120/240"
      c. Panel fed from “panel name or transformer name”
   2. Generator Powered Panels
      a. Panel Name
      b. Voltage “277/480", “120/208", or “120/240"
      c. Panel fed from “panel name or transformer name”
      d. Non-Hospital
         1) Non-emergency, “Stand-By Branch”
         2) Life Safety Non-Hospital, “Life Safety Branch”
      e. Hospital Essential Branches:
         1) “Life Safety”
         2) “Critical Branch”
         3) “Equipment Branch”

3.3 CONNECTIONS

A. Install equipment grounding connections for panel boards with ground continuity to main electrical ground bus.

B. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

A. Prepare for acceptance tests as follows:
   1. Test insulation resistance for each panel board bus, component, connecting supply, feeder, and control circuit.
   2. Test continuity of each circuit.

B. Testing: After installing panel boards and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

1. Procedures: Perform each visual and mechanical inspection and electrical test indicated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

C. Balance Loads: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes as follows:
1. Measure as directed during period of normal system loading.
2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data-processing, computing, transmitting, and receiving equipment.
3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
4. Tolerance: Difference exceeding 20 percent between phase loads, within a panel board, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

3.5 ADJUSTING

A. Provide factory technician to set field-adjustable switches and circuit-breaker trip ranges.

3.6 CLEANING

A. On completion of installation, inspect interior and exterior of panel boards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

END OF SECTION 262416

SECTION 262726

WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes receptacles, connectors, switches, and finish plates.

1.3 DEFINITIONS

A. GFCI/GFI: Ground-fault circuit interrupter.

B. SPD: Surge protective device.

1.4 SUBMITTALS

A. Product Data: For each product specified.

B. Shop Drawings: Legends for receptacles and switch plates.

C. Samples: For devices and device plates for color selection and evaluation of technical features.

D. Maintenance Data: For materials and products to include in maintenance manuals specified in Division 1.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

B. Comply with NEMA WD 1.

C. Comply with NFPA 70.

1.6 COORDINATION

A. Receptacles for Owner-Furnished Equipment: Match plug configurations.
   1. Cord and Plug Sets: Match equipment requirements.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Deliver extra materials to Owner.
   1. Telephone/Power Service Poles: One for each 10, but not less than one.
   2. Floor Service-Outlet Assemblies: One for each 10, but not less than one.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Wiring Devices:
      a. Bryant Electric, Inc.
      b. Eaton.
      c. Hubbell, Inc.; Wiring Devices Div.
      d. Killark Electric Manufacturing Co.
      e. Leviton Manufacturing Co., Inc.
      f. Pass & Seymour/Legrand; Wiring Devices Div.
   2. Multi-outlet Assemblies:
      a. Airey-Thompson Co.
      b. Wiremold.
   3. Floor Service Outlets and Telephone/Power Poles:
      a. American Electric.
      b. Hubbell, Inc.; Wiring Devices Div.
      c. Pass & Seymour/Legrand; Wiring Devices Div.
      d. Square D Co.
      e. Wiremold.

2.2 RECEPTACLES

A. Straight-Blade and Locking Receptacles: Commercial spec grade Configuration NEMA 5-20R. Color by Architect/Owner.

B. GFCI Receptacles: Feed-through type, with integral NEMA WD 6, Configuration 5-20R duplex receptacle arranged to protect connected downstream receptacles on same circuit. Design units for installation in a 2¾-inch-deep outlet box without an adapter. Provide with test light as per NEC.

C. Isolated-Ground Receptacles: Equipment grounding contacts connected only to the green grounding screw terminal of the device with inherent electrical isolation from mounting strap.
   1. Devices: Orange in color and listed and labeled as isolated-ground receptacles.
   2. Isolation Method: Integral to receptacle construction and not dependent on removable parts.

D. TVSS Receptacles: Duplex type, NEMA WD 6, Configuration 5-20R, with integral TVSS in line to ground, line to neutral, and neutral to ground.

E. USB Receptacles:
   1. USB Charger Tamper-Resistant Receptacle, Two USB Type 2.0 ports 3.5 Amp, 5 Volt DC, 20 Amp, 125 Volt AC Decorator Duplex.
      a. Green LED indicator to show USB power available.
      b. Impact and chemical resistant.
      c. Flush fit design.
      d. Meets UL94 for 5V flammability rating.
      e. Complies with battery charging specification USB BC1.2.
      f. Compatible with USB 1.1/2.0/3.0 devices.
      g. Listed to UL498 and UL1310.

F. Industrial Heavy-Duty Receptacle: Comply with IEC 309-1.

G. All receptacles on emergency/stand-by power shall be red hospital grade. Faceplate color by Architect. All emergency/stand-by power receptacles shall have circuit numbers on faceplate. Refer to panel schedules and one-line for emergency/stand-by power branches.

H. Fifteen-amp (15A) receptacles are not acceptable and shall not be installed unless specifically directed by the engineer.

2.3 PENDANT CORD/CONNECTOR DEVICES

A. Description: Matching, locking type, plug and receptacle body connector, NEMA WD 6, Configurations L5-20P and L5-20R, Heavy-Duty grade.
   1. Body: Nylon with screw-open cable-gripping jaws and provision for attaching external cable grip.
   2. External Cable Grip: Woven wire-mesh type made of high-strength galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector. (Kellum or equal)

2.4 CORD AND PLUG SETS

A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.
   1. Cord: Rubber-insulated, stranded-copper conductors, with type SOW-A jacket. Green-insulated grounding conductor, and equipment-rating ampacity plus a minimum of 30 percent.
   2. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

2.5 SWITCHES

A. Snap Switches: Commercial spec grade.

B. Combination Switch and Receptacle: Both devices in a single gang unit with plaster ears and removable tab connector that permit separate or common feed connection.
   1. Switch: 20 A, 120/277-V ac.
   2. Receptacle: NEMA WD 6, Configuration 5-20R.

C. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on/off switches and audible and electromagnetic noise filters rated for amperage and voltage listed.
   1. Control: Continuously adjustable slide, and push-button on/off. Single-pole or three-way switch to suit connections.
   2. Incandescent Lamp Dimmers: Modular, 120 V, 60 Hz with continuously adjustable slide and toggle or rocker; single pole with soft tap or other quiet switch; electromagnetic filter to eliminate noise, RF, and TV interference; and 5-inch wire connecting leads.

2.6 WALL PLATES

A. Single and combination types match corresponding wiring devices. CSA certified and UL listed.
   1. Plate-Securing Screws: Metal with head color to match plate finish. Color by Architect.
   2. Material for Finished Spaces:
      a. Smooth, high impact self-extinguishing nylon, reinforcement ribs, captive screws; color by Architect/Owner.
   3. Material for Kitchens, Unfinished spaces (Mechanical, Electrical), and surface mounted locations: 302 brushed stainless steel.

2.7 FLOOR SERVICE FITTINGS

A. Type: Modular, flush-type, dual-service units suitable for wiring method used.

B. Compartmentation: Barrier separates power and signal compartments.

C. Housing Material: Die-cast aluminum, satin finished.

D. Power Receptacle: NEMA WD 6, Configuration 5-20R, gray finish, unless otherwise indicated.

E. Signal Outlet: Blank cover with bushed cable opening, unless otherwise indicated.

2.8 MULTI-OUTLET ASSEMBLIES

A. Components of Assemblies: Products from a single manufacturer designed for use as a complete, matching assembly of raceways and receptacles.

B. Raceway Material: Metal, with manufacturer's standard finish.

C. Raceway Material: Nonmetal.

D. Wire: No. 12 AWG.

2.9 TELEPHONE/POWER SERVICE POLES

A. Description: Factory-assembled and -wired units to extend power, telephone, and data service from distribution wiring concealed in ceiling to devices or outlets in pole near floor.
   1. Poles: Nominal 2.5-inch-square cross section with height adequate to extend from floor to at least 6 inches above ceiling, and separate channels for power and signal wiring.
   2. Mounting: Ceiling trim flange with concealed bracing arranged for positive connection to ceiling supports, and pole foot with carpet pad attachment.
   3. Finishes: One of manufacturers standard finish and trim combinations, including painted and satin anodized-aluminum finishes and wood-grain-type trim.
   4. Wiring: Sized for six No. 12 AWG power and ground conductors; one 75-ohm coaxial telephone/data cable; and four four-pair, 75-ohm telephone/data cable.
   5. Power Receptacles: four single; 20-A; heavy-duty; NEMA WD 6, Configuration 5-20R units.
   6. Signal Outlets: Blank insert with bushed cable opening.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install devices and assemblies straight, plumb and secure. Do not overtighten to deform faceplate. Adjust receptacle depth so faceplate mounts flush with wall. Adjust receptacle to extend equilaterally 1/8” beyond the faceplate opening.

B. Install devices as per ADA height requirements.

C. Review Architectural elevations to coordinate locations and mounting heights. If there are any discrepancies request information prior to install. If height is not listed on the drawings refer to the following:
   1. General purpose receptacles @ 18" AFF to the center of the duplex or simplex.
   2. General purpose receptacles at retirement facilities, nursing homes, hospice, nursing facilities @ 24" AFF.
   3. TV receptacles at the TV mounting location (see architectural elevations) or at 96" AFF.
   4. Above counter receptacles @ 6" above backsplash.
   5. Toilet room receptacles @ 48" AFF to the top of the box
   6. Switches to be 48” AFF to the centerline of the switch.
   7. Equipment receptacles at the piece of equipment. Coordinate with architectural elevations and equipment submittals.
   8. Refrigerator receptacles mount at 36” AFF to the center of the receptacle.
   9. Receptacles shall not be installed flat on any counter surface.

10. No general purpose receptacles shall be below 15” in height or above 48” AFF.

D. Install wall plates when painting is complete. Remove all paint from any wall plates.

E. Provide GFI receptacles within 6 feet of all sinks, exterior receptacles, undercounter equipment, at exterior HVAC equipment, vending machines, and in kitchens.

F. Install wall dimmers to achieve indicated rating after de-rating for ganging as instructed by manufacturer.

G. Do not share neutral conductor on load side of dimmers.

H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and grounding terminal of receptacles on bottom. Group adjacent switches under single, multi-gang wall plates.

I. Protect devices and assemblies during painting.

J. Mount receptacles in millwork flush with the millwork. Provide extension rings.

K. Adjust locations at which floor service outlets and telephone/power service poles are installed to suit arrangement of partitions and furnishings.

L. GFCI or GFI receptacles shall be wired to “trip” individually not the entire circuit. Receptacles shall not be daisy chained together from a GFI and create a GFI “protected” receptacle.

3.2 IDENTIFICATION

A. Comply with Section “Electrical Identification.”
   1. Switches: Where three or more switches are ganged, and elsewhere as indicated, identify each switch with approved legend engraved on wall plate.
   2. Receptacles: Identify panelboard and circuit number from which served. Use machine-printed, pressure-sensitive, abrasion-resistant label tape on face of plate and durable wire markers or tags within outlet boxes.

3.3 CONNECTIONS

A. Connect wiring device grounding terminal to branch-circuit equipment grounding conductor.

B. Isolated-Ground Receptacles: Connect to isolated-ground conductor routed to designated isolated equipment ground terminal of electrical system.

C. Tighten electrical connectors and terminals according to manufacturers published torque-tightening values. If manufacturers torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

A. Test wiring devices for proper polarity and ground continuity. Operate each device at least six times.

B. Provide receptacle tension testing as requested by owner/engineer. Tension shall be greater than 4 oz.

C. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.

D. Replace damaged or defective components.

3.5 CLEANING

A. Internally clean devices, device outlet boxes, and enclosures. Replace stained or improperly painted wall plates or devices.

END OF SECTION 262726

SECTION 262816

DISCONNECT SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes individually mounted switches and circuit breakers used for the following:
   1. Service disconnect switches.
   2. Feeder and equipment disconnect switches.
   3. Feeder branch-circuit protection.
   4. Motor disconnect switches.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Section “Wiring Devices” for attachment plugs and receptacles, and snap switches used for disconnect switches.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for disconnect switches, circuit breakers, and accessories specified in this Section.

C. Wiring diagrams detailing wiring for power and control systems and differentiating between manufacturer-installed and field-installed wiring.

D. Field test reports.

E. Maintenance data for tripping devices to include in the operation and maintenance manual specified in Division 1.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain disconnect switches and circuit breakers from one source and by a single manufacturer.

B. Comply with NFPA 70 for components and installation.

C. Listing and Labeling: Provide disconnect switches and circuit breakers specified in this Section that are listed and labeled.
   1. The Terms “Listed” and “Labeled”: As defined in the National Electrical Code, Article 100.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Molded-Case Circuit Breakers:
      a. Siemens Energy & Automation, Inc.
      b. Square D Co.
      c. Eaton
   2. Combination Circuit Breaker and Ground Fault Trip:
      a. Siemens Energy & Automation, Inc.
      b. Square D Co.
      c. Eaton
   3. Molded-Case, Current-Limiting Circuit Breakers:
      a. Siemens Energy & Automation, Inc.
      b. Square D Co.
      c. Eaton
   4. Integrally Fused, Molded-Case Circuit Breakers:
      a. Siemens Energy & Automation, Inc.
      b. Square D Co.
      c. Eaton

2.2 DISCONNECT SWITCHES

A. General: Heavy Duty safety switch, service entrance rated if indicated, with grounding lug kit, rated for equipment amperage, capable to be locked in the open position, with number of poles matching equipment connections.

B. Enclosed, 600V Nonfusible Switch: NEMA KS 1, Type HD, with lockable handle. Switch shall be rated for equipment amperage.

C. Enclosed, 600V Fusible Switch, 800 A and Smaller: NEMA KS 1, Type HD, clips to accommodate specified fuses, enclosure consistent with environment where located, handle lockable with 2 padlocks, and interlocked with cover in CLOSED position. Switch shall be rated for equipment amperage.

D. Enclosure: NEMA KS 1, Type 1, unless otherwise specified or required to meet environmental conditions of installed location.
   1. Outdoor Locations: Type 3R.
   2. Wet or Damp Indoor Locations: Type 4, 304 stainless steel.
   3. Kitchen Locations: Type 4X 304 stainless steel.
   4. Pools and Coastal Locations: Type 4X 316 stainless steel.
   5. Hazardous Areas Indicated on Drawings: Type 7 stainless steel.

E. Lugs: Mechanical lugs and power-distribution connectors for number, size, and material of conductors indicated.

F. Shunt Trip: Where indicated.

G. Accessories: As indicated.

2.3 ENCLOSED CIRCUIT BREAKERS

A. Enclosed, Molded-Case Circuit Breaker: UL 489, with lockable handle. Bolt on mounting.

B. Characteristics: Frame size, trip rating, number of poles, and auxiliary devices as indicated and interrupting rating to meet available fault current. Breakers will be fully rated for circuit AIC rating.

C. Application Listing: Appropriate for application, including switching fluorescent lighting loads or heating, air-conditioning, and refrigerating equipment.

D. Circuit Breakers, 200 A and Larger: Trip units interchangeable within frame size.

E. Circuit Breakers, 400 A and Larger: Field-adjustable, short-time and continuous-current settings.

F. Current-Limiting Trips: Where indicated, let-through ratings less than NEMA FU 1, Class RK-5.

G. Current Limiters: Where indicated, integral fuse listed for circuit breaker.

H. Molded-Case Switch: Where indicated, molded-case circuit breaker without trip units.

I. Lugs: Mechanical lugs and power-distribution connectors for number, size, and material of conductors indicated.

J. Shunt Trip: Where indicated.

K. Accessories: As indicated.

L. Enclosure: NEMA AB 1, Type 1, unless otherwise specified or required to meet environmental conditions of installed location.
   1. Outdoor Locations: Type 3R.
   2. Wet or Damp Indoor Locations: Type 4, 304 stainless steel.
   3. Hazardous Areas Indicated on Drawings: Type 7 stainless steel.
   4. Kitchen Locations: Type 4X 304 stainless steel.
   5. Pools and Coastal Locations: Type 4X 316 stainless steel.

M. Surge Protective Device: IEEE C62.41, to meet requirements for category indicated.
   1. Exposure: High.
   2. Impulse sparkover voltage coordinated with system circuit voltage.
   3. Factory mounted with UL-recognized mounting device.

2.4 MOTOR CONTROL CENTER ADDED BREAKERS

A. Motor circuit breakers shall be thermal magnetic breakers.

B. Match AIC ratings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install disconnect switches and circuit breakers in locations as indicated, according to manufacturer's written instructions. Provide 2-inch clearance for operation and maintenance.

B. Install disconnect switches and circuit breakers level and plumb. Height of handle centerline shall not exceed 68 inches. Provide required clearance in front of disconnect switches voltage requirements by NEC.

C. Install disconnecting means (safety switch, enclosed circuit breaker, motor rated switch) for equipment independent of the equipment unless directly by engineer. In interior installations, mount on unistrut racks or suspend from structure. Exterior installations shall be mounted on galvanized unistrut racks. Provide working clearance in front of disconnecting means. Interior above ceiling disconnecting means shall be clearly visible from the equipment point of connection. Coordinate location with equipment.

D. Install wiring between disconnect switches, circuit breakers, control, and indication devices.

E. Provide power to all shunt trip circuit breakers/switches from panel the breakers are mounted in or fed from unless indicated otherwise on drawings. Provide 20A 1P CB and label shunt trip power.

F. Grounding: Ground case and metallic conduit of disconnects.

G. Provide working clearance in front of disconnect switch per NEC, minimum 36 inches.

H. Connect disconnect switches and circuit breakers and components to wiring system and to ground as indicated and instructed by manufacturer.
   1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486 A and UL 486 B.

I. Label and identify each disconnect switch and enclosed circuit breaker according to requirements specified in Section "Electrical Identification." Labels shall be 1" for 100A and smaller, 2" for 200 – 400A switches, and 3 inch for larger switches.

J. Label and identify each switch and breaker in MCC, distribution panels, and switchboards with 1" permanent engraved label indicating name and rating.

K. Engage factory tech to set all adjustable breaker settings per actual equipment installed. Coordinate with manufacturer for required settings and engage qualified agency (testing company/manufacturer) to obtain breaker settings.

3.2 FIELD QUALITY CONTROL

A. Testing: After installing disconnect switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
   1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.5 for disconnect switches 7.6 for molded-case circuit breakers. Certify compliance with test parameters.

B. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units and retest.

C. Infrared Scanning: After Substantial Completion, but not more than two (2) months after Final Acceptance, perform an infrared scan of each disconnect switch and circuit breaker. Remove fronts to make joints and connections accessible to a portable scanner.
   1. Follow-up Infrared Scanning: Perform one (1) additional follow-up infrared scan of each disconnect switch and circuit breaker 11 months after date of Substantial Completion.
   2. Instrument: Use an approved infrared scanning device designed to measure temperature or detect significant deviations from normal values. Provide calibration record for device used.
   3. Record of Infrared Scanning: Prepare a certified report identifying disconnect switch and circuit breaker checked and describing results of scanning. Include notation of deficiencies detected, remedial action taken and observations after remedial action.

3.3 ADJUSTING

A. Set field-adjustable disconnect switches and circuit-breaker trip ranges as indicated by the Electrical System Coordination Study. Refer to Section – Overcurrent Protection for fault current analysis, coordination study, electrical tests, and device setting requirements.

3.4 CLEANING

A. After completing system installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish including chips, scratches, and abrasions.

END OF SECTION 262816

SECTION 264313

SURGE PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes Surge Protective Devices for low-voltage (1000V and less) power, control, and communication equipment. Surge protective devices must exceed any short circuit rating of the equipment it is protecting. All safety emergency equipment shall have surge protection.

B. Related Sections include the following:
   1. Section “Wiring Devices” for devices with Surge Protective Devices.
   2. Section “Panelboards” for factory-installed Surge Protective Devices.
   3. Section “Switchboards” for factory-installed Surge Protective Devices.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities; shipping, installed, and operating weights; furnished specialties; and accessories.

B. Product Certificates: Signed by manufacturers of surge protective devices, certifying that products furnished comply with the following testing and labeling requirements:
   1. UL 1283 certification.
   2. UL 1449 Third Edition, or most recent edition, listing and classification.

C. Field Test Reports: Written reports of tests specified in Part 3 of this Section. Include the following:
   1. Test procedures used.
   2. Test results that comply with requirements.
   3. Failed test results and corrective action taken to achieve requirements.

D. Specification Compliance Review:
   1. Manufacturers and bidders must provide the consulting engineer with a Compliance Review of the Specifications and Addenda’s. The Compliance Review shall be a paragraph-by-paragraph review of the Specifications and schedule with the following information; “C”, “D”, or “E” marked in the margin of the original Specifications and any subsequent Addenda’s. If the manufacturer or bidder does not provide the Compliance Review to the engineer for review, with the submittal, the submittal will be subject to rejection as non-compliant.
      a. “C” Comply with no exceptions.
      b. “D” Comply with deviations. For each and every deviation, provide a numbered footnote with reasons for the proposed deviation and how the intent of the Specification can be satisfied.
      c. “E” Exception do not comply. For each and every exception, provide a numbered footnote with reasons and possible alternatives. Non-compliance with the specifications is grounds for rejection as unacceptable. A bid from any alternative or listed equipment manufacturer with any number of exceptions will be reason for rejection for non-compliance without further review.
      d. Unless a deviation or exception is specifically noted in the Compliance Review, the manufacturer shall provide full compliance with entire specification. Deviations or

exceptions taken in letters or cover letters in a bid document, subsidiary documents, by omission or by contradiction do not release the manufacturer or bidder from being in complete compliance, unless the exception or deviation has been specifically noted in the Compliance Review and approved by the consulting engineer.

e. Equipment manufacturers or bidders that do not meet the specifications thru the above process will be subject to rejection without further review.

E. Maintenance Data: For surge protective devices to include in maintenance manuals specified in Division 1.

F. Warranties: Special warranties specified in this Section.

G. All surge suppression device shall be sourced from the same company and current models.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain surge protective devices and accessories through one source from a single manufacturer.

B. Product Options: Drawings indicate size, dimensional requirements, and electrical performance of surge protective device and are based on the specific system indicated. Other manufacturers' products complying with requirements may be considered. Refer to Division 1 Section “Substitutions.”

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. IEEE Compliance: Comply with IEEE C62.41.1-2002, “IEEE Guide for Surge Voltages in Low Voltage AC Power Circuits,” IEEE C62.41.2 - 2002. “IEEE Recommended Practice on Characterization of Surges in Low Voltage AC Power Circuits” and test devices according to IEEE C62.45-2002, “IEEE Recommended Practice on Surge Testing for Equipment connected to Low Voltage AC Power Circuits.

E. NOTE: NEMA LS 1 was rescinded in 2009. Any reference to NEMA LS1 should be removed. We can provide documentation if necessary.

F. UL Compliance: Comply with UL 1283, “Electromagnetic Interference Filters,” and UL 1449 most recent edition, “Surge Protective Devices.”

1.5 PROJECT CONDITIONS

A. Placing into Service: Do not energize or connect service entrance equipment, panelboards, control terminals, or data terminals to their sources until the installer verifies the service and separately derived system’s Neutral to Ground bonding jumpers per NEC. After the system is energized and stable, connect the surge protective device.

B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Architect not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Architect's written permission.

C. Service Conditions: Rate surge protective devices for continuous operation under the following conditions, unless otherwise indicated:

1. Maximum Continuous Operating Voltage: Not less than 115 percent of nominal system operating voltage for 480Y/277V and not less than 125 percent of nominal voltage for 208Y/120V (Verifiable at UL.com).
2. Operating Temperature: 30 to 120 deg F.
3. Humidity: 0 to 85 percent, noncondensing.
4. Altitude: Less than 20,000 feet above sea level.

1.6 COORDINATION

A. Coordinate location of field-mounted surge protective device to allow adequate clearances for maintenance.

1.7 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
   1. Provide 5-year manufacturer warranty, 1 year labor install warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Manufacturers of a Broad Line of Surge Protective Devices:
      a. Atlantic Scientific Corp.
      b. Current Technology, Inc.
      c. Cutler-Hammer, Inc.
      d. Hubbell.
      e. Leviton Manufacturing Co., Inc.
      f. Liebert Corp.
      g. Northern Technologies.
      h. Siemens Energy & Automation.
      i. Square D Co.
      j. Tycor International, Inc.
      k. Advanced Protection Technologies, Inc. (APT).
   2. Manufacturers of Category A and Telephone/Data Line Surge Protective Devices:
      a. MCG Electronics, Inc.
      b. NTE Electronics, Inc.
      c. Telebyte Technology, Inc.
      d. Advanced Protection Technologies, Inc. (APT).

2.2 SERVICE ENTRANCE SURGE PROTECTIVE DEVICE

A. Surge Protective Device Description: Non-modular type with the following features and accessories:
   1. Visual LED indicator lights for power and protection status including a minimum of one green LED indicator per phase, and one red service LED.
   2. Audible alarm, with a diagnostic test function and a silencing switch, to indicate when protection has failed.
   3. One set of dry contacts rated at 5 a, 250-V ac, for remote monitoring of protection status.

B. Peak Single-Impulse Surge Current Rating: 200 kA per phase, minimum.

C. Connection Means: Permanently wired.

D. Protection modes and UL 1449 Third Edition, or most recent edition, Voltage Protection Rating (VPR) for grounded wye circuits with voltages of 480Y/277 and 208Y/120; three-phase, four-wire circuits, shall be as follows:
   1. Line to Neutral: 1200 V for 480Y/277 and 700 V for 208Y/120.
   2. Line to Ground: 1200 V for 480Y/277 and 700 V for 208Y/120.
   3. Neutral to Ground: 1200 V for 480Y/277 and 700 V for 208Y/120.

E. SPD shall be UL labeled with 200 kA Short Circuit Current Rating (SCCR). Fuse ratings shall not be considered in lieu of demonstrated withstand testing of SPD, per NEC 285.6.

F. SPD shall be UL labeled as Type 1 (verifiable at UL.com), intended for use without need for external or supplemental overcurrent controls. Every suppression component of every mode, including N-G, shall be protected by internal overcurrent and thermal overtemperature controls. SPDs relying upon external or supplementary installed safety disconnectors do not meet the intent of this specification.

G. SPD shall be UL labeled with 20 kA Inominal (I-n), which is verifiable at UL.com for compliance to UL 96A Lightning Protection Master Label and NFPA 780.

2.3 PANELBOARD SURGE PROTECTIVE DEVICES

A. Surge Protective Device Description: Non-modular type with the following features and accessories:
   1. Visual LED indicator lights for power and protection status including a minimum of one green LED indicator per phase and one red service LED.
   2. Audible alarm, with silencing switch, to indicate when protection has failed.
   3. One set of dry contacts rated at 5 a, 250-V ac, for remote monitoring of protection status.

B. Peak Single-Impulse Surge Current Rating: 100 kA per phase minimum.

C. Protection modes and UL 1449 Third Edition Voltage Protection Rating (VPR) for grounded wye circuits with voltages of 480Y/277 and 208Y/120; three-phase, four-wire circuits, shall be as follows:
   1. Line to Neutral: 1200 V for 480Y/277 and 700 V for 208Y/120.
   2. Line to Ground: 1200 V for 480Y/277 and 700 V for 208Y/120.
   3. Neutral to Ground: 1200 V for 480Y/277 and 700 V for 208Y/120.

D. SPD shall be UL labeled with 200 kA Short Circuit Current Rating (SCCR). Fuse ratings shall not be considered in lieu of demonstrated withstand testing of SPD, per NEC 285.6.

E. SPD shall be UL labeled as Type 1 (verifiable at UL.com), intended for use without need for external or supplemental overcurrent controls. Every suppression component of every mode, including N-G, shall be protected by internal overcurrent and thermal overtemperature controls. SPDs relying upon external or supplementary installed safety disconnectors do not meet the intent of this specification.

F. SPD shall be UL labeled with 20 kA Inominal (I-n), which is verifiable at UL.com, for compliance to UL 96A Lightning Protection Master Label and NFPA 780.

2.4 AUXILIARY PANEL SURGE PROTECTIVE DEVICES

A. Surge Protective Device Description: Unit type, panel-mounted design with the following features and accessories:
   1. Visual LED indicator lights for power and protection status including a minimum of one green LED indicator per phase and one red service LED.
   2. Audible alarm, with silencing switch, to indicate when protection has failed.
   3. One set of dry contacts rated at 5 A, 250-V ac, for remote monitoring of protection status.
   4. Arrangement with wire connections to phase buses, neutral bus, and ground bus.

B. Peak Single-Impulse Surge Current Rating: 100 kA per phase minimum.

C. Protection modes and UL 1449 Third Edition Voltage Protection Rating (VPR) for grounded wye circuits with voltages of 480Y/277 and 208Y/120; three-phase, four-wire circuits, shall be as follows:
   1. Line to Neutral: 1200 V for 480Y/277 and 700 V for 208Y/120.
   2. Line to Ground: 1200 V for 480Y/277 and 700 V for 208Y/120.
   3. Neutral to Ground: 1200 V for 480Y/277 and 700 V for 208Y/120.

D. SPD shall be UL labeled with 200 kA Short Circuit Current Rating (SCCR). Fuse ratings shall not be considered in lieu of demonstrated withstand testing of SPD, per NEC 285.6.

E. SPD shall be UL labeled as Type 1 (verifiable at UL.com), intended for use without need for external or supplemental overcurrent controls. Every suppression component of every mode, including N-G, shall be protected by internal overcurrent and thermal overtemperature controls. SPDs relying upon external or supplementary installed safety disconnectors do not meet the intent of this specification.

F. SPD shall be UL labeled with 20 kA Inominal (I-n), which is verifiable at UL.com, for compliance to UL 96A Lightning Protection Master Label and NFPA 780.

2.5 SPECIAL SYSTEMS CONTROL AND DATA TERMINALS

A. Protectors for fire alarm, copper control, data, antenna, and telephone conductors entering the building from the outside shall be as recommended by the manufacturer for the type of line being protected.

2.6 ENCLOSURES

A. NEMA 250, with type matching the enclosure of panel or device being protected.

PART 3 - EXECUTION

3.1 INSTALLATION OF SURGE PROTECTIVE DEVICES

A. Provide surge suppression for the incoming service at the switchboard or service entrance equipment.

B. Provide surge suppression at the tele/data demark phone board or cabinet as close as possible to the incoming conduit and conductors. Provide surge suppression for all tele/data conductors that are run underground from one MDF/IDF to another.

C. Provide surge suppression at all fire alarm panels that connect to any fire alarm panel or device with underground conductors.

D. Install devices at service entrance on load side, with ground lead bonded to service entrance ground.

E. Install devices for panelboard and auxiliary panels with conductors between surge protective device and points of attachment as short (less than 24") and straight as possible. Gently twist conductors together. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.

F. Install devices at service entrance on load side with ground lead bonded to service entrance ground. At Service Entrance or Transfer Switch, a UL approved disconnect switch shall be provided as a means of servicing disconnect if a 60 A breaker is not available.

G. Install devices for Distribution, MCC and Branch panelboards with conductors between supressors and points of attachment as short and straight as possible. Do not exceed manufacturer’s recommended lead length. Do not bond neutral to ground.

H. SPD shall have an independent means of servicing disconnect such that the protected panel remains energized. Provide a 30 Amp breaker (or larger sized by manufacturer) to serve this function.

I. Installer may reasonably rearrange breaker locations to ensure short & straightest possible leads to SPDs.

J. Before energizing, installer shall verify service and separately derived system Neutral to Ground bonding jumpers per NEC.

K. For surface mounted panel boards, associated surge protective device shall be surface mounted adjacent to the panel board with user access. For recessed mounted panel boards, associated surge protective devices shall be mounted recessed adjacent to the panel board with user access. Do not mount above 84 inches unless directed.

3.2 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturers published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.3 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing:
   1. After installing surge protective devices, test for compliance with requirements.
   2. Complete startup checks according to manufacturer's written instructions.
   3. Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.19. Certify compliance with test parameters.
   4. If the SPD led are not green, replace with new unit.

B. Repair or replace malfunctioning units. Retest after repairs or replacements are made.

C. Manufacturer’s Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.
   1. Verify that electrical wiring installation complies with manufacturer's installation requirements.

END OF SECTION 264313

SECTION 265100

INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes interior lighting fixtures, lighting fixtures mounted on exterior building surfaces, lamps, ballasts, emergency lighting units, and accessories.

1.3 SUBMITTALS

A. Product Data: For each type of lighting fixture indicated, arranged in order of fixture designation. Include data on features, accessories, and the following:
   1. Dimensions of fixtures.
   2. Certified results of independent laboratory tests for fixtures and lamps for electrical ratings and photometric data.
   3. Certified results of laboratory tests for fixtures and lamps for photometric performance.
   4. Fluorescent and high-intensity-discharge ballasts.
   5. Types of lamps.

B. Specification Compliance Review:
   1. Manufacturers and bidders must provide the consulting engineer with a Compliance Review of the Specifications and Addenda's. The Compliance Review shall be a paragraph-by-paragraph review of the Specifications and schedule with the following information "C", "D", or "E" marked in the margin of the original Specifications and any subsequent Addenda's. If the manufacturer or bidder does not provide the Compliance Review to the engineer for review, with the submittal, the submittal will be subject to rejection as non-compliant.
      a. "C" Comply with no exceptions.
      b. "D" Comply with deviations. For each and every deviation, provide a numbered footnote with reasons for the proposed deviation and how the intent of the Specification can be satisfied.
      c. "E" Exception do not comply. For each and every exception, provide a numbered footnote with reasons and possible alternatives. Non-compliance with the specifications is grounds for rejection as unacceptable. A bid from any alternative or listed equipment manufacturer with any number of exceptions will be reason for rejection for non-compliance without further review.
      d. Unless a deviation or exception is specifically noted in the Compliance Review, the manufacturer shall provide full compliance with entire specification. Deviations or exceptions taken in letters or cover letters in a bid document, subsidiary documents, by omission or by contradiction do not release the manufacturer or bidder from being in complete compliance, unless the exception or deviation has been specifically noted in the Compliance Review and approved by the consulting engineer.
      e. Equipment manufacturers or bidders that do not meet the specifications thru the above process will be subject to rejection without further review.

C. Shop Drawings: Show details of nonstandard or custom fixtures. Indicate dimensions, weights, method of field assembly, components, features, and accessories.
   1. Wiring Diagrams: Detail wiring for fixtures and differentiate between manufacturer-installed and field-installed wiring.

D. Samples for Verification: For lighting fixtures designated for sample submission in the Interior Lighting Fixture Schedule.
   1. Lamps: Specified units installed.
   2. Ballast: 120-V model of specified ballast type.
   3. Accessories: Cord and plug.

E. Product Certificates: Signed by manufacturers of lighting fixtures certifying that products comply with requirements.

F. Dimming Driver Compatibility Certificates: Signed by manufacturer of driver certifying that drivers are compatible with dimming systems and equipment with which they are used.

G. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

H. Maintenance Data: For lighting fixtures to include in maintenance manuals specified in Division 1.

I. Photometric Analysis: Submit point-by-point values on 1/8" = 1'-0" plans for all interior rooms. Calculations shall be made using (1) no masking, (2) light loss factor of 0.95, (3) point-by-point spacing of 24" x 24", and (4) reflectances of 80/50/20. In addition, also provide calculated average, maximum, and minimum footcandle values in a schedule for each room. Illuminance values (in footcandles) shall be for a calculation plane (workplane) at 30" AFF unless stated otherwise. Architectural plans in AutoCAD format shall be provided by Engineer for calculations upon request. Refer to architectural drawings for ceiling heights.

1.4 QUALITY ASSURANCE

A. Fixtures, Emergency Lighting Units, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

B. Comply with NFPA 70.

C. FM Compliance: Fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM.

D. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.

1.5 COORDINATION

A. Fixtures, Mounting Hardware, and Trim: Coordinate layout and installation of lighting fixtures with ceiling system and other construction.

1.6 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
   1. Warranties for LED Drivers; Written warranty, executed by manufacturer agreeing to replace LED drivers that fail in materials or workmanship within five years from date of manufacture, but not less than four years from date of Substantial Completion.
   2. Warranties for Electronic Ballasts; Written warranty, executed by manufacturer agreeing to replace Electronic Ballasts that fail in materials or workmanship within five years from date of manufacture, but not less than four years from date of Substantial Completion.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. LED Fixtures: Provide 10 extra 2x4 fixtures in boxes. Deliver to owner.
   2. Lamps: Ten (10) for every 100 of each type and rating installed. Furnish at least one (1) of each type.
   3. Plastic Diffusers and Lenses: One (1) for every 100 of each type and rating installed. Furnish at least one (1) of each type.
   4. Ballasts: One (1) for every 100 of each type and rating installed. Furnish at least one (1) of each type.
   5. Globes and Guards: One (1) for every 20 of each type and rating installed. Furnish at least one (1) of each type.
   6. Remote Battery Packs: One (1) for every 10, no less than two (2).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers and Models: All manufacturers (including those in the Lighting Fixture Schedule) are required to submit photometrics that illustrate the performance and light distribution as well as prove equal in quality to match those in the Lighting Fixture Schedule. Additional manufacturers beyond those in the Lighting Fixture Schedule may be considered as equal after review from the design engineer. For manufacturers not specified in the Lighting Fixture Schedule, submit photometrics to the design engineer for review prior to bid. Include a cross reference for each fixture submitted. Equipment submitted for “as-equal” without complete cutsheet cross reference, to include drawing fixture lettering, is subject to immediate rejection.
   1. Additional manufacturers will be considered on a case by case basis prior to bid. Post-bid non-approved manufacturers/models are subject to rejection and any cost difference for approved fixtures will be the contractors’ responsibility.

2.2 FIXTURES AND FIXTURE COMPONENTS, GENERAL

A. Metal Parts: Free from burrs, sharp corners, and edges.

B. Sheet Metal Components:
   1. Steel, unless otherwise indicated.
   2. Form and support to prevent warping and sagging.
   3. Housing painted after fabrication.
   4. Smooth hemmed sides and smooth inward formed end flanges.

C. Doors, Frames, and Other Internal Access:
   1. Smooth operating, free from light leakage under operating conditions, and arranged to permit relamping without use of tools. Arrange doors, frames, lenses, diffusers, and other pieces to prevent accidental falling during relamping and when secured in operating position.
   2. Standard extruded aluminum door frame has superior structural integrity with premium appearance and mitered corners. Door frame is painted after fabrication, standard. Powder-painted rotary cam latches provide easy, secure door closure. Integral T-bar clips are standard. Acrylic shielding materials is 100% UV stabilized.

D. Reflecting Surfaces: Minimum reflectance as follows, unless otherwise indicated:
   1. White Surfaces: 85 percent.
   2. Specular Surfaces: 83 percent.
   3. Diffusing Specular Surfaces: 75 percent.
   4. Laminated Silver Metallized Film: 90 percent.

E. Lenses, Diffusers, Covers, and Globes: 100 percent virgin acrylic plastic or annealed crystal glass, unless otherwise indicated.

1. Plastic: High resistance to yellowing and other changes due to aging, exposure to heat, and ultraviolet radiation.
2. Lens Thickness: 0.125-inch minimum, unless greater thickness is indicated.

F. Electromagnetic Interference Filters: Integral to fixture assembly. Provide one filter for each ballast where indicated on drawings. Suppress conducted electromagnetic interference filters as required by MIL-STD-461.

G. Housings: Manufacturers standard with integral heat sink.

H. Fixture Type Components:
1. Cylinder: With integral mounting provisions.
2. Downlight:
   a. Universal mounting bracket.
   b. Integral junction box with conduit fittings.
   c. Battery backup test button and integral to fixture.
3. Highbay, Linear
   a. Pendant mounted with secondary support provision.
   b. Universal mounting bracket.
4. Highbay, Nonlinear
   a. Pendant mounted with secondary support provision.
   b. Universal mounting bracket.
   c. Integral junction box with conduit fittings.
5. Linear Industrial
   a. Housing and heat sink rated to the following:
      1) Class 1, Division 2 Groups A, B, C, and D.
      2) NEMA 4X.
      3) IP 54.
      4) IP 66.
      5) Marine and wet locations.
      6) CSA C22.2 No 137.
6. Lowbay
   a. Pendant mounted with secondary support provision.
   b. Universal mounting bracket.
7. Parking Garage (Minimum damp location rated)
   a. Pendant mounted with secondary support provision.
   b. Universal mounting bracket.
   c. Low-profile housing and heat sink.
   d. Fully gasketed and sealed. IP 65 rated.
   e. Stainless-steel latches.
   f. Integral pressure equalizer.
8. Recessed Linear: Integral junction box with conduit fittings.
9. Strip Light
   a. Pendant mounted with secondary support provision.
   b. Universal mounting bracket.
   c. Integral junction box with conduit fittings.
   d. Wire guard or lens.
10. Surface Mount, Linear
   a. Universal mounting bracket.
   b. Integral junction box with conduit fittings.
11. Surface Mount, Nonlinear
   a. Universal mounting bracket.
   b. Integral junction box with conduit fittings.
12. Suspended, Linear
   a. Pendant mounted with secondary support provision.
   b. Universal mounting bracket.
   c. Provide with aircraft cable.
   d. Fixtures shall join with factory fittings of length on drawings with factory ends.

e. Coordinate cord drop.
f. Power feed thru factory quick connect.
g. White cord drop to end of fixture.
h. Minimum two supports per run. Minimum one every 8 feet.

13. Suspended, Nonlinear
    a. Pendant mounted with secondary support provision.
    b. Universal mounting bracket.

2.3 LED LIGHTING

A. General: Comply with fixture component requirements.

B. All LED products must be UL, ETL and/or CSA listed.

C. All LED products must have LM-79 and LM-80 testing minimum and noted on specification sheet by an independent test lab and in accordance with the following:
1. Lay-in Troffers: L90 at 60,000 hours at 25 degrees C.
2. Surface Mounted: L80 at 60,000 hours at 25 degrees C.
3. Pendant Mount: L90 at 60,000 hours at 25 degrees C.
4. Recessed Can: L70 at 50,000 hours at 25 degrees C.
5. High Bay: L70 at 90,000 hours at 25 degrees C. or
6. L95 at 60,000 hours at 25 degrees C. *
7. Exterior Surf Mtd: L90 at 100,000 hours at 40 degrees C or
   L80 at 100,000 hours at 25 degrees C *
8. High Bay and Exterior Fixtures shall be Thermally Protected Drivers

D. All LED products should be identified as L70 and/or L90 ratings based on independent test lab data.

E. Long-life LEDs, coupled with high-efficiency drivers, provide superior level and quality of illumination for extended service life.

F. All outdoor and wet location listed products must clearly state the IP rating carried on the fixture based on independent test lab data.

G. All LED products must be serviceable for accessible for field repair needs. Drivers and internal components are accessible from floor. LED boards include plug-in connectors for easy replacement or servicing. Suitable for direct insulation contact. Suitable for damp location.

H. Standard embedded controls continuously monitor system performance, allow for constant lumen management/compensation function, facilitate simple “plug-and-play’ network and controls upgrading via Cat-5 cable.

I. Minimum CRI 80.

J. All outdoor lighting color rendering should be within a 7 step McAdams Ellipse. All outdoor lighting should be 4100 Kelvin unless specifically noted.

K. All indoor lighting color rendering should be within a 3 step McAdams ellipse. All indoor lighting should be 4000 Kelvin unless specifically noted.

L. All LED drivers should be capable of 0-10 volt controls and DMX control and shall dim to 1% of total lumen output. Where specifically specified the dimming driver may be required to dim to .1% of lumen output, otherwise known as “dim to dark”.

M. Driver manufacturers must have a 5-year history producing dimmable electronic LED drivers for the North American market.

N. Ambient driver temperatures must be within -20 degrees to 50 degrees C (-4 degrees to 122 degrees F).

O. Driver must limit inrush current.
   1. Base specification: meet or exceed NEMA 410 driver inrush standard of 430 amp per 10 amps load with a maximum of 370 amps/2 seconds
   2. Preferred specification: Meet or exceed 30ma's at 277 VAC for up to 50 watts of load and 75A at 240us att 277 VAC for 100 watts of load
   3. Withstand up to a 1,000 volt surge without impairment of performance as defined by ANSI C62.41 Category A
   4. No visible change in light output with a variation of plus/minus 10percent line voltage input.
   5. Total harmonic distortion less than 20% and meet ANSI C82.11 maximum allowable THD requirements at full output. THD shall at no point in the dimming curve allow imbalance current to exceed full output THD

P. Any exceptions are at the engineer's discretion based on project needs and applicability.

2.4 EXIT SIGNS

A. General Requirements: Comply with UL 924 and the following:
   1. Sign Colors and Lettering Size: Comply with authorities having jurisdiction.
   2. Die cast brushed metal finish exit signage with manufacturer's multi-style mounting (wall, surface, and top). Plastic exit signage is not acceptable.

B. Internally Lighted Signs: As follows:
   1. Lamps for AC Operation: Light-emitting diodes, 70,000 hours minimum rated lamp life.
   2. All exit signs shall have battery back-up.
   3. Provide with self-diagnostics as indicated on the drawings.

2.5 LAMPS

A. Fluorescent Color Temperature and Minimum Color-Rendering Index: 3500 K and 90 CRI, SPX 830, unless otherwise indicated.

B. Noncompact Fluorescent Lamp Life: Rated average is 20,000 hours at 3 hours per start when used on rapid-start circuits.

C. Metal-Halide Color Temperature and Minimum Color-Rendering Index: 3600 K and 70 CRI, unless otherwise indicated.

2.6 FIXTURE SUPPORT COMPONENTS

A. Comply with Section "Basic Electrical Materials and Methods," for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: ½-inch steel tubing with swivel ball fitting and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, ½-inch steel tubes with single canopy arranged to mount a single fixture. Finish same as fixture.

D. Rod Hangers: 3/16-inch- minimum diameter, cadmium-plated, threaded steel rod.

E. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

F. Aircraft Cable Support: Use cable, anchorages, and intermediate supports recommended by fixture manufacturer.

2.7 FINISHES

A. Fixtures: See fixture schedule for colors and finishes. Otherwise manufacturer's standard.
   1. Paint Finish: Applied over corrosion-resistant treatment or primer, free of defects.
   2. Metallic Finish: Corrosion resistant.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fixtures, General: Set level, plumb, and square with ceiling and walls, and secure according to manufacturer's written instructions and approved submittal materials. Install lamps in each fixture.
   1. Coordinate location of fixtures with architectural ceiling plan.
   2. Review architectural elevations prior to rough-in for any wall mounted fixtures. Mount at 84 inches or above, unless otherwise indicated. All wall mounted fixtures shall be ADA compatible if below 84 inches.
   3. Center single fixtures in rooms as much as possible.
   4. Center fixtures in exposed ceilings. Provide equal distance between fixtures and structural elements (walls, columns, furrdowns, etc.).
   5. Provide switching mechanisms for all fixtures whether indicated on the drawings or not.
   6. Provide supports without causing deflection of ceiling or wall.
   7. Secure to outlet box.

B. Track Lighting
   1. Install track parallel with structural or grid. Secure track to structural mounted j-boxes.
   2. Conceal transformers above accessible ceiling.
   3. Coordinate with architect for track lighting head locations.
   4. Aim track heads at objects to be illuminated
   5. Adjust pendant track fixtures per architect/owner.

C. Remote Battery or Ballasts:
   1. Mount battery backup over accessible ceiling spaces. Provide appropriate battery backup for mounting distance away from fixture.
   2. Remote mount ballasts for fixtures in stairwells or over hard ceilings where ballast is not directly accessible from below.
   3. Mount all remote ballasts and battery packs together as much as possible over accessible ceiling spaces and mount on unistrut with backboard. **Do not mount directly to wall**. Bundle cabling together and label ballasts/battery packs corresponding to fixture. Provide diagram as required.

D. Support for Fixtures in or on Grid-Type Suspended Ceilings: Use grid for alignment.
   1. Install a minimum of four (4) ceiling support system rods or wires attached to the fixture structure on **EACH** fixture secured to the building structure. Locate not more than 6 inches from fixture corners.
   2. Support Clips: Fasten to fixtures and to ceiling grid members at or near each fixture corner.
   3. Fixtures of Sizes Less Than Ceiling Grid: Arrange as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two (2) ¾-inch metal channels spanning and secured to ceiling tees.

E. Suspended Fixture Support: As follows:
   1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging. Provide blocking for heavy fixtures.
   2. Stem- Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
   3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.

4. Coordinate mounting heights with Architect/Engineer. Consult prior to hanging. Stems may need to be field cut.
5. Chain hung fixtures are NOT acceptable unless indicated on the drawings.
6. Provide secondary support for all fixtures without canopy support from structure.
   a. All high and low bay fixtures shall have secondary support cables secured to structure.
7. Sized and rated for fixture weight.
8. Do not use ceiling grid as support for pendant luminaires. Connect support wired or rods to building structure.

F. Flush-Mounted Luminaire Support:
1. Secured to outlet box.
2. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
3. Trim ring flush with finished surface.

G. Wall-Mounted Luminaire Support:
1. Attached to structural members in walls.
2. Do not attach luminaires directly to gypsum board.
3. Provide blocking to support.

3.2 CONNECTIONS

A. Ground equipment:
1. Tighten electrical connectors and terminals according to manufacturers' published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Connect to switch mechanisms (wall switch, contactors, relays) room controllers.

C. Provide dual switching for room mounted dual ballast fixtures. Wire each switch leg to each ballast. Do not connect together unless directed by engineer.
1. Exception: Step dimming fixtures in corridors may be connected together. Consult engineer prior to connections and installing switch legs.

D. Fixture Connections:
1. Indoors
   a. With Lay-in ceilings: Provide EMT home runs to structure mounted J-boxes. Provide MC Cable from above ceiling j-boxes to fixtures. Do not daisy chain fixtures together unless specifically indicated on the drawings or allowed by engineer.
   b. With gypboard ceilings: Provide EMT home runs to structure mounted J-boxes. Provide access to j-boxes or locate above fixtures. Provide MC Cable from above ceiling j-boxes to fixtures. Do not wire daisy chain fixtures together, unless indicated on the drawings.
   c. Exposed (no ceiling) in finished spaces: Conceal EMT as much as possible in adjacent walls. Route EMT to fixtures in exposed spaces with steel compression fittings and install parallel along structural members to structural mounted j-boxes. Conceal conduit along structural members. DO NOT route conduit across open spaces suspended from structural members unless directed by architect or engineer. Mount fixtures from j-boxes. Center fixtures in spaces.
   d. Exposed unfinished spaces: Provide EMT runs to structural mounted j-boxes. Route parallel to structural members as much as possible. Mount fixtures or fixture support to j-boxes.
2. Outdoor: Provide IMC for exterior fixtures and connect directly to fixtures or j-boxes as required for fixture mounting. Exterior fixtures mounted in ceilings or structure can use EMT to fixture j-box mounts.

3.3 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Advance Notice: Give dates and times for field tests.

C. Provide instruments to make and record test results.

D. Tests: As follows:
   1. Verify normal operation of each fixture after installation.
   2. Emergency Lighting: Interrupt electrical supply to demonstrate proper operation.
   3. Verify normal transfer to battery source and retransfer to normal.
   4. Report results in writing.

E. Malfunctioning Fixtures and Components (Except LED Fixtures): Replace or repair, then retest. Repeat procedure until units operate properly.

F. Malfunctioning LED Fixtures: Replace fixture then retest. LED fixtures shall not be repaired.

G. Corrosive Fixtures: Replace during warranty period.

3.4 CLEANING AND ADJUSTING

A. Clean fixtures internally and externally after installation. Use methods and materials recommended by manufacturer.

B. Adjust aimable fixtures to provide required light intensities.

END OF SECTION 265100

SECTION 265600

EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes exterior lighting units with luminaires, lamps, ballasts, poles/support structures, and accessories.

B. Related Sections include Section “Interior Lighting” for interior fixtures, lamps, ballasts, emergency lighting units, and accessories; and for exterior luminaires normally mounted on buildings.

1.3 DEFINITIONS

A. Lighting Unit: A luminaire or an assembly of luminaires complete with a common support, including pole, post, or other structure, and mounting and support accessories.

B. Luminaire (Light Fixture): A complete lighting device consisting of lamp(s) and ballast(s), when applicable, together with parts designed to distribute light, to position and protect lamps, and to connect lamps to power supply.

1.4 SUBMITTALS

A. Product Data: For each type of lighting unit indicated, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
   1. Materials and dimensions of luminaires and poles.
   2. Certified results of independent laboratory tests for fixtures and lamps for electrical ratings and photometric data.
   3. Certified results of laboratory tests for fixtures and lamps for photometric performance.
   4. High--intensity-discharge luminaire ballasts.

B. Specification Compliance Review:
   1. Manufacturers and bidders must provide the consulting engineer with a Compliance Review of the Specifications and Addenda’s. The Compliance Review shall be a paragraph-by-paragraph review of the Specifications and schedule with the following information; “C”, “D”, or “E” marked in the margin of the original Specifications and any subsequent Addenda’s. If the manufacturer or bidder does not provide the Compliance Review to the engineer for review, with the submittal, the submittal will be subject to rejection as non-compliant.
      a. “C” Comply with no exceptions.
      b. “D” Comply with deviations. For each and every deviation, provide a numbered footnote with reasons for the proposed deviation and how the intent of the Specification can be satisfied.
      c. “E” Exception, do not comply. For each and every exception, provide a numbered footnote with reasons and possible alternatives. Non-compliance with the specifications is grounds for rejection as unacceptable. A bid from any alternative or listed equipment manufacturer with any number of exceptions will be reason for rejection for non-compliance without further review.

d. Unless a deviation or exception is specifically noted in the Compliance Review, the manufacturer shall provide full compliance with entire specification. Deviations or exceptions taken in letters or cover letters in a bid document, subsidiary documents, by omission or by contradiction do not release the manufacturer or bidder from being in complete compliance, unless the exception or deviation has been specifically noted in the Compliance Review and approved by the consulting engineer.
e. Equipment manufacturers or bidders that do not meet the specifications thru the above process will be subject to rejection without further review.

C. Shop Drawings: Anchor-bolt templates keyed to specific poles and certified by manufacturer.

D. Samples for Verification: For lighting units or luminaires designated for sample submission in the Exterior Lighting Unit Schedule.
1. Lamps: Specified units installed.
2. Ballast: 120-V model of specified ballast type.
3. Finishes: For each finished metal used in support components.

E. Product Certificates: Signed by manufacturers of lighting units certifying that products comply with requirements.

F. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

G. Maintenance Data: For lighting units to include in maintenance manuals specified in Division 1.

1.5 QUALITY ASSURANCE

A. Luminaires and Accessories: Listed and labeled as defined in NFPA 70, Article 100, for their indicated use, location, and installation conditions by a testing agency acceptable to authorities having jurisdiction.

B. Comply with ANSI C2.

C. Comply with NFPA 70.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Package aluminum poles for shipping according to ASTM B 660.

B. Store poles on decay-resistant treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.

C. Retain factory-applied pole wrappings on metal poles until just before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.7 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps: Ten (10) for every 100 of each type and rating installed. Furnish at least one (1) of each type.
2. Glass and Plastic Lenses, Covers, and Other Optical Parts: One (1) for every 100 of each type and rating installed. Furnish at least one (1) of each type.
3. Ballasts: One (1) for every 100 of each type and rating installed. Furnish at least one (1) of each type.
4. Globes and Guards: One (1) for every 20 of each type and rating installed. Furnish at least one (1) of each type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products indicated on the drawings and fixture schedules.

B. Products: Subject to compliance with requirements, provide products indicated on the drawings. Submit “as equals” to engineer two weeks prior to bid for approval.

2.2 LUMINAIRES

A. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.

B. All exterior fixtures shall be wet location rated.

C. Metal Parts: Free from burrs, sharp corners, and edges.

D. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.

E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.

F. Doors, Frames, and Other Internal Access: Smooth operating, free from light leakage under operating conditions, and arranged to permit relamping without use of tools. Arrange doors, frames, lenses, diffusers, and other pieces to prevent accidental falling during relamping and when secured in operating position. Provide for door removal for cleaning or replacing lens. Arrange to disconnect ballast when door opens.

G. Exposed Hardware Material: Stainless steel.

H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and ultraviolet radiation.

I. Reflecting Surfaces: Minimum reflectance as follows, unless otherwise indicated:
   1. White Surfaces: 85 percent.
   2. Specular Surfaces: 83 percent.
   3. Diffusing Specular Surfaces: 75 percent.

J. Lenses and Refractors: Materials as indicated. Use heat- and aging-resistant, resilient gaskets to seal and cushion lens and refractor in luminaire doors.

K. Photoelectric Relays: As follows:
   1. Contact Relays: Single throw, arranged to fail in the on position and factory set to turn light unit on at 1.5 to 3 fc and off at 4.5 to 10 fc with 15-second minimum time delay.
   2. Relay Mounting: In luminaire housing.

L. Auxiliary, Instant-on, Quartz System: Automatically switches quartz lamp on when luminaire is initially energized and when momentary power outages occur. Automatically turns quartz lamp off when high-intensity-discharge lamp reaches approximately 60 percent light output.
   1. Mount control components internal to ballast.
   2. Connect to ballast with tap so quartz lamp operates at 120 V.

M. Lamps: Comply with the standard of the ANSI C78 series that is applicable to each type of lamp. Provide luminaires with indicated lamps of designated type, characteristics, and wattage. Where a lamp is not indicated for a luminaire, provide medium wattage lamp recommended by manufacturer for luminaire.
   1. Metal- Halide Color Temperature and Minimum Color-Rendering Index: 3600 K and 70 CRI, unless otherwise indicated.

P. LED Pole Luminaires
   1. Construction: Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA ($0.98ft^2$) for optimized pole wind loading.
   2. Finish: Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish. Minimum 3 mils thickness.
   3. Optics: Precision-molded acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engine is standard 4000K zero uplight and qualifies as a Nighttime Friendly™ product.
   4. Electrical: High-efficacy LEDs mounted to a metal-core circuit board to maximize heat dissipation and promote long life (L87/100,000 hrs at 40°C). Class 1 electronic drivers have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate.
   5. Hardware: Stainless steel bolts fasten the mounting block securely to poles and walls.

Q. LED Wall Luminaires
   1. Construction: Two-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. The LED driver is mounted to the door to thermally isolate it from the light engines for low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Housing weep holes for wet location listing in the face-up orientation; permitting safe drainage while maintaining the luminaire's IP65 rating.
   2. Finish: Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish. Minimum 3 mils thickness.
   3. Optics: Precision-molded proprietary acrylic lenses with photometric distributions tailored specifically to building mounted applications. Light engines are 4100K (70 min. CRI).
   4. Electrical: High-efficacy LEDs mounted to a metal-core circuit board to maximize heat dissipation and promote long life. Class 1 electronic driver has a power factor >90%, THD <20%, and has an expected minimum life of 90,000 hours with <1% failure rate.
   5. Hardware: Universal mounting plate with integral mounting support arms.

2.3 LUMINAIRE SUPPORT COMPONENTS

A. Description: Comply with AASHTO LTS-3 for pole or other support structures, brackets, arms, appurtenances, base, and anchorage and foundation.

B. Wind-Load Strength of Total Support Assembly: Adequate to carry support assembly plus luminaires at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of 100 mph with a gust factor of 1.3. Support assembly includes pole or other support structures, brackets, arms, appurtenances, base, and anchorage and foundation.
   1. Strength Analysis: For each pole type and luminaire combination, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.

C. Finish: Match finish of pole/support structure for arm, bracket, and tenon mount materials.

D. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
   1. Materials: Will not cause galvanic action at contact points.
   2. Mountings: Correctly position luminaire to provide indicated light distribution.
   3. Anchor Bolts, Nuts, and Washers: Hot-dip galvanized after fabrication unless stainless-steel items are indicated. Provided by the pole manufacturer.
   4. Anchor- Bolt Template: Plywood or steel.

E. Pole/Support Structure Bases: Anchor type with hold-down or anchor bolts, leveling nuts, and bolt covers.

F. Steel Poles: (Galvanized only) Tubing complying with ASTM A 500, Grade B, carbon steel with a minimum yield of 55,000 psig; one-piece construction up to 40 feet in length with access handhole in pole wall.
   1. Steps: Fixed steel with nonslip treads, positioned for 15-inch vertical spacing, alternating on opposite sides of pole; first step at elevation 10 feet above finished grade.
   2. Intermediate Handhole and Cable Support: Locate at midpoint of pole height. Weathertight 3-by-5-inch handhole with cover provides access to internal welded attachment lug for electric cable support grip.
   3. Cable Support Grip: Wire-mesh type with rotating attachment eye, sized for diameter of cable and rated for a minimum load equal to weight of supported cable times a 5.0 safety factor.
   4. Platform for Lamp Servicing: Factory fabricated of steel with finish matching that of pole.

G. Aluminum Poles: Fabricated from seamless, extruded structural tube complying with ASTM B 429, 6063-T6 alloy with access handhole in pole wall.
   1. Grounding Provisions for Metal Pole/Support Structure: Welded 1/2-inch threaded lug, accessible through handhole and listed for copper conductor connection.

H. Aluminum Mast Arms: Tapered oval arms continuously welded to pole attachment plate with span and rise as indicated.

I. Metal Pole Brackets: Match pole metal. Provide cantilever brackets without underbrace, in sizes and styles indicated, with straight tubular end section to accommodate luminaire.

J. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.

K. Lowering System for Luminaires: Include luminaire mounting assembly, lowering device, lowering cable, and portable winch.
   1. Coordinate with pole and luminaire manufacturers for assembly details, wind-loading and vibration analysis, and compatibility of materials for electrolysis-free attachment and connection.
   2. Structural and Mechanical Design: Use a safety factor of 5.0 for static and dynamic loading of load-bearing components, including cable.
   3. Lowering Device: Weatherproof, cast-aluminum housing with multipin, plug-receptacle assembly.
   4. Lowering Cable: Stainless-steel aircraft cable.
   5. Portable Winch: Electric drive with cord and plug and 120-V, weatherproof receptacle mounted in pole base.

L. Concrete for Pole Foundations: Comply with Division 3 Section “Cast-in-Place Concrete,” “Concrete Formwork,” and “Concrete Reinforcement.”
   1. Design Strength: 3000-psig, 28-day compressive strength.

2.4 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Aluminum: Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
   1. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
   2. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 607.1.
   3. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 606.1 or AAMA 608.1.
      a. Color: Light bronze.
      b. Color: Medium bronze.
      c. Color: Dark bronze.
      d. Color: Black.
   4. Gold Anodic Finish: AA-M32C22A43 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, impregnated color coating 0.018 mm or thicker) complying with AAMA 611; gold color.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Concrete Foundations: Construct according to Division 3 Section "Cast-in-Place Concrete," "Concrete Formwork," and "Concrete Reinforcement."
   1. Comply with details for reinforcement and for anchor bolts, nuts, and washers. Verify anchor-bolt templates by comparing with actual pole bases furnished.
   2. Finish for Parts Exposed to View: Trowel and rub smooth. Comply with Division 2 Section "Cast-in-Place Concrete" for exposed finish.

B. Concrete Pole Bases:
   1. Set pole bases to indicated depth below grade
   2. Dig holes large enough to permit use of tampers the full depth of hole
   3. Backfill in 6 inch layers and thoroughly tamp each layer so the compaction is equal to or greater than that of disturbed earth
   4. Extend concrete base 4 inches beyond pole base in all directions. Chamfer edges
   5. Concrete base for poles with 1-2 luminaires shall have minimum depths below grade
      a. Poles less than 10' – 36 inches
      b. Poles greater than 10' to 15' – 48 inches
      c. Poles greater than 15'to 27' – 72 inches
      d. Poles greater than 27' to 40' – 96 inches
      e. Poles greater than 40' to 50' – 144 inches
      f. Poles greater than 50' to 60' – 192 inches
      g. Poles greater than 60' sized per structural engineer
   6. Poles with 3-4 luminaires add 24 inches to base depth.
   7. Concrete bases shall be 8 inches above grade in landscaped areas
   8. Concrete bases shall be 30 inches above grade in traffic areas
   9. Concrete bases shall be 42 inches above grade in bus parking areas.

C. Install poles as follows:
   1. Use web fabric slings (not chain or cable) to raise and set poles.
   2. Mount pole to foundation with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer.

3. Secure poles level, plumb, and square.
4. Mount bolt cover over base.

D. Luminaire Attachment: Fasten to indicated structural supports.

E. Luminaire Attachment with Adjustable Features or Aiming: Attach luminaires and supports to allow aiming for indicated light distribution.

F. Lamp luminaires with indicated lamps according to manufacturer's written instructions. Replace malfunctioning lamps.

G. Wall Mounted Fixtures:
1. See architectural elevations.
2. Mount at 84 inches or above, unless otherwise indicated. All wall mounted fixtures shall be ADA compatible if below 84 inches.

3.2 CONNECTIONS

A. Ground equipment; see electrical pole base detail.
1. Tighten electrical connectors and terminals according to manufacturers' published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Ground metal poles/support structures according to Section "Grounding"; see electrical base detail.
1. Nonmetallic Poles: Ground metallic components of lighting units and foundations. Connect luminaires to grounding system with No. 6 AWG conductor.

3.3 CONTROLS VERIFICATION

A. Verify operation of light pole or building luminaire controls. Verify photocell operation. Coordinate with owner for the schedule. Program time clock per owner or through software controls.

3.4 FIELD QUALITY CONTROL

A. Inspect each installed unit for damage. Replace damaged units.

B. Advance Notice: Give dates and times for field tests.

C. Provide instruments to make and record test results.

D. Tests and Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source, and as follows:
1. Measure light intensities at night if specific illumination performance is indicated. Use photometers with calibration referenced to NIST standards.
2. Check intensity and uniformity of illumination.
3. Check excessively noisy ballasts.

E. Prepare a written report of tests, inspections, observations and verifications indicating and interpreting results.

F. Malfunctioning Fixtures and Components: Replace or repair, then retest. Repeat procedure until units operate properly.

3.5 CLEANING AND ADJUSTING

A. Clean units after installation. Use methods and materials recommended by manufacturer.

B. Adjust aimable luminaires and luminaires with adjustable lamp position to provide required light distributions and intensities.

END OF SECTION 265600

SECTION 21 47 15 PERFORMANCE SOUND REINFORCEMENT SYSTEMS AND EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF THE WORK

A. Complete Audio and Video systems in the renovated school building, including, but not limited to, the following items:

1. An Audio-Visual system in the multi-use room, including a wired and wireless microphones, signal processors and amplifiers housed in a wall-mounted equipment rack, full-range loudspeaker system, a video system including operable cameras, video switcher with live streaming and projector with motorized screen.

2. Wiring and accessories, as needed, to provide complete and working Audio-Visual Systems, as described in the Drawings and Specifications.

1.02 RELATED DOCUMENTS

A. General Conditions and Requirements, Special Provisions, and applicable portions of Division I of the general contract are hereby made a part of this section.

B. Architectural, Structural, Mechanical, Electrical, and other applicable documents are considered a part of the Sound System documents insofar as they apply as if referred to in full.

1.03 SCOPE OF THE WORK

A. These Specifications, together with the related Drawings and General Conditions of the contract, comprise the requirements for the Audio-Visual Systems for the project.

B. Furnish, deliver, erect, install and connect completely all of the material and appliances described herein and in the Drawings, and supply all other incidental material and appliances, tools, transportation, etc., required to make the work complete, and to leave the Audio-Visual Systems in first class operating condition, excluding those items listed under Section 1.10, RELATED WORK IN OTHER SECTIONS.

C. Perform all assembly of equipment, wiring and inter-connection and soldering of wires to jacks, devices, terminals or equipment, using technical employees only, who are experienced in the installation of Sound System equipment and its inter-connectivity. Coordinate final utility rough-in locations with actual equipment furnished.

D. Verify dimensions and conditions at the job site prior to installation, and perform installation in accordance with these Specifications, manufacturers' recommendations and all applicable code requirements.

E. Verify all existing conditions before ordering equipment. Owner shall not be liable for costs associated with return of equipment.

1.04 QUALITY ASSURANCE

A. The intent of these Specifications is to describe and provide for complete Audio-Visual Systems of high professional quality and reliability. Professional performance standards by the Audio-Visual Systems Contractor (hereafter referred to as Installer) and the equipment will be required.

B. In all cases, the Owner and Architect shall determine the acceptability of the work based upon the visits, observations, and reports of the Audio-Visual Systems Consultant, BAi, LLC of Austin, Texas (hereafter referred to as Consultant).

1.05 SUBSTITUTIONS

A. Refer to Division 01 for specific substitution procedures and submittal requirements.

B. Many items are listed in the Specifications by the manufacturer's type or model number, without a detailed performance specification, and may not include the phrase "or approved equal". Where this is the case, no substitutions will be accepted, without a written request from the Installer and the written consent of the Consultant.

C. Where the phrase "or approved equal" appears, the item specified shall set a standard of quality and performance, based on the published specifications of the manufacturer and on the actual performance as known by the Consultant.

D. Requests for substitution, when forwarded by the Installer to the Consultant, are understood to mean that the Installer represents that he has personally investigated the proposed substitute product and determined that it is equal to or superior in all respects to that specified, that the same guarantee will be provided for the substitution as for the specified product, and that the Installer will coordinate the installation of the accepted substitute, making such changes as may be required for the work to be complete in all respects.

E. Substitutions will be considered on the basis of equal performance, only if requested prior to bid date, in writing. No substitutions will be allowed without prior approval.

F. Substitutions will not be considered if they are indicated or implied in Shop Drawing submissions without previous formal request, or, for their implementation, they require a substantial revision of the Contract Documents in order to accommodate their use

G. Space allocations and utility rough-ins have been designed on the basis of equipment items named by manufacturer and model number. If any equipment not so named is offered which differs substantially in dimension or configuration from the named equipment, provide scaled shop drawings showing that the substitute can be installed in the space available without interfering with other trades or with access for operation and maintenance in the completed project. The Installer shall coordinate final utility rough-in locations with actual equipment furnished.

H. Where substitute equipment requiring different arrangement or connections from those shown in the Drawings is accepted by the Consultant, install the equipment to operate properly and in harmony with the intent of the Drawings and Specifications, making all necessary incidental changes without increasing the Contract amount. Pay all additional costs incurred by adjoining or connecting trades.

I. All requests for substitutions should be submitted before the bid opening date. Substitutions shall be requested and approved in writing only, based upon these criteria. Substitutions requested after bid date will not be considered unless it is determined by the Consultant and Architect that such consideration is in the best interests of the Project.

1.06 INSTALLER QUALIFICATIONS

A. The work performed under this Section shall be performed by a Sound Systems contractor, normally engaged in the business of Audio-Visual Systems installation. The prospective contractor shall show proof, as part of the bid that the contractor has been in the Audio-Visual Systems installation business for a period of not less than five years and has successfully completed projects of similar size and scope.

B. Each bidder shall hold a current, valid franchise for the major lines of Audio-Visual equipment furnished by them under these Specifications.

C. All work shall be performed by employees of the sound subcontractor, and not by contract employees. Work crew must be supervised by a technician holding CTS-I certification.

D. All systems engineering and shop drawings shall be performed by a technician holding a CTS-D certification.

E. The Owner and Architect reserve the right to reject any bids submitted by firms without sufficient experience in projects of similar size and scope.

1.07 COOPERATION AND COORDINATION

A. Cooperate and coordinate as required with the other contractors who are responsible for work not included in this section.

B. Provide any and all information as required or requested by the Owner, Architect, Consultant, or General Contractor in order for this work to be completed to the satisfaction of the Owner, and in the best interests of the Project. Such assistance or information shall be transmitted in writing to the requesting party in all cases. All written correspondence shall be copied to the Consultant.

1.08 GUARANTEE AND WARRANTY

A. Guarantee all parts, labor, and workmanship furnished under this contract for a period of twelve months from the date of substantial completion.

B. During the warranty period, report to the site and repair or replace any defective materials or workmanship without cost to the Owner. Warranty service shall be rendered within 48 hours after request by the Owner. Equivalent replacement equipment shall be temporarily provided when immediate on-site repairs cannot be made.

C. Where warranties on individual pieces of equipment exceed twelve months, the guarantee period shall be extended to the warranty period of the particular items.

D. Furnish complete and working Audio-Visual Systems. Be of maximum assistance to the Owner during the guarantee period of the system, to the degree that maximum Owner satisfaction is assured.

E. After completion of the work, the Installer shall submit a Certificate of Warranty, stating commence and expiration dates and conditions of the warranty, for signature of both parties. Incremental warranties for completed portions of the work may be negotiated at the discretion of the Owner, if delays occur beyond the control of the Installer.

1.09 SHOP DRAWINGS AND SUBMITTALS

A. Completely detailed shop drawings shall be prepared prior to the procurement of equipment or commencement of work. With permission from the Architect, electronic files of select drawings will be made available to the Installer from the Consultant for a $500.00 USD handling and service fee. The available drawings shall include only: (1) Legend/Advisory Power Requirements, (2) Conduit Riser, (3) Floor and Reflected Ceiling Plans, (4) Section Views. Drawings shall be prepared and submitted on 30" x 42" paper. Equipment lists, data sheets, etc. shall be 8-½” x 11" size, properly bound into a single or multiple volumes as necessary. Submit quantity in accordance with Division 1, General Requirements.

B. Within 3 weeks after the notice to proceed, submit to the Architect/Owner identical copies of the following for approval:

1. A complete equipment list, with manufacturers' names, model numbers, and quantities of each item
2. Manufacturers' data sheets on all equipment items
3. Equipment rack layouts showing locations of all rack mounted equipment items
4. Floor plans and reflected ceiling plans, prepared at a scale of not less than 1/8”=1'-0", showing loudspeaker locations and orientation, wall plates, and all other related device locations
5. Proposed construction details for any custom fabricated items, including loudspeaker mounting, custom interface panels, patch panels, and wall plates. These details shall show dimensions, materials, finishes and color selection
6. Loudspeaker mounting details shall be certified by a structural engineer licensed in the State of Texas.

7. Comprehensive system schematics, showing detailed connections to all equipment, with wire numbers, terminal block numbers, and color coding
8. Riser diagrams showing conduit requirements with pull boxes, outlet boxes, physical cable layouts, part numbers of cable types used, and number of circuits in each conduit
9. Electrical power requirements for head-end and ancillary equipment. Include diagrams for any remote control of electrical power, in sufficient detail to coordinate with the electrical contractor, showing exact conduit requirements and locations for switched duplex receptacles
10. Certain other submittals as noted elsewhere in this Specification, and as may be required for various equipment items prior to construction, fabrication, or finishing of that item.
11. Submission of the Audio-Visual contract documents does not constitute a legitimate submittal, and will not be reviewed.
12. Incomplete submittals will not be reviewed.

C. All final documentation shall be submitted and approved before final acceptance by the Owner will be granted. Submit the following in accordance with Division 1, General Requirements.

1. A complete as-installed equipment list, listed by room, with manufacturers' names, model numbers, serial numbers, and quantities of each item
2. A complete and correct system schematic, showing detailed connections for all parts of the system, including wire numbers, terminal block numbers and layouts, and other designations and codes. System performance measurements as noted elsewhere in this Specification shall be documented. Include diagrams or charts showing final settings of all control knobs in the system (mixers, equalizers, power amplifiers, etc.). Submit copies of processor data files with software settings of each piece of equipment that is software controlled
3. Complete equipment rack layouts showing locations of all rack mounted equipment items
4. Floor plans and reflected ceiling plans, prepared at a scale of not less than 1/8"=1'-0", showing loudspeaker locations and orientation, wall plates, rack locations, and other related device locations
5. Riser diagrams showing as-installed conduit with pull boxes, outlet boxes, physical cable layouts, part numbers of cable types used, and number of circuits in each conduit
6. Manufacturer's warranties and operating instructions for each and every equipment item furnished. Include a copy of the certificate of warranty, signed by both parties
7. Technical Systems Operations Manual, custom-written by the Contractor, for the purpose of instructing the Owner's operating personnel in the detailed step-by-step operation of the system and preventive maintenance procedures. This manual shall include descriptions of the system components and their relationship to system function. This manual shall be bound separately and labeled appropriately.
8. Incomplete submittals will not be reviewed.

1.10 RELATED WORK IN OTHER SECTIONS

A. All conduit with pull strings, all electrical pull boxes, and all outlet boxes shall be furnished and installed under the electrical section of Division 26. Conduits shall be run continuously from outlet box to outlet box. Conduit stub-outs are not acceptable except as indicated in Drawings. Coordinate as necessary for proper installation.

B. All 120VAC power conductors and conduits associated with power circuits to all equipment locations shall be furnished and installed under the electrical section of Division 26. The 120VAC

power to the equipment racks shall be terminated inside the racks to AV Contractor supplied rack mounted outlets.

C. An insulated THW stranded copper ground wire, sized according to NEC, shall be installed under the electrical section of Division 26 from the equipment racks sheet metal to the primary ground point within the building, and terminated at each end to bare metal using approved connectors and clamps.

D. All built-in millwork and grillecloth shall be furnished under other sections.

E. Electrical circuits shown in the AV system Drawings are for reference only in depicting the number of electrical circuits needed for operation of these systems.

PART 2 PRODUCTS

2.01 GENERAL

A. All items shall be new and unused, unless specifically noted otherwise.

B. The following sections specifically list the acceptable equipment types and items for this project. Where quantities are not noted, they may be obtained from the Drawings. In the event of a discrepancy between the Specifications and the Drawings, the greater quantity or better quality shall be furnished.

C. Refer to Section 1.05, SUBSTITUTIONS of this Specification.

2.02 WIRE AND CABLE

A. Wire not installed in equipment racks, not portable, or not installed in conduit shall be plenum-rated and meet all applicable codes.

B. Voice coil loudspeaker: West Penn HA210 stranded 10AWG jacketed twisted pair, or approved substitution

C. Constant voltage (70.7-volt) loudspeaker cable (runs of less than 300 feet): West Penn 225 stranded 16AWG jacketed twisted pair, or approved equal. Provide 25225B Plenum-rated cable, where applicable.

D. Constant voltage (70.7-volt) loudspeaker cable (runs of 300’ to 500’): West Penn 226 stranded 14AWG jacketed twisted pair, or approved equal. Provide 25226B Plenum-rated cable, where applicable.

E. Constant voltage (70.7-volt) loudspeaker cable (runs of 500’ or more): West Penn 227 stranded 12AWG jacketed twisted pair, or approved equal. Provide 25227B Plenum-rated cable, where applicable.

F. Microphone-level audio cable (installed in conduit, not portable): West Penn Wire 292 stranded 20AWG jacketed twisted pair with foil shield, or approved substitution.

G. Line-level audio cable and all inter-rack audio cable: West Penn Wire 292 stranded 20AWG jacketed twisted pair with foil shield, or approved substitution.

H. Wireless microphone antenna cable: Belden 9310, 50-ohm RG-58A/U coaxial cable with Amphenol 50-ohm connectors, or equal. For runs that exceed 50 feet, Belden 9914, 50 ohm RG-8A/U type coaxial cable or approved equal with Amphenol Connex 112563 connectors.

I. Data wire for AV Control Network: Mohawk Category 6 F/UTP Shielded Cable, or approved equal.

J. Other equipment control cables shall be stranded wire, appropriately shielded, of gauge and number of conductors required by the manufacturer for proper operation of the system or equipment item furnished.

K. Wire and cable for all devices shall be supplied in accordance with the recommendations of the device manufacturer and the National Electrical Code.

2.03 JACKS, CONNECTORS, FLOOR BOXES AND WALL PLATES

A. All plate-mounted connectors shall be ground-insulated from the plates on which they are mounted.

B. Floor-mounted jacks, unless noted otherwise, shall be installed in floor pockets (described in this section). The interior plates shall be painted or anodized black. Nomenclature shall be engraved into the interior plate of each floor box with 1/8” block letters filled with white paint.

C. All wall plates installed in partitions with exposed masonry or wall tile shall be standard brushed stainless steel finish plates. Nomenclature shall be engraved into the plate with 1/8” block letters filled with black paint. All mic locations shall be numbered logically and consecutively, starting from one (1), as shown on Drawings.

D. For non-standard custom panels at stage and performance areas, connectors shall be installed on 1/8” thick black anodized brushed aluminum panels. Nomenclature shall be engraved into the panels with 1/8” block letters filled with white paint.

E. All wall plates installed in partitions with exposed painted gypsum board shall be commercial-grade vinyl in color white. Nomenclature shall be engraved into the plate with 1/8” block letters filled with black paint. All mic locations shall be numbered logically and consecutively, starting from one (1), as shown on Drawings.

F. Floor boxes shall be sized to accommodate Audio-Visual and 120VAC connections as indicated in the Drawings, and shall be welded steel construction, powder-coated for durability.

G. Floor box shall be Ace Backstage model 124SLBK with custom panels as indicated in the Drawings. Floor box to be provided by Div. 27, and installed by Div. 26. (Qty: 2)

H. Unless otherwise specified, all jacks and connectors for the Audio-Visual Systems shall be as follows:

1. Microphone and line-level input jacks: Neutrik NC3FD-L-1-B 3-pin female XLR panel-mount jacks with gold-plated contacts, or approved equal.
2. Audio output jacks: Neutrik NC3MD-L-1-B 3-pin male XLR panel-mount jacks with gold-plated contacts, or approved equal.
3. Female cable-end audio connectors: Neutrik NC3FX-B 3-pin female XLR connectors with gold-plated contacts, or approved equal.
4. Male cable-end audio connectors: Neutrik NC3MX-B 3-pin male XLR connectors with gold-plated contacts, or approved equal.
5. 4-Pole Loudspeaker jacks: Neutrik NL4MP 4-pole Speakon® connectors with gold-plated contacts and mating NL4FC-B with gold-plated contacts, or approved equal.
6. 8-Pole Loudspeaker jacks: Neutrik NLT8MP 8-pole Speakon® connectors with gold-plated contacts and mating NLT8FX-BAG with gold-plated contacts, or approved equal.
7. Wireless antenna wall-mount jack: Neutrik NBB75FI BNC bulkhead jack, or approved equal.
8. RJ 45 connectors: Neutrik NE8FDY-C6 EtherCon D-Series data connector.
9. Network data jacks: Neutrik NE8FDX-P6-B CAT-6 shielded panel connectors
10. Furnish and install the required number of jacks and connectors as shown on the Drawings.

2.04 EQUIPMENT RACKS AND POWER DISTRIBUTION

A. Furnish equipment racks for use in housing equipment including, but not limited to, power amplifiers, signal processors, microphone splitters, playback equipment, intercom equipment, etc.

B. Equipment rack colors shall be satin black. All mounting screws shall be theft resistant.

C. Heat-producing components – such as power amplifiers – shall be mounted with one 1-3/4" vent panel installed between units. Fill all other portions of unused rack front sections with matching blank panels.

D. Power distribution within racks shall be supplied via sequentially switched convenience outlets, allowing incremental switching of components. Program so that when rack power is switched, power amplifiers are last to turn on, and first to turn off.

E. Install the required number of units, of sufficient size to accommodate the equipment specified, at the locations indicated in the drawings.

F. Furnish (5) sets of replacement keys for each equipment rack type of lock.

G. Furnish and install power sequencing equipment for Equipment Rack 'WR'.

H. Furnish and install the following:

1. Equipment Rack 'WR': Middle Atlantic Products model EWR-12-17SD wall-mounted rack with lockable front door, or approved equal. Furnish and install accessories including model UD utility drawer, as indicated in Drawings. (Qty: 2 ea.)

2. Sequenced Power and Conditioner: Furnish and install Furman model CN-2400S power sequencer and conditioner, or approved equal. Power On/Off sequence control shall be available on the touchscreen. Amplifier power shall be controlled from the remote relay and not connected directly to the power sequencing. Amplifier shall be set to standby when turned off. (Qty: as required)

2.05 DIGITAL SIGNAL PROCESSING

A. The audio processing shall be in the digital domain following the input source and shall remain until power amplification is required.

B. The system processor shall provide up to 64 x 64 networked audio channels individually configurable as either Q-LAN or AES67 formatted networked audio. Additionally, the system processor shall include 8 x 8 Software-based Dante network audio channels and is licensable for up to 32 x 32 Software-based Dante capacity. Software-based Dante channels used subtract from the overall 64 x 64 network audio capacity. The system processor shall support an 8-channel total analog I/O capacity and shall be presented as 8 Flex Channel I/O which shall be software definable as analog inputs or outputs in single channel increments in any combination ratio.

C. The system processor shall have the following front panel controls and indicators: Unit ID button and Power On blue LED. Device Status, monitoring, and logging shall be provided by a standard web interface.

D. On the rear panel, the system processor shall have two 3-pin RS232 Euro Block Connectors, 8 GPI general purpose control inputs on a 10-pin Euro Block Connector, 8 GPIO general purpose control outputs on a 10-pin Euro Block Connector, USB C and B connectors to support AV bridging with QSC Q-SYS cameras and/or present itself as one or more multi-channel USB audio interfaces. Q-SYS Network: LAN A RJ45 1000 Mbps only, LAN B: RJ45 1000 Mbps only. The system processor shall be mountable in a standard AV rack.

E. The system processor shall operate from a single design, which can be comprised of components, wiring, links, text, and graphics on a single or multiple schematic pages. Designs shall include any of the following DSP function blocks, test and measurement components, control components, and layout components: Acoustic Echo Cancellers, SIP Softphone instances, USB Audio host and device blocks, Audio Players, Audio Streaming components, Crossfaders, Crossovers, Delay

components, Auto Gain control elements, Compressors, Gates, Duckers, Expanders, Ambient Noise Compensators, Limiters, Gain blocks, Graphic Equalizers, Parametric Equalizers, FIR Filters, All-Pass Filters, Band-Pass Filters, Band-Stop Filters, High-Pass Filters, Low-Pass Filters, FIR High-Pass filters, FIR Low-Pass Filters, Dual-Shelf Equalizers, Notch Filters, Meters, Matrix Mixers, Gain-Sharing Automatic Mixers, Gated Automatic Mixers, Signal Routers, Public Address Routers, Room Combiners, Signal Presence Meters, Tone Generators, Tone and Noise Generators, Dual Trace FFT Measurement Modules, Real Time Analyzers, Signal Injectors, and Signal Probes.

F. The system processor shall support custom user control interfaces on either proprietary touch screen controllers, network computers utilizing a control application, iOS devices, or any device with a standard web browser. Custom control interfaces shall be capable of having multiple user-selectable pages with different controls on each.

G. Native system control shall be accomplished via proprietary touch screen controllers located at locations as indicated in the drawings. The Installer shall program a custom user interface incorporating all end user controls, to include controls and presets for default house system, as as well as controls and presets for system for use with the portable mixing console. The custom user interfaces shall be programmed to remotely power on/off the system via the touch screen controllers. Custom control interfaces shall be capable of providing multiple user-selectable pages with different controls on each. All program file pages not intended for end-user operational access shall be password protected.

H. Provide and install most current version of manufacturer's configuration software at time of installation. All DSP hardware devices shall be updated to the most current firmware version at time of installation; all devices shall run the same firmware version.

I. Provide all data interconnection cabling as shown.

J. System programmer shall be QSys Level 2 certified.

K. Include all licensing for DSP plug-ins and Dante™ routing by software, as required.

L. Furnish and install the following as indicated in the accompanying Audiovisual drawings, or approved equal:

M. Furnish and install the following, mount as indicated in the Drawings. These devices are associated with the Multi-Purpose Room:

N. Furnish and install the following for the Multi-Purpose Room:

1. Digital Signal Processor: QSC Q-Sys CORE 8 Flex. (Qty: 1)
2. DSP I/O Expander: QSC QIO-ML4i. (Qty: 1)
3. Type "C" Control Panel: QSC TSC-70-G3 5" touch control panel. (Qty: 3 ea)
4. Automated Room Combiner: Ivie model IR-3D Infrared sensor system. Mount at locations shown in drawings. Set jumper to Analog mode. (Qty: 1 system)
5. Network Switches: Netgear AV Line M4250-PoE+ Model network switch with 10/100/1000Mbps half / full duplex RJ45 ports, SFP/SFP+ 1/10GbE ports. Size appropriately for device quantities and POE requirements. Provide 10GbE SFP Fiber transmitters as noted in drawings. Size as required. (Qty: as shown)
6. Wireless Access Point: Ubiquiti Networks UAP-IW-HD 802.11ac PoE-powered Wi-Fi access point. This device is dedicated to the Sound System data network and is not associated with any building network functionality. Coordinate wireless frequencies and channels with owner. (Qty: as shown)

O. DSP Programming:

1. Successful Contractor shall be responsible for programming the software configuration file for system based on intended functionality as follows:
    a. Volume control of local wired and wireless microphones, Bluetooth media inputs, audio from video.
    b. Bluetooth pairing controls.
    c. Video System power, screen control and routing.
    d. Room Combiner override.
2. Contractor shall provide a review copy of each file to the Consultant for review no later than two weeks prior to scheduled commissioning trip.

2.06 POWER AMPLIFIERS

A. Each power amplifier shall have an input connector which is either a screw-type barrier strip or XLR type. Output connections shall be barrier strip. Other types of connectors shall not be accepted.

B. All power amplifiers shall have detented stepping input level controls. Install the units in the equipment racks, and connect as indicated in the Drawings.

C. Provide security covers on all amplifiers.

D. Furnish and install the following for the Multi-Purpose Room system:

1. PA-1: QSC model CX-Q 2k4 installed in Equipment Rack ‘WR’ as indicated in the Drawings

2.07 LOUDSPEAKERS

A. Measure and record the impedance of each driver at the amplifier terminals. High frequency drivers shall be measured at 1000Hz; low frequency drivers shall be measured at 250Hz. Include the measurements in the final documentation.

B. Verify factory loudspeaker color prior to product acquisition.

C. Furnish and install the following in the Multi-Purpose Room System:

1. Pendant Loudspeaker: JBL Control 67P/T Full-Range Pendant Loudspeaker. (Qty: 15 ea.)

2.08 ASSISTIVE LISTENING SYSTEM

A. Furnish and install an assistive listening system in the Auditorium for use by hearing-impaired persons.

B. The assistive listening system shall be capable of broadcasting audio over both the 72 MHz frequency and 2.4/5.0 GHz Wi-Fi frequencies, allowing users to receive the audio through a receiving device with ear speaker/headphones or directly to Bluetooth enabled hearing aids. The 72 MHz frequency shall be transmitted to a receiving device as defined below. The 2.4/5.0 GHz frequency shall be transmitted to personal smart devices such as cellular phones and tablets through a free application as defined below.Furnish and install the following:

C. The stationary RF transmitter shall be capable of broadcasting on 57 channels. The transmitter shall have an SNR of 80 dB or greater. The output power shall be adjustable to quarter, half or full. Channel tuning shall be capable of being locked. The device shall have an audio frequency response of 50 Hz to 15k Hz, ±3 dB at 72 MHz. It shall have two (2) mixing audio inputs and a mixed signal output. The device shall have the following audio controls: input level, mix level and an adjustable low pass filter (contour). The device shall have an audio processor that is capable of automatic gain control and limiting. The Listen Technologies LT-800-072 is specified.

D. The stationary audio over Wi-Fi server shall be capable of delivering 2 mono / 1 stereo audio channels in 1 RU space and shall be capable of connecting to and residing on the venues existing local area network (LAN) via a single RJ45 Ethernet connection. Venue content and channel listings shall be administered through a cloud managed service. The audio over Wi-Fi server shall be compatible with the latest Wi-Fi IEEE 802.11 standards and capable of handling up to 1,000 simultaneous users. The Listen EVERYWHERE 2 Channel Server LW-100P-02 is specified.

E. The RF receiver shall be capable of receiving on 57 wide and narrow band channels. The receiver shall have a signal-to-noise ratio of 80 dB or greater and shall have an audio frequency response of 50 Hz – 15 kHz (±3 dB). The device shall employ a unique DSP SQTM noise reduction technology. The unit shall have a programmable squelch circuit. The unit shall incorporate a multi-functional display that indicates battery status, inventory number and channel. The device shall have the option of being lanyard or belt clip worn and the lanyard shall have the option of an integrated neck loop. The device shall have a USB connector used for inventory control, set up, charging and firmware upgrades. The device shall incorporate automatic battery charging circuitry and use a non-proprietary lithium ion battery. The device shall have additional charging contacts to allow multiple charging options. The Listen LR-4200-072 is specified.

F. The Wi-Fi receiver shall be personal smart devices such as cellular phones and tablets as provided by the users. The audio over Wi-Fi shall be delivered to the personal smart device via a free application downloaded onto the personal device. When the free application is launched, the personal smart device will automatically connect to the audio over Wi-Fi server. The application will list the available channels and play the audio when selected by the user. The free application shall also be capable of containing user documentation and instructions in addition to ads, promotional banners and videos. The app shall be customizable, allowing the venue to load in its color pallet and logos. The Listen Technologies Listen EVERYWHERE App is specified.

G. Furnish and install a COMBO Wi-Fi/RF assistive listening system in the Multi-Purpose Room System:

1. Listen Technologies Performance System LCS-121-01 kit. (Qty: 1 system)

2.09 WIRELESS MICROPHONE SYSTEMS

A. Operating frequencies shall be selected so as to avoid interference. Consult with the manufacturer for frequency coordination.

B. The wireless receivers shall be provided with rack-mount kits.

C. Furnish and install the following wireless system and accessories:

1. Shure model ULXD4Q quad channel wireless receiver. (Qty: 2 ea.)
2. Shure model ULXD8 tabletop transmitter with Shure model MX410 cardioid gooseneck microphone for ULXD8 transmitter. (Qty: 8 ea.)
3. Shure model ULXD2/SM58 handheld transmitter. (Qty: 2 ea.)
4. Shure model ULXD1digital bodypack transmitter with WL 183 omni-directional lavalier microphone. (Qty: 2 ea.)
5. Point Source Audio model CO-8WS omni-directional earworn microphone adapted to work with Shure beltpack. Verify color selection with owner prior to product acquisition. (Qty: 2)
6. Shure model UA864 directional wall-mount antenna, installed at mark ‘WL’, as indicated in Drawings. (Qty: 2)
7. Shure model SBC850 8-bay docking station for charging ULXD8 tabletop transmitter. (Qty: 1 ea)
8. Shure model SBC200-US Dual Docking Charger with power supply. (Qty: 2)

9. Shure model SB900B Rechargeable Lithium-Ion Battery. (Qty: 12)

2.10 MICROPHONES, AND ACCESSORIES

A. Provide a variety of stands for microphones. Stands should be ebony in color, have weighted bases, and have telescopic height adjustment.

B. Provide high quality microphone cables in various lengths.

C. Furnish and install the following:

1. Atlas Sound model MS12CE Stand with PB21XEB Boom Arm, or approved equal. (Qty: 2 ea.)

2. Shure model SM58-LC handheld dynamic cardioid microphone. (Qty: 2)

3. Portable microphone cable: Whirlwind model MKQ25NP-Black. (Qty: 2)

2.11 RECESSED FLOOR POCKETS

A. Recessed floor boxes shall be used in the auditorium to house microphone and monitor speaker connections.

B. Modify the interior plate to accept connectors as indicated in the drawings. The interior plates shall be painted or anodized black. Nomenclature shall be engraved into the interior plate of each floor box with 1/8" block letters filled with white paint.

1. Furnish the following floor pockets to the Electrical Contractor for installation:

a. ACE Backstage 122SLBK Floor Pocket with ISO102BBX Back Box. Provide PNL-106 Plate with PE power receptacle plate. Provide Voltage Divider between low voltage connections and Electrical Receptacles. Recess the lid flush with the stage floor. Coordinate blocking requirements with ARCH/GC. (QTY: 3 ea.)

2.12 VIDEO ENCODER AND DECODERS

A. Provide and install a video encoders and decoders in the configuration as shown and terminate as indicated.

B. Unit to have HDMI inputs and HDMI outputs in the configuration as shown in the drawings, be HDCP compliant, have EDID minder and isolated inputs and outputs, RS-232 controllable, individually controlled inputs and outputs, automatic equalization and re-clocking and have an internal power supply.

C. Furnish and install all necessary manufacturer recommended wire and connectors for installation.

1. Visionary Solutions D5100 Decoder Output device, mount one at projector, mount one to the back of the mobile TV cart, mount one in the rack for Live StreamVideo switching system: (Qty: 3 ea.)

2. Visionary Solutions DuetE-WP-BT Wallplate Encoder Input device: (Qty: 3 ea.)

2.13 VIDEO PRODUCTION EQUIPMENT

A. Provide and install a video streaming system as shown in the drawings.

B. Unit to have 12G-SDI inputs, HDMI inputs, and support NDI 5 or NDI/HX Network and HDMI and NDI outputs in the configuration as shown in the drawings, individually controlled inputs and outputs, automatic equalization and re-clocking and have an external power supply.

C. Unit shall include audio mixing from video inputs and from (4) local XLR analog audio inputs.

D. Unit shall provide direct to internet video streaming in both RTP and MPEG-TS formats.

E. Furnish and install all necessary manufacturer recommended wire and connectors for installation.

1. Furnish and install the following in the Production Studio:

    a. Video Switcher: Epiphan model Pearl 2 Rackmount: (Qty: 1 ea.)

2.14 PTZ CAMERA

A. Furnish and install a wall mounted pan/tilt/zoom camera at the back and two sides of the auditorium, as shown in the drawings. Coordinate exact locations with Owner, including which locations include camera installation and which locations include cable, infrastructure and plate only, for future use.

B. Furnish and install the following:

1. QSC Q-SYS NC-20x60 camera with HDMI and 3G-SDI output and all standard accessories. Verify actual camera locations with Owner prior to install. (Qty: 2 ea)

2.15 VIDEO MONITOR SCREENS

A. Provide the following video monitor . To be connected to wall mounted video transmitter. Units to be provided with all cabling and hardware as required for a complete installation.

B. Furnish and install the following:

1. Units to be Panasonic TH-75EQ2W 75” Class HD Digital Display with Chief PFC2000B large flat panel mobile cart, or approved equal. (Qty. 1 ea.)

2.16 VIDEO PROJECTOR

A. Furnish and install ceiling mounted projection high light output video projector for projection of video, data, and graphic images on the projection screens in the areas as indicated.

B. Perform all setup procedures and image convergence for each input according to the manufacturer’s recommendations. The image shall be adjusted for full available screen width for each input.

C. Projectors shall be installed plumb and level with the screen. Lens shift shall be used for all image adjustment, digital geometry correction or corner adjustment shall not be used when aligning the projected image to the screen.

D. Video projector shall be 3-chip 3LCD projector with WUXGA native resolution and 16,000 ANSI lumen brightness. Shall have HDMI input that is HDCP compliant and lens, verify with field conditions. Shall have RS-232 control via network or control cable to allow integrated controls from Audio Visual DSP Control Panels.

1. Furnish and install the following:

    a. Unit to be Epson EB-PU2116B with ELPLM08 medium zoom lens for throw distance as shown. Verify photometrics in field. (Qty: 1 ea.)

    b. Mounting Hardware: Chief model VCMU projector mount, with hardware as required for structural mounting. (Qty: 1)

2.17 MOTORIZED PROJECTION SCREENS

A. Furnish and install a projection screens in the area as indicated. Verify locations with architect prior to installation. Refer to architectural drawings for size and location.

B. Provide black extruded aluminum case for initial installation process. Install actual screens only when a clean and controlled environment is present. Provide all support as required, including threaded rods, supplemental framing, unistrut, anchors, and blocking. Screen case to be hung plumb and square.

C. The viewing surfaces shall be seamless. The screens shall operate on 120 VAC. Motor to be mounted inside the roller, to be 3-wire, instantly reversible with lifetime lubrication. Motor to be mounted with rubber vibration isolators. Case to be 22 gauge steel with black oxide finish.

D. All painting, metalwork, and woodwork shall be completed prior to installation, to protect against damage by other contractors.

E. The screens shall be delivered to the job site, still in factory crating, while access is still available for a screen of these dimensions. Store the screens in such a way as to protect it from moisture and adverse weather conditions. Take all precautions necessary to protect the screen from damage during storage and installation. Projection screens must remain in a climate-controlled environment at all times.

F. Furnish and install the following:

1. Projection Screen: DaLite Professional Electrol 92”X164” viewing surface area (188” diagonal) 16:9 format screen with Matte White viewing surface. Provide LVC low voltage control module for interface with Q-SYS control system. Include an additional 4’ of extra black drop on the screen surface. (Qty: 1)

PART 3 EXECUTION

3.01 INSTALLATION

A. Furnish components, racks, wire, cabinetry, connectors, materials, parts, equipment and labor necessary for the complete installation of the systems, in full accordance with the recommendations of the equipment manufacturers and the requirements of the Drawings and Specifications.

B. Installation shall follow standard broadcast wiring and installation practice, and shall meet or exceed industry standards for such work, with particular attention given to any installation instructions in Part 2 of these Specifications.

C. Equipment shall be held firmly in place with proper types of mounting hardware. All equipment affixed to the building structure must be self-supporting with a safety factor of at least five. All equipment shall be installed so as to provide reasonable safety to the operator and occupants. Supply adequate ventilation for all enclosed equipment items which produce heat.

D. Furnish the system to facilitate expansion and servicing using modular, solid-state components. All equipment shall be designed and rated for continuous operation and shall be UL listed, or manufactured to UL standards.

E. Observe proper circuit polarity and loudspeaker wiring polarity. No cables shall be wired with a polarity reversal between connectors with respect to either end. Special care shall be taken when wiring microphone cables, to ensure that constant polarity is maintained. Balanced audio connectors shall be wired as follows.

Wire	Connector	Signal
Black	Pin #3 or Ring	Negative
Red or White	Pin#2 or Tip	Positive
Bare	Pin#1 or Shield	Ground

F. Provide all audio circuits balanced and floating, except as noted in the Specifications or directed by the Consultant at the time of final equalization and testing. Shields of audio cables shall be grounded at one end only, at the outputs of the various equipment items in the system.

G. Route cables and wiring within equipment racks and cabinetry according to function, separating wires of different signal levels (microphone level, line level, amplifier output, 120VAC, control, etc.)

by as much physical distance as possible. Neatly arrange and bundle all cables loosely with plastic cable ties. Cables and wires shall be continuous lengths without splices.

H. All system wire, except spare wire, after being cut and stripped, shall have the wire strands twisted back to their original lay and be terminated by approved soldered or mechanical means. No un-terminated wire ends will be accepted. Heat-shrink type tubing shall be used to insulate and dress the ends of all wire and cables. Include a separate tube for the ground or drain wire.

I. All cables in conduits shall be insulated from each other and from the conduit the entire length and shall not be spliced. All cables and wires are to be continuous lengths without splices.

J. All solder joints and terminations shall be made with rosin-core solder.

K. Temperature regulated soldering irons rated at least 60 watts shall be used for all soldering work. No soldering guns or temperature unregulated irons shall be used on the job site.

L. Mechanical connections shall be made using approved connectors of the correct size and type for the connection. Wire nuts will not be accepted.

M. Each mechanical connector shall be attached using the proper size controlled-duty-cycle ratcheting crimp tool which has been approved by the manufacturer of the connectors. Conventional non-ratcheting type crimping tools are unacceptable, and shall not be used on the job site.

N. Label all wires in racks and console as to destination and purpose with permanent labels. Clearly and permanently label all controls, connections, and equipment at the front and back of the rack with permanent Lamacoid labels. Wall plates and custom panels shall be engraved and filled with contrasting paint, unless otherwise noted. All labeling shall be completed prior to final system inspection.

3.02 SOUND SYSTEM FINAL TESTING AND EQUALIZATION

A. Installer shall perform thorough preliminary testing of the Sound Systems prior to the final inspection by the Consultant. All systems and subsystems shall be tested to ensure that they are in proper working order and meet the performance specifications outlined in Part 3.03 below. Build the program for the digital signal processor and submit it to the consultant for review prior to commissioning. Install the processing program on the digital signal processor and test it for functionality.

B. The completed Sound System shall be physically inspected by the Consultant to assure that all equipment is installed in a neat and professional manner, and in accordance with these Specifications. The Audio System shall be inspected and equalized by the Consultant with assistance from the Installer. Provide a minimum of two weeks' notice to the Consultant for final inspection and equalization.

C. The testing and equalization work shall be performed after the installation work has been completed, but prior to any use of the system. During the testing and equalization work, the Installer shall have on the job site at least one (1) competent technician who is familiar with the project, and who will be prepared to stay as long as his services are needed. It is estimated that approximately four (4) hours will be required for this work.

D. The process of equalizing and testing the system may necessitate moving and adjusting certain loudspeakers. Adjustments shall be performed without claim for additional payment.

E. Coordinate as necessary to ensure a totally quiet room during the Sound System testing and balancing period.

F. Prior to requesting systems testing, verify the following:

1. All systems are in first-class working condition and free of short circuits, ground loops, parasitic oscillations, excessive system noise beyond published specifications of the equipment, hum, RF interference, or instability of any form.
2. All specified equipment, including loose and portable equipment is on the job site for proper accounting.
3. All loudspeaker circuits have been tested, are configured at the proper crossover frequency, and are in perfect working order. Furnish impedance measurements of each circuit prior to final tests.
4. All equipment controls are labeled, even if unused. If permanent labels cannot be furnished prior to system inspection, temporarily label every control as to its function with write-on tape. Supply labels or markers suitable for indicating knob settings after equalization is performed.
5. Operation manuals for every equipment item furnished are on hand at the job site.
6. Installer shall provide all signal processing software loaded on a portable PC and ready for use at time of testing. Installer shall provide a calibrated RTA and microphone, and pink noise generator at time of testing.
7. Installer shall provide a temporary wireless router at the DSP to remotely connect to the DSP from anywhere within the Project area.

G. Should the performance testing show that the Installer has not properly completed the systems, the Installer shall make all necessary corrections or adjustments and a second demonstration shall be arranged at the Installer's expense.

H. The final acceptance of the system by the Owner will be based upon the report of the Consultant following inspection, testing, and demonstration. A list of items in need of completion or correction shall be prepared by the Consultant, which must be corrected by the Installer before final acceptance will be granted.

3.03 SOUND SYSTEM PERFORMANCE

A. After equalization and testing, the Sound System shall meet or exceed the following specifications:

1. System shall be free of short circuits, ground loops, parasitic oscillation, excessive system noise, hum, RF interference, and instability of any form.
2. Maximum SPL with band-limited pink noise input to the system shall be 105 dB before audible distortion occurs.
3. Spatial variation in SPL at 4 kHz octave band pink noise shall be within a tolerance of plus or minus 2.5 dB SPL.
4. Acoustic response of the system shall be plus or minus 1.5dB along a line which is +5dB per octave from 65 Hz to 125 Hz, flat from 125 Hz to 4 kHz, and which rolls off at 2dB per octave to 16 kHz.

3.04 OWNER TRAINING AND FAMILIARIZATION

A. The Installer shall furnish the Owner's representatives with training necessary to properly operate the systems. Demonstrate in detail all functions of the systems. Provide a minimum of 8 hours for this basic training, broken up into several training sessions, at the discretion of the owner. These training session shall be videotaped by the installer and copies provided to the Owner with the as-built documentation.

B. The Installer shall have a qualified representative, familiar with the Audio-Visual System, to assist in operation at (1) scheduled event in the Cafeteria, selected by the Owner.

C. END OF SECTION 27 41 15

SECTION 283000

FIRE ALARM WITH VOICE EVACUATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SCOPE

A. The scope of work is to install a complete operational licensed fully addressable manual fire alarm system with pull stations at all exits, visual devices in all common and multi-use spaces, remote annunciator panel(s), and a main fire alarm control panel (FACP).

B. Fire alarm provider shall compute all devices requirements and provide expansion panels as required. Contractor shall coordinate power for any expansion panels with electrical contractor and provide 120V circuits as required. Contractor shall bid a complete and working system. Refer to specifications for devices and locations in addition to the floor plan drawings. The contractor shall be responsible prior to bid for a price for a complete system to include; manual stations, detectors, signal equipment, controls, expansion panels, and devices. The drawings are schematic in nature and include approximate locations of devices. The fire alarm contractor shall coordinate the exact location of the visual signaling device in accordance with the candela of the installed devices.

C. Provide expansion panels or NAC panels to supply additional signal or initiating circuits for a complete system.

D. Daisy chain campus panels together for one complete system. All signals shall be received by the main FACP. All expansion panels shall be compatible with the main FACP. Provide fiber optic cabling between buildings with wire to fiber wire convertors.

E. Provide software programming for individual testing of devices without putting the building in alarm (walk-thru mode) or shutting down the entire system.

F. Provide interface and connection with Dry Pipe System for full monitoring and alarm.

G. Provide interface and connection to Pre-action System for full monitoring and alarm.

H. Provide interface and connection to Air Sampling Smoke Detection System for full monitoring and alarm.

I. This section provides for the supply and installation of fire alarm system components, which includes manual pull stations, detectors, signal/alarm devices, wiring and conduit installed in the fire control panel (FACP) as specified in Specification Sections Fire-Suppression Piping Wet-Pipe Sprinkler System, Fire-Suppression Piping Dry-Pipe Sprinkler System, Fire-Suppression Piping Preaction-Type Sprinkler System and Air Sampling Smoke Detection System. These components shall be integrated into the building's general fire alarm system AND the pre-action and control system. All equipment in this section shall be compatible with the new Fire Management System, and installed and formatted in a similar fashion.

J. It is the intent and requirement of these documents that all the sprinkler/detection/alarm systems shall be incorporated into one integrated system, with sole-source responsibility. Thus, some devices

(such as smoke detectors) can be utilized to signal the building, wet, dry and preaction alarm sequences. It is not intended nor is it acceptable to provide two or more “stand alone” systems.

1.3 SUMMARY

A. This Section includes fire alarm systems with manual stations, detectors, signal equipment, controls, and devices.

B. Related Sections include the following:
   1. Section “Door Hardware” for door closers/holders/smoke detectors, electric door locks, and release devices that interface with fire alarm systems.
   2. Section “Control/Signal Transmission Media” for transmission media used for control and signal circuits.

1.4 DEFINITIONS

A. FACP: Fire alarm control panel.

B. LED: Light-emitting diode.

C. RAP: Remote Annunciator Panel

D. Definitions in NFPA 72 apply to fire alarm terms used in this Section.

1.5 SYSTEM DESCRIPTION

A. General: Noncoded, addressable-analog system with manual and automatic alarm initiation; automatic sensitivity control of certain smoke detectors; and multiplexed signal transmission dedicated to fire alarm service only. “System shall individually identify each addressable initiating device and other addressable monitor functions. System shall be capable of individually operating each alarm notification appliance and other addressable monitor functions.” Zoning is not acceptable.

B. Provide a fully automatic fire alarm in all building. Fire Alarm system shall be configured such that an alarm condition initiated in one building with activate annunciation devices in all other buildings on the campus. Provide a complete intelligent analog addressable fire alarm system, compliant with the more stringent of local codes having jurisdiction.

C. A full system test/inspection shall be provided by the fire alarm Contractor for a period of one (1) year as a part of the contract.

D. The system shall operate as on integrated protected premise fire alarm control system. Changes in the status of monitored points shall be detected by the microprocessor based fire alarm control panel. Sensor “dirty” and “excessively dirty” trouble conditions shall report automatically. Devices shall be listed by UL for sensitivity testing by means of the portable programmer/tester or by a readout from the control panel. Each addressable device shall be set electronically, devices requiring dipswitch settings, rotary switch settings, staples or jumper settings are not acceptable. Smoke detectors shall alarm at their programmed sensitivity settings and shall not revert to a common default setting when their operating system segment is in the fail safe degrade mode. System shall individually identify each addressable initiating device and other addressable monitor functions. System shall be capable of individual operating each alarm notification appliance and other addressable monitor functions. System shall be capable of individually operating each alarm notification application and other control functions. Life safety alarm function programs shall perform automatically upon system alarm actuation. In addition, control points may be operated manually at any time by the attendant through appropriate keyboard commands. The system FACP shall also provide integral programmable

function control switches to allow personal to manually operate specific pre-programmed control output functions.

E. The system as described shall be installed, programmed, tested and delivered to the Owner complete and in fully operational condition. The system shall include all necessary hardware, software, raceways and interconnecting wiring to accomplish the requirements of this specification and the Contract Drawings.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show details of graphic annunciator.
1. Wiring Diagrams: Detail wiring and differentiate between manufacturer-installed and field-installed wiring. Include diagrams for equipment and for system with all terminals and interconnections identified.
2. Battery: Sizing calculations.
3. Floor Plans: Indicate final outlet locations and routings of raceway connections.
4. Device Address List: Coordinate with final system programming.
5. System Operation Description: Detailed description for this Project, including method of operation and supervision of each type of circuit and sequence of operations for manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems are not acceptable.

C. Coordination Drawings: Plans, sections, and elevations drawn to scale and coordinating installation of smoke detectors, control modules, and relays in ducts and access to them. Show the following near each duct smoke provision of detector installation:
1. Size and location of ducts, including lining.
2. Size and location of piping.
3. Size and arrangement of structural elements.
4. Size and location of duct smoke detector, including air-sampling elements.
5. Size and location of speakers.

D. Operating Instructions: For mounting at the FACP.

E. Product Certificates: Signed by manufacturers of system components certifying that products furnished comply with requirements.

F. Installer Certificates: Signed by manufacturer certifying that installers comply with requirements.

G. Field Test Reports: Indicate and interpret test results for compliance with performance requirements. Comply with NFPA 72.

H. Maintenance Data: For fire alarm systems to include in maintenance manuals specified in Division 1. Comply with NFPA 72.

I. Submissions to Authorities Having Jurisdiction: In addition to distribution requirements for Submittals specified in Section “Submittals,” make an identical submission to authorities having jurisdiction. Include copies of annotated Contract Drawings as needed to depict component locations to facilitate review. Resubmit if required to make clarifications or revisions to obtain approval. On receipt of comments from authorities having jurisdiction, submit them to Architect for review.

J. Certificate of Completion: Comply with NFPA 72, AHJ, and local amendments.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is an authorized representative of the FACP manufacturer for both installation and maintenance of units required for this Project.

B. Manufacturer Qualifications: A firm experienced in manufacturing systems similar to those indicated for this Project and with a record of successful in-service performance.

C. Source Limitations: Obtain fire alarm system components through one source from a single manufacturer.

D. Compliance with Local Requirements: Comply with applicable building code, local ordinances and regulations, and requirements of authorities having jurisdiction.

E. Comply with NFPA 72.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but not less than one unit.
   2. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but not less than one unit.
   3. Smoke Detectors, Fire Detectors, and Flame Detectors: Quantity equal to 10 percent of amount of each type installed, but not less than one unit of each type.
   4. Detector Bases: Quantity equal to 2 percent of amount of each type installed, but not less than one unit of each type.
   5. Keys and Tools: One extra set for access to locked and tamper proofed components.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Edwards Systems Technology; Unit of General Signal.
   2. Federal Signal Corp.; Commercial Products Group.
   3. Fire Control Instruments, Inc.
   4. Fire Lite Alarms, Inc.
   5. Gamewell Co. (The).
   6. Notifier; Div. of Pittway Corp.
   7. Siemens.
   8. Silent Knight.
   9. Tyco Life Safety (SimplexGrinnell).

2.2 FUNCTIONAL DESCRIPTION OF SYSTEM

A. Control of System: By the FACP.

B. System Supervision: Automatically detect and report open circuits, shorts, and grounds of wiring for initiating device, signaling line, and notification-appliance circuits.

C. Priority of Signals: Automatic alarm response functions resulting from an alarm signal from one zone or device are not altered by subsequent alarm, supervisory, or trouble signals. An alarm signal is the highest priority. Supervisory and trouble signals have second- and third-level priority. Higher-priority signals take precedence over signals of lower priority, even when the lower-priority condition occurs

first. Annunciate and display all alarm, supervisory, and trouble signals regardless of priority or order received.

D. System Reset: All zones are manually resettable from the FACP after initiating devices are restored to normal.

E. Transmission to Remote Alarm Receiving Station: Automatically route alarm, supervisory, and trouble signals to a remote alarm station by means of a digital alarm communicator transmitter and telephone lines.

F. System Alarm Capability during Circuit Fault Conditions: System wiring and circuit arrangement prevent alarm capability reduction when an open circuit, ground or wire-to-wire short occurs, or an open circuit and a ground occur at the same time in an initiating device circuit, signal line circuit, or notification-appliance circuit.

G. Loss of primary power at the FACP initiates a trouble signal at the FACP and the annunciator. An emergency power light is illuminated at both locations when the system is operating on the secondary power supply.

H. Basic Alarm Performance Requirements: Unless otherwise indicated, operation of a manual station, automatic alarm operation of a smoke or flame or heat detector, or operation of a sprinkler flow device initiates the following:
1. Notification-appliance operation.
2. Identification at the FACP and the remote annunciator of the device originating the alarm.
3. Transmission of an alarm signal to the remote alarm receiving station.
4. Unlocking of electric door locks in designated egress paths.
5. Release of fire and smoke doors held open by magnetic door holders.
6. Shutdown of fans and other air-handling equipment serving zone when alarm was initiated.
7. Closing of smoke dampers in air ducts of system serving zone where alarm was initiated.
8. Recording of the event in the system memory.

I. Alarm Silencing, System Reset and Indication: Controlled by switches in the FACP and the remote annunciator.
1. Silencing-switch operation halts alarm operation of notification appliances and activates an “alarm silence” light. Display of identity of the device is retained.
2. Subsequent alarm signals from other devices reactivate notification appliances until silencing switch is operated again.
3. When alarm-initiating devices return to normal and system reset switch is operated, notification appliances operate again until alarm silence switch is reset.

J. Water-flow alarm switch operation initiates the following:
1. Notification-appliance operation.
2. Flashing of the device location-indicating light for the device that has operated.

K. Smoke detection with alarm verification initiates the following:
1. Audible and visible indication of an “alarm verification” signal at the FACP.
2. Activation of a listed and approved “alarm verification” sequence at the FACP and the detector.
3. General alarm if the alarm is verified.
4. Cancellation of the FACP indication and system reset if the alarm is not verified.

L. Sprinkler valve-tamper switch operation initiates the following:
1. A supervisory, audible, and visible “valve-tamper” signal indication at the FACP and the annunciator.
2. Flashing of the device location-indicating light for the device that has operated.
3. Transmission of supervisory signal to remote alarm receiving station.

M. Low-air-pressure switch operation on a dry-pipe or preaction sprinkler system initiates the following:

1. A supervisory, audible, and visible “sprinkler trouble” signal indication at the FACP and the annunciator.
2. Flashing of the device location-indicating light for the device that has operated.
3. Transmission of trouble signal to remote central station.

N. Remote Detector Sensitivity Adjustment: Manipulation of controls at the FACP causes the selection of specific addressable smoke detectors for adjustment, display of their current status and sensitivity settings, and control of changes in those settings. Same controls can be used to program repetitive, scheduled, automated changes in sensitivity of specific detectors. Sensitivity adjustments and sensitivity-adjustment schedule changes are recorded in system memory.

O. Removal of an alarm-initiating device or a notification appliance initiates the following:
1. A “trouble” signal indication at the FACP and the annunciator for the device or zone involved.
2. Transmission of trouble signal to remote alarm receiving station.

P. FACP Alphanumeric Display: Plain-English-language descriptions of alarm, supervisory, and trouble events; and addresses and locations of alarm-initiating or supervisory devices originating the report. Display monitoring actions, system and component status, system commands, programming information, and data from the system's historical memory.

Q. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

R. Voice/Alarm Signaling Service: Central emergency communication system with redundant microphones, preamplifiers, amplifiers, and tone generators provided as a special module that is part of fire-alarm control unit.
1. Indicate number of alarm channels for automatic, simultaneous transmission of different announcements to different zones or for manual transmission of announcements by use of the central-control microphone. Amplifiers shall comply with UL 1711.
   a. Allow the application of, and evacuation signal to, indicated number of zones and, at the same time, allow voice paging to the other zones selectively or in any combination.
   b. Programmable tone and message sequence selection.
   c. Standard digitally recorded messages for “Evacuation” and “All Clear.”
   d. Generate tones to be sequenced with audio messages of type recommended by NFPA 72 and that are compatible with tone patterns of notification-appliance circuits of fire-alarm control unit.
2. Status Annunciator: Indicate the status of various voice/alarm speaker zones and the status of firefighters’ two-way telephone communication zones.
3. Preamplifiers, amplifiers, and tone generators shall automatically transfer to backup units, on primary equipment failure.

2.3 MANUAL PULL STATIONS

A. Description: Fabricated of metal or plastic, and finished in red with molded, raised-letter operating instructions of contrasting color.
1. Single-action mechanism initiates an alarm.
2. Double-action mechanism requires two actions, such as a push and a pull, to initiate an alarm.
3. Station Reset: Key or wrench operated; double pole, double throw; switch rated for the voltage and current at which it operates.
4. Indoor Protective Shield: Factory-fabricated clear plastic enclosure, hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false alarm operation.
5. Weatherproof Protective Shield: Factory-fabricated clear plastic enclosure, hinged at the top to permit lifting for access to initiate an alarm.
6. Integral Addressable Module: Arranged to communicate manual-station status (normal, alarm, or trouble) to the FACP.

7. Outdoor device to be complete with weatherproof outlet box, mounting plate, mounting hardware, and terminal strip for wiring connections.

2.4 SMOKE DETECTORS

A. General: Include the following features:
   1. Operating Voltage: 24V powered from the fire alarm control panel.
   2. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
   3. Plug-in Arrangement: Detector and associated electronic components are mounted in a module that connects in a tamper-resistant manner to a fixed base with a twist-locking plug connection. Terminals in the fixed base accept building wiring.
   4. Integral Visual-Indicating Light: LED type. Indicates detector has operated.
   5. Sensitivity: Can be tested and adjusted in-place after installation.
   6. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to the FACP.
   7. Remote Controllability: Unless otherwise indicated, detectors are analog-addressable type, individually monitored at the FACP for calibration, sensitivity, and alarm condition, and individually adjustable for sensitivity from the FACP.

B. Smoke detectors shall be photoelectric type.
   1. Sensor: LED or infrared light source with matching silicon-cell receiver.
   2. Detector Sensitivity: Between 2.5 and 3.5 percent/foot smoke obscuration when tested according to UL 268A.
   3. Integral Thermal Detector: Fixed-temperature type with 135 deg F setting.

C. Duct Smoke Detector: Photoelectric Type.
   1. Sampling Tube: Design and dimensions as recommended by the manufacturer for the specific duct size, air velocity, and installation conditions where applied. Detectors shall be capable of self-sensitivity testing and report back to the fire alarm panel. All detectors shall be addressable and resettable from FACP.
   2. Provide necessary relays and control module to interface with the fire alarm for damper closure and AHU shutdown.
   3. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.
   4. Unit shall have local reset.
   5. Provide remote test station and status indicator for duct smoke detectors above hard ceilings or mounted higher than 12 feet AFF.
   6. Unit shall be 24V powered from the Fire Alarm Control Panel.
   7. Each smoke sensor and its duct housing shall be self-compensating for the effects of air velocity (from 300 to 4000 FPM), temperature, humidity and atmospheric pressure. It shall not be necessary to field adjust the sensitivity to compensate for the above effects.

D. Combination Smoke and CO detectors in Sleeping Areas: Addressable detector for smoke detection and CO detection in the same device.
   1. Sensor: Four sensing elements for detection and false signal rejection.
   2. Separate CO Signal.
   3. Intelligent Sounder Base
   4. Sync with other devices
   5. Ceiling or wall mounted

2.5 OTHER DETECTORS

A. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F or rate of rise of temperature that exceeds 15 deg F per minute, unless otherwise indicated.
   1. Mounting: Adapter plate for outlet box mounting.
   2. Mounting: Plug-in base, interchangeable with smoke detector bases.

3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to the FACP.
4. Unit shall be 24V powered from the fire alarm control panel.

B. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190 deg F.
1. Mounting: Adapter plate for outlet box mounting.
2. Mounting: Plug-in base, interchangeable with smoke detector bases.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to the FACP.
4. Unit shall be 24V powered from the fire alarm control panel.

C. Waterflow Solid State Detector (Flow Switch): Actuated by water flow in the specified direction after a preset time delay.
1. Unit shall be 24V powered from the fire alarm control panel. Exterior detectors may be powered 120V AC. See drawings for circuit. If no circuit is shown detector shall be 24V, powered from FACP.
2. Mounting: Vertical or Horizontal on any clear pipe span. Provide detector compatible with pipe size and schedule.
3. Outputs: Unit shall have two contacts for wiring directly to FACP or addressable control module and local bell or notification device.
4. A local grounding provision shall be provided.
5. All enclosures shall be NEMA 4 suitable for indoor or outdoor use, unless otherwise specified.

D. Supervisory Switch (Tamper Switch): Actuated by more than two revolutions of the valve control or when the stem has move more than one-fifth the distance from its normal position.
1. Unit shall be 24V powered from the fire alarm control panel. Exterior detectors may be powered 120V AC. See drawings for circuit. If no circuit is shown detector shall be 24V, powered from FACP.
2. Mounting: Vertical (down position only) or horizontal.
3. Outputs: Unit shall have two contacts for wiring directly to FACP or addressable control module and local bell or notification device.
4. A local grounding provision shall be provided.
5. All enclosures shall be NEMA 4 suitable for indoor or outdoor use, unless otherwise specified. Unit shall be NEMA 3R when vertical.

2.6 NOTIFICATION APPLIANCES

A. Description: Equipped for mounting as indicated and have screw terminals for system connections.
1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly.
2. Devices shall be red in color.

B. Audio Alarm Devices (Horns – Interior Installation):
1. Electronic-vibrating-polarized type, 24V dc; with provision for housing the operating mechanism behind a grille. Horns produce a minimum sound pressure level of 85 dB, measured 10 feet from the horn.
2. Device to be complete with outlet box, mounting plate, mounting hardware, and terminal strip for wiring connections.

C. Audio Alarm Devices (Horns – Mini Horns):
1. Electronic-vibrating-polarized type, 24V dc, “mini horn”, with provision for housing the operating mechanism behind a grille. Horns produce a minimum sound pressure level of 85 dB, measured 10 feet from the horn.
2. Device to be complete with outlet box, mounting plate, mounting hardware, and terminal strip for wiring connections.

D. Audio Alarm Devices (Horns – Exterior Installation):
   1. Electronic--vibrating-polarized type, 24V dc; with provision for housing the operating mechanism behind a grille. Horns produce a minimum sound pressure level of 85 dB, measured 10 feet from the horn.
   2. Grille and device to be of weatherproof design and construction.
   3. Device to be complete with outlet box, mounting plate, mounting hardware, and terminal strip for wiring connections.

E. Visual Alarm Devices (Strobe Lights): Xenon strobe lights listed under UL 1971 with clear or nominal white polycarbonate lens. Mount lens on an aluminum faceplate. The word “FIRE” is engraved shall be engraved on the device.
   1. Rated Light Output: 75 candela (minimum), 110 candela in larger coverage spaces.
   2. Strobe Leads: Factory connected to screw terminals.

F. Audio/Visual Alarm Devices (Horn and Strobe Light): Combination audio and visual alarm devices consisting of the same devices indicated above for “Audio Alarm Devices (Horns)” and “Visual Alarm Devices (Strobe Lights)” provided as a single combination alarm device.

G. Voice/Tone Speakers:
   1. High-Range Units: Rated 2 to 5 W.
   2. Low-Range Units: Rated 1 to 2 W.
   3. Mounting: Flush, semi-recessed, surface, or surface-mounted; bidirectional as indicated.
   4. Matching Transformers: Tap range matched to the acoustical environment of the speaker location.

H. Audio Visual Devices (Voice/Tone Speakers and Strobe Lights): Combination voice/tone speakers and visual alarm devices consisting of the same devices indicated above for “Voice/Tone Speakers” and “Visual Alarm Devices (Strobe Lights)” provided as a single combination alarm device.

2.7 PREACTION SYSTEM

A. Initiate Presignal Alarm: This function shall cause an audible and visual alarm and indication to be provided at the FACP. Activation of an initiation device connected as part of a preaction system shall be annunciated at the FACP only, without activation of the general evacuation alarm.

2.8 REMOTE DEVICE LOCATION-INDICATING LIGHTS AND IDENTIFICATION PLATES

A. Description: LED indicating light near each smoke detector that may not be readily visible, and each sprinkler water-flow switch and valve-tamper switch. Light is connected to flash when the associated device is in an alarm or trouble mode. Lamp is flush mounted in a single gang wall plate. A red, laminated, phenolic-resin identification plate at the indicating light identifies, in engraved white letters, device initiating the signal and room where the smoke detector or valve is located. For water-flow switches, the identification plate also designates protected spaces downstream from the water-flow switch.

2.9 MAGNETIC DOOR HOLDERS

A. Description: Units are equipped for wall or floor mounting as indicated and are complete with matching door plate.
   1. Electromagnet: Requires no more than 3 W to develop 25-lbf holding force.
   2. Wall-Mounted Units: Flush mounted, unless otherwise indicated.
   3. Rating: 24-V ac or dc.
   4. Rating: 120-V ac.

B. Material and Finish: Match door hardware.

C. Device to be complete with outlet box, mounting plate, mounting hardware, and terminal strip for wiring.

2.10 FIRE PROTECTION SYSTEMS WATERFLOW AND TAMPER SWITCHES

A. Switches are to be provided under Section “Fire Suppression Piping – Wet Pipe Sprinkler System” and/or Fire Suppression Piping Dry-Type Sprinkler System.”

B. Provide fire alarm zones for the fire protection system’s waterflow and tamper switches and make final connections of all fire protection systems waterflow and tamper switch alarm wiring to fire alarm panel. Provide all relays and accessories as a part of these connections.

2.11 REMOTE CONTROL RELAYS

A. Remote control relays for shutdown air handling units and operation of electrically controlled circuits from the fire alarm system shall be provided.

B. Provide relays for Fire Shutters, magnetic Locks, Door Holds and all other egress powered circuits.

C. Relays shall be UL listed, SPDT, DPDT, operating coil voltage appropriate for the fire alarm system and terminal strips for connection of input and output wiring.

D. Relays shall contain a red LED to indicate when the relay coil is energized.

E. These relays shall be employed where local contacts are required for system status, remote control of electrical loads, shutdown of air handling equipment, actuation of other systems or equipment, and any other general uses.

F. Device to be complete with outlet box, mounting plate, mounting hardware, and terminal strip for wiring connections.

2.12 CENTRAL FACP

A. Cabinet: Lockable steel enclosure. Arrange interior components so operations required for testing or for normal maintenance of the system are performed from the front of the enclosure. Provide 25% future expansion capacity.
   1. Identify each enclosure with an engraved, red, laminated, phenolic-resin nameplate with lettering not less than 1-inch high. Identify individual components and modules within cabinets with permanent labels.
   2. Mounting: Surface.

B. Alarm and Supervisory Systems: Separate and independent in the FACP. Alarm-initiating zone boards consist of plug-in cards. Construction requiring removal of field wiring for module replacement is unacceptable.

C. Control Modules: Include types and capacities required to perform all functions of fire alarm systems.

D. Indications: Local, visible, and audible signals announce alarm, supervisory, and trouble conditions. Each type of audible alarm has a different sound.

E. Indicating Lights and System Controls: Individual LED devices identify zones transmitting signals. Lights distinguish between alarm and trouble signals, and indicate the type of device originating the signal. Manual switches and push-to-test buttons do not require a key to operate. Controls include the following:
   1. Alarm acknowledge switch.
   2. Alarm silence switch.

3. System reset switch.
4. LED test switch.

F. Resetting Controls: Prevent the resetting of alarm, supervisory, or trouble signals while the alarm or trouble condition still exists.

G. Alphanumeric Display and System Controls: Arranged for interface between human operator at the FACP and addressable system components, including annunciation, supervision, and control.
1. Display: A minimum of 80 characters; alarm, supervisory, and component status messages; and indicate control commands to be entered into the system for control of smoke detector sensitivity and other parameters.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

H. Voice Alarm: An emergency communication system includes central voice alarm system components complete with microphones, preamplifiers, amplifiers, and tone generators. Features include the following:
1. Two alarm channels permit simultaneous transmission of different announcements to different zones or floors automatically or by using the central control microphone. All announcements are made over dedicated, supervised communication lines.
2. Status annunciator indicates the status of various voice alarm speaker zones and the status of firefighters' two-way telephone communication zones.

I. Instructions: Printed or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.13 FIRE ALARM EXPANSION PANEL

A. Cabinet: Lockable steel enclosure. Arrange interior components so operations required for testing or for normal maintenance of the system are performed from the front of the enclosure.
1. Identify each enclosure with an engraved, red, laminated, phenolic-resin nameplate with lettering not less than 1 inch high. Identify individual components and modules within cabinets with permanent labels.
2. Mounting: Surface.

B. Alarm and Supervisory Systems: Alarm-initiating boards consist of plug-in cards. Construction requiring removal of field wiring for module replacement is unacceptable.

C. Control Modules: Include types and capacities required to perform all functions of fire alarm systems.

D. Indications: Local, visible, and audible signals announce alarm, supervisory, and trouble conditions. Each type of audible alarm has a different sound.

E. Indicating Lights and System Controls: LCD display mimics FACP signals. Manual switches and push-to-test buttons do not require a key to operate. Controls include the following:
1. Alarm acknowledge switch.
2. Alarm silence switch.
3. System reset switch.
4. LED test switch.

F. Resetting Controls: Prevent the resetting of alarm, supervisory, or trouble signals while the alarm or trouble condition still exists.

G. Instructions: Printed or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for

displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

H. Expansion panels shall be daisy chained with the main fire alarm control panel to operate as one complete system.

2.14 REMOTE ANNUNCIATOR

A. Description: Duplicate annunciator functions of the FACP for alarm, supervisory, and trouble indications. Also duplicate manual switching functions of the FACP, including acknowledging, silencing, reset, and test.
   1. Mounting: Flush cabinet, NEMA 250, Class 1.

B. Display Type and Functional Performance: Alphanumeric display same as the FACP. Controls with associated LEDs permit acknowledging, silencing, resetting, and testing functions for alarm, supervisory, and trouble signals identical to those in the FACP.

2.15 EMERGENCY POWER SUPPLY

A. General: Components include sealed maintenance free battery, charger, and an automatic transfer switch.
   1. Battery Nominal Life Expectancy: 20 years, minimum.

B. Battery Capacity: Comply with NFPA 72.
   1. Magnetic door holders are not served by emergency power. Magnetic door holders are released when normal power fails.

C. Battery Charger: Solid-state, fully automatic, variable-charging-rate type. Provide capacity for 150 percent of the connected system load while maintaining batteries at full charge. If batteries are fully discharged, the charger recharges them completely within four hours. Charger output is supervised as part of system power supply supervision.

D. Integral Automatic Transfer Switch: Transfers the load to the battery without loss of signals or status indications when normal power fails.

2.16 AUXILLARY POWER MODULE (NAC)

A. Description: Intelligent power supply module with built in synchronization, AC power connection, battery charging circuit, and backup battery for 24 hours operation for all powered circuits. Programmable for auxiliary power, constant, resettable, or door holder operation
   1. Minimum 6 Amp notification power expander with switching mode
   2. Ground fault detector
   3. Notification/Aux Power Circuits: 2 Class A, 4 Class B
   4. Power input 120V

B. Communicates with main FACP SBUS with standard manufacturers 4 wire cabling up to 4000 feet.

C. AC loss of power delay option for shutting off power to door holders. (provide only on NAC panels with door holders on the fire alarm system)

D. Transmits all signals to the FACP

2.17 ADDRESSABLE INTERFACE DEVICE

A. Description: Microelectronic monitor module listed for use in providing a multiplex system address for listed fire and sprinkler alarm-initiating devices with normally open contacts.

2.18 WIRE TO FIBER CONVERTOR

A. Description: Fiber optic cabling to SBUS convertor on a single card mounted in the FA panel or in a remote enclosure and connected to the fire alarm panel.
   1. Range: Up to one mile
   2. Transfers all signals between panels
   3. Does not require TVSS or grounding
   4. Duplex connectors for the transmittance and receiving of signals
   5. Compatible with the FA system from the same manufacturer
   6. Powered from the FA panel locally 9-35 VDC

2.19 DIGITAL ALARM COMMUNICATOR TRANSMITTER

A. Listed and labeled under UL 864 and NFPA 72.

B. Functional Performance: The FACP shall have a digital alarm communicator transmitter (DACT) module to transmit alarm signals to a Remote Central Monitoring station. The DACT shall support dual telephone lines. Unit receives an alarm, supervisory, or trouble signal from the FACP panel, and automatically captures one or two telephone lines and dials a preset number for a remote central station. When contact is made with the central station(s), the signal is transmitted. The unit supervises up to two telephone lines. Where supervising two lines, if service on either line is interrupted for longer than 45 seconds, the unit initiates a local trouble signal and transmits a signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. When telephone service is restored, unit automatically reports that event to the central station. If service is lost on either telephone lines, the local trouble signal is initiated.

C. The fire alarm system shall provide point identification reporting of alarm, trouble and supervisory conditions to the monitoring station. Group reporting will not be accepted.

D. The communicator shall automatically send restore signals to the central station when alarm, trouble or supervisory is cleared. Required on-premise restore is not acceptable.

E. Secondary Power: Integral rechargeable battery and automatic charger. Battery capacity is adequate to comply with NFPA 72 requirements.

F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

2.20 GUARDS FOR PHYSICAL PROTECTION

A. Description: Size and shape for the manual station, smoke detector, gong, or other device requiring protection.
   1. Factory fabricated and furnished by the manufacturer of the device.
   2. Finish: Paint of color to match the protected device.
   3. Manual Pull Station – Clear Lexan.
   4. Smoke/Heat Detector – Wire Mesh.
   5. Gong – Wire Mesh.

2.21 WIRE

A. Non-Power-Limited Circuits: Red jacketed plenum rated solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.
   1. Low-Voltage Circuits: No. 16 AWG, minimum.

2. Line-Voltage Circuits: No. 12 AWG, minimum.

B. Power-Limited Circuits: NFPA 70, Types FPL, FPLR, or FPLP, as recommended by manufacturer.

2.22 VOICE ALARM SYSTEM COMPONENTS

A. Voice/Alarm Signaling Service:
1. One-way, multichannel voice notification system incorporating at least eight distinct sounds selectable by user for tone signaling and incorporating a voice module for delivery of prerecorded messages.
2. Redundant microphones, preamplifiers, amplifiers, and tone generators provided in separate main and remote cabinets.
3. Voice notification system shall support facility public address paging.
4. Audible appliances shall produce a code 3 temporal tone for three cycles followed by a voice message that is repeated until the control panel is reset or silenced.
5. Automatic messages shall be broadcast through speakers throughout the building or facility.
6. When using microphones, live messages shall be broadcast throughout a selected floor or floors or all call.
7. Live voice message shall override automatic or recorded audible output through use of a microphone input at the main control panel or the remote cabinet.
8. Number of alarm channels shall be indicated for automatic, simultaneous transmission of different announcements to different zones or for manual transmission of announcements by use of the central-control microphone.
   a. Allow sending an evacuation signal to selected zones and, at the same time, allow voice paging to the other zones selectively or in any combination.
   b. Programmable tone and message sequence selection.
   c. Standard digitally recorded messages for "Evacuation" and "All Clear."

B. Audible Notification System: Comply with the requirements of NFPA 72 and ISO 7240-16 for Emergency Voice/Alarm Communications System, except where more stringent requirements are specified. Voice intelligibility shall be evaluated according to IEC 60268-16.
1. Amplifiers:
   a. Comply with UL 1711.
   b. Audio output shall be selectable for line level. Minimum amplifier output shall be 100 W rms.
   c. Capable of operating all speakers at the same time.
   d. Loss of operating power, supervisory power, or any other malfunction that could render the voice module inoperative shall automatically cause the code 3 temporal tone to take over all functions assigned to the failed unit in the event an alarm is activated.
2. Audible Notification Devices:
   a. Handheld push-to-talk microphone shall be supervised and a key shall be required to enable remote microphone use.
   b. Microprocessor shall actively integrate circuitry, field wiring, and digital coding necessary for the immediate and accurate rebroadcasting of stored voice data into appropriate amplifier input.

C. Voice/Tone Notification Appliances:
1. Comply with UL 1480.
2. Indoor Speakers for Voice Notification:
   a. Construction: High-efficiency, sealed back; for maximum output at minimum power across a frequency range of 150 Hz to 10,000 Hz.
   b. Standard: UL 1480.
   c. Speaker Locations: Comply with NFPA 72, "Notification Appliances" and "Emergency Communications Systems" chapters.
   d. High-Range Units: Rated 2 to 15 W.
   e. Low-Range Units: Rated 1 to 2 W.

f. Mounting: Flush and Surface mounted and bidirectional per ceiling. Surface mount in exposed spaces.
g. Matching Transformers: Tap range matched to acoustical environment of speaker location.

3. Outdoor Speakers for Voice Notification:
a. High-powered, 1600-W speaker arrays with acoustic performance and intelligibility features complying with NFPA 72.
b. Control panel providing signal processing, amplification, gain control, battery backup, and antenna surge protection.
c. Pole designed for the speaker array with 110 mph (177 km/h) wind load.

D. Text Displays:
1. Programmable, digital text displays having a minimum of 4-inch (100-mm) high letters for hearing-impaired occupants displaying the content of the voice message being played.
2. Capable of sending static, flashing, or scrolling messages to textual visible appliances.
3. Mass notification control panel shall interface with and control the programmable display controller to activate the proper message.
4. Textual visible notification shall be primary notification when it is the only method used to convey emergency MNS information to the general public or to specific individuals.

E. Primary Power:
1. 24-V dc obtained from 120-V ac service and a power-supply module.
a. Power supplies shall be sized to furnish a minimum of 125% of the total connected load in a worst-case condition.
2. Devices Powered by 24-V dc:
a. Control panels.
b. Notification appliances.
c. Text displays.
d. Trouble signals.
e. Supervisory signals.
f. Supervisory and digital alarm communicator transmitters.
g. Digital alarm radio transmitters.

F. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.
1. Batteries: Sealed lead calcium.
2. Batteries: Sealed, valve-regulated, recombinant lead acid.
3. Batteries: Sealed lead calcium, valve-regulated, recombinant lead acid.
4. Battery size shall be a minimum of 125% of the calculated requirement.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

A. Connect the FACP with a disconnect switch with lockable handle or cover. Install smoke detectors above the FACP, all expansion panels, and all power supplies.

B. Connect devices to FACP, expansion panel, or NAC up to 300 feet from panel. Beyond 300 feet provide additional NAC panels.

C. Mount wire to fiber convertors in either the fire alarm panel with stand-offs or in remote cabinet adjacent to fire alarm panel. Provide conduit between remote cabinet and FA panel.

D. Manual Pull Stations: Mount semi-flush in recessed back boxes.

E. Water-Flow Detectors and Valve Supervisory Switches: Connect for each sprinkler valve station required to be supervised.

F. Ceiling-Mounted Smoke Detectors: Not less than 4 inches from a side wall to the near edge. For exposed solid-joist construction, mount detectors on the bottom of joists. On smooth ceilings, install not more than 30 feet apart in any direction.

G. Wall-Mounted Smoke Detectors: At least 4 inches, but not more than 12 inches, below the ceiling.

H. Smoke Detectors near Air Registers: Install no closer than 60 inches.

I. Duct Smoke Detectors: Comply with manufacturer's written instructions.
   1. Verify that each unit is listed for the complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
   2. Install sampling tubes so they extend the full width of the duct.
   3. Install necessary relays and control modules to accomplish mechanical equipment operation upon detector activation.

J. Audible Alarm-Indicating Devices: Install so the top of the device is no less than 90 inches above finish floor and not less than 6 inches below the ceiling. Do not install higher than 120 inches unless directed. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Combine audible and visible alarms at the same location into a single unit.

K. Visible Alarm-Indicating Devices: Install so the top of the device is no less than 90 inches above finish floor and not less than 6 inches below the ceiling. Do not install higher than 120 inches unless directed.

L. Device Location-Indicating Lights: Locate in public space near the device they monitor.

M. FACP: Surface mount with tops of cabinets not more than 72 inches above the finished floor.

N. Annunciator: Install with the top of the panel not more than 72 inches above the finished floor.

O. Antenna for Radio Alarm Transmitter: Mount to building structure where indicated. Use mounting arrangement and substrate connection that will resist 100-mph wind load with a 1.3 gust factor without damage.

P. Auxiliary Power Module (NAC): Locate in accessible areas where batteries and associated equipment may be readily maintained. Provide 120-volt/1-phase power from a dedicated 120-volt 1-phase 20-amp circuit for alarm indicating devices.

3.2 WIRING INSTALLATION

A. Wiring Method: Install wiring in metal raceway according to specification section “Raceways and Boxes.” Conceal raceway and coordinate with structural for conduit routes.
   1. Exceptions:
      a. All wiring in mechanical/electrical/equipment rooms shall be in conduit.
      b. All wiring 9’ AFF and below or below ceilings shall be in conduit.

B. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by the manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

C. Wiring between panels or NAC panels:
   1. Within the building and conditioned spaces: Provide manufacturers plenum rated cabling between expansion panels and NAC panels within the building in conduit as per raceway and boxes schedule or as per the wiring installation method in this specification section. If the distance exceeds manufacturers copper cabling, provide plenum rated fiber optic cabling with a wire to fiber convertor.
   2. Outside the building or not within the conditioned space: Provide exterior rated plenum fiber optic cabling in conduit as per raceway and boxes schedule or as per the wiring installation method in this specification section. Provide a wire to fiber convertor either in the panel or in a remote mounting cabinet installed adjacent to the FA panel.
   3. Fiber Install:
      a. Fiber runs shall use long sweep elbows and be protected from damage.
      b. Provide manufacturer required number of strands. Polish and terminate fiber in connectors per wire to fiber convertor. Connect to the wire to fiber convertor and test for operation.
      c. Provide single or multi-mode; 50 or 62.5 micron fiber optic cabling per manufacturer convertor.

D. Cable Taps: Use numbered terminal strips in junction, pull and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.

E. Speakers: Plenum rated cable in conduit in exposed areas. Plenum cable above ceilings.

F. Color-Coding: Red fire alarm plenum rated conductors. Paint fire alarm system junction boxes and covers red.

G. Risers: Install at least two vertical cable risers to serve the fire alarm system. Separate risers in close proximity to each other with a minimum one-hour-rated wall, so the loss of one riser does not prevent the receipt or transmission of signal from other floors.

H. Wiring to Remote Alarm Transmitting Device: 1-inch conduit between the FACP and the transmitter. Install number of conductors and electrical supervision for connecting wiring as needed to suit monitoring function.

I. Provide TVSS and grounding for all devices connected to a FA or NAC panel, external to the building conditioned space.

3.3 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals according to specification section Electrical Identification.

B. Install instructions frame in a location visible from the FACP.

C. Paint power-supply disconnect switch red and label FIRE ALARM.

3.4 GROUNDING

A. Ground cable shields and equipment according to system manufacturer's written instructions to eliminate shock hazard and to minimize, to the greatest extent possible, ground loops, common-mode returns, noise pickup, cross talk, and other impairments.

B. Signal Ground Terminal: Locate at main equipment rack or cabinet. Isolate from power system and equipment grounding.

C. Install grounding electrodes of type, size, location, and quantity as indicated. Comply with installation requirements in Division 26 Section Grounding.

D. Ground equipment and conductor and cable shields. For audio circuits, minimize, to the greatest extent possible, ground loops, common-mode returns, noise pickup, cross talk, and other impairments. Provide 5-ohm ground at main equipment location. Measure, record, and report ground resistance.

E. Ground radio alarm transmitter system and equipment as recommended by the manufacturer. Provide grounding for antenna to building ground.

3.5 APPLICATION SCHEDULE

A. General Application: Provide fire alarm devices where indicated on drawings or as scheduled below. Locations on drawings are approximate. Contractor shall coordinate exact locations with architectural drawings. Contractor shall submit locations of fire alarm devices to engineer/architect as part of fire alarm shop drawings. Locations shall be based upon ability to mount the device to building construction and coverage afforded the device.

B. Fire Alarm Panel: Panel shall be mounted in a continuously (during normal hours) occupied space. Provide dedicated smoke detector for fire alarm panel.

C. Fire Alarm Expansion Panel: Provide fire alarm expansion panel for either every 35 devices or to maintain no more than 15% voltage drop to the device. Provide dedicated smoke detector connected to fire alarm for fire alarm expansion panel.

D. Remote Annunciator: Provide remote annunciator at building address entrance. Location as shown on drawings is approximate and shall be coordinated with architectural.

E. Pull Station: Provide pull stations within 5 feet of all exits to building and second floor stairwell access.

F. Audio/Visuals and Visuals: Device locations indicated on the drawings are approximate. Coordinate with architectural for exact locations and install as per coverage criteria. Install devices in areas that are unobtrusive to room or space intent (e.g. do not install device at the back of the stage, but install stage device off to one side; or do not try to install device on glass block wall).

G. Control Modules and Relays:
   1. Provide control modules and relays at all smoke fire dampers, air handler duct smoke detectors, and equipment smoke detectors for shutdown.
   2. Fire alarm activated fire suppression equipment.
   3. module and relay for all HVLS fans to shut down in the event of fire alarm or water flow.

H. Provide relays for all door holds, mag locks and electronically operated doors in the path of egress.

I. Monitor Modules:
   1. Provide monitor modules for all devices to be monitored by the fire alarm system but not controlled.
   2. Provide monitor modules for all flow and tamper switches.
   3. Provide monitor modules for all dry pipe pressure switches.
   4. Provide fire control monitor module for Halon/FM-200 or similar systems that are locally activated.

J. Master/Slave Synchronization: Provide master synchronization module at fire alarm panel and slaves for every two (2) circuits. Provide notification at fire alarm panel for synchronization and low power or A/C loss.

K. Duct Smoke Detectors: Provide as shown on the drawings and as indicated below (applications may be redundant with drawings).
   1. Duct smoke detectors shall be provided within five feet, with no breaks in the ductwork, of all smoke fire dampers in the direction of airflow. Mount the duct smoke detectors to provide unrestricted access to the control section and for full removal of the sampling tubes.
   2. Duct smoke detectors shall be provided at the discharge to all air handling units and mounted in accordance with NFPA 72.

L. Weatherproof Horn/Strobe: Provide weatherproof horn/strobe for all interior courtyards.

M. Weatherproof Horn: Provide weatherproof horns to be mounted high on exterior wall (coordinate with architectural), audible from any entrance to the building.

3.6 VOICE EVACUATION SPEAKERS FOR AUDIBLE NOTIFICATION AUDIBILITY AND INTELLIGIBILITY DESIGN

A. Provide voice evacuation system with speakers located to provide code required audible notification intelligibility. Drawing locations are approximate. Contractor to submit calculated locations per shop drawings.

B. Acoustically Distinguishable Spaces (ADS) assignments shall be submitted for review and approval.
   1. Each ADS shall be identified as requiring or not requiring voice intelligibility.
   2. ADS measurement points shall be shown on plans or otherwise described in a way that permits future testing at the same locations.

C. Audible notification devices shall have the dB output for each speaker labeled adjacent to the speaker to substantiate the design and assist the installer in sizing amplifiers.

D. A minimum intelligibility level of 0.7 on the Common Intelligibility Scale (CIS) must be met in all areas that require voice intelligibility. If using the Speech Transmission Index (STI), a minimum score of 0.5 shall be achieved.

E. Acoustic properties of spaces and sound loss shall be considered and documented on shop drawings with respect to speaker selection and placement to ensure audibility and intelligibility requirements can be met.

F. Average Ambient Sound Level According to Location. The following sound levels shall be used for design purposes.
   1. Educational occupancies 45 dB.
   2. Places of assembly 55 dB.

3.7 MECHANICAL COORDINATION

A. See mechanical duct accessory specification for smoke fire dampers and mechanical drawings for sequences of operation. Provide control circuits, relays, monitor modules as required. Fire alarm system shall be capable of shutting down all dampers, HVLS fans, and air handlers during a fire alarm activation. Coordinate for sequencing as per duct accessories specification, mechanical specifications, and mechanical sequence of operation.

3.8 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and connections and to supervise pretesting, testing, and adjustment of the system. Report results in writing.

B. Pretesting: After installation, align, adjust, and balance the system and perform complete pretesting. Determine, through pretesting, the compliance of the system with requirements of Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new ones, and retest until satisfactory performance and conditions are achieved. Prepare forms for systematic recording of acceptance test results.

C. Report of Pretesting: After pretesting is complete, provide a letter certifying the installation is complete and fully operable, including the names and titles of witnesses to preliminary tests.

D. Final Test Notice: Provide a minimum of 10 days' notice in writing when the system is ready for final acceptance testing.

E. Minimum System Tests: Test the system according to procedures outlined in NFPA 72. Minimum required tests are as follows:
   1. Verify the absence of unwanted voltages between circuit conductors and ground.
   2. Test all conductors for short circuits using an insulation-testing device.
   3. With each circuit pair, short circuit at the far end of the circuit and measure the circuit resistance with an ohmmeter. Record the circuit resistance of each circuit on record drawings.
   4. Verify that the control unit is in the normal condition as detailed in the manufacturer's operation and maintenance manual.
   5. Test initiating and indicating circuits for proper signal transmission under open circuit conditions. One connection each should be opened at not less than 10 percent of initiating and indicating devices. Observe proper signal transmission according to class of wiring used.
   6. Test each initiating and indicating device for alarm operation and proper response at the control unit. Test smoke detectors with actual products of combustion.
   7. Test the system for all specified functions according to the approved operation and maintenance manual. Systematically initiate specified functional performance items at each station, including making all possible alarm and monitoring initiations and using all communications options. For each item, observe related performance at all devices required to be affected by the item under all system sequences. Observe indicating lights, displays, signal tones, and annunciator indications. Observe all voice audio for routing, clarity, quality, freedom from noise and distortion, and proper volume level.
   8. Test Both Primary and Secondary Power: Verify by test that the secondary power system is capable of operating the system for the period and in the manner specified.

F. Retesting: Correct deficiencies indicated by tests and completely retest work affected by such deficiencies. Verify by the system test that the total system meets Specifications and complies with applicable standards.

G. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log. Submit log on the satisfactory completion of tests.

H. Tag all equipment, stations, and other components at which tests have been satisfactorily completed.

I. During system testing, actual sound level measurements and intelligibility measurements shall be taken by an approved independent third party or the installing contractor with expertise in audio engineering. These results shall be recorded and submitted for review. Where results differ sharply from the calculated theoretical value, investigate the reason for the deviation and provide justification for the deviation in the report.

J. All test equipment shall be calibrated annually and bear the mark of a certified third party firm testing firm indicating that the equipment has been calibrated within the past 365 days.

3.9 CLEANING AND ADJUSTING

A. Cleaning: Remove paint splatters and other spots, dirt, and debris. Touch up scratches and marred finish to match original finish. Clean unit internally using methods and materials recommended by manufacturer.

3.10 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel as specified below:
   1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, adjusting, and maintaining equipment and schedules. Provide a minimum of 8 hours' training.
   2. Training Aid: Use the approved final version of the operation and maintenance manual as a training aid.
   3. Schedule training with Owner, through Architect, with at least seven days' advance notice.

3.11 ON-SITE ASSISTANCE

A. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels, controls, and sensitivities to suit actual occupied conditions. Provide up to three requested visits to Project site for this purpose.

END OF SECTION 283000

SECTION 313116

TERMITE CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Below grade soil treatment for termite control.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Application Procedures: Indicate locations for application, application rates, and application equipment.
2. Warranty: Sample warranty form.

B. Quality Control Submittals:
1. Current EPA approval listing.
2. Certificates of Compliance: Applicator’s certification that termiticide was applied at specified concentrations and using specified methods and materials.

1.3 QUALITY ASSURANCE

A. Applicator Qualifications: Licensed for termite control by authorities having jurisdiction.

1.4 DELIVERY, STORAGE AND HANDLING

A. Protect containers from accidental opening and use.

1.5 PROJECT CONDITIONS

A. Do not apply termiticide when surface water is present.

1.6 SEQUENCING

A. Apply termiticide:
1. After completion of excavating, backfilling, and compaction.
2. Prior to placing vapor retarder.

1.7 WARRANTIES

A. Provide manufacturer’s 5 year warranty against invasion or propagation of subterranean termites and damage to building or building contents caused by termites, including repairs to building and building contents.

PART 2 PRODUCTS

2.1 MATERIALS

A. Termiticide:
1. Approved for termite treatment by Environmental Protection Agency and other authorities having jurisdiction.
2. Water based solution, uniform in composition, synthetically dyed to permit visual identification of treated soil.

B. Signage: As required by authorities having jurisdiction.

2.2 MIXES

A. Mix materials in accordance with manufacturer’s instructions.

PART 3 EXECUTION

3.1 APPLICATION

A. Apply materials in accordance with manufacturer's instructions.

B. Apply treatment to following areas:
1. Outside and inside of building perimeter: Apply treatment to full depth of foundation or minimum 48 inches below grade as backfill is placed.
2. Floor slab penetrations: Apply treatment to full depth of penetration or minimum 48 inches below grade as backfill is placed.
3. Under floor slabs on grade: Apply treatment uniformly over prepared subgrade just prior to placement of vapor retarder.

C. Prevent spillage and runoff onto adjacent non treated areas.

D. Ensure complete coverage of treated areas.

E. Extend treatment onto adjacent construction and floor slab penetrations.

F. Reapply termiticide to treated soils that are disturbed after treatment.

G. Install signage as required by authorities having jurisdiction.

END OF SECTION

SECTION 321413

PRECAST CONCRETE UNIT PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Precast concrete pavers and joint sand.
2. Bitumen setting bed.
3. Asphalt tack coat.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. C 33 - Specification for Concrete Aggregates.
2. C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. C 140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
4. C144 - Standard Specification for Aggregate for Masonry Mortar.D946 - Standard Test Method for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
5. C 920 - Specification for Elastomeric Joint Sealants.
6. C936/C936M - Standard Specification for Solid Concrete Interlocking Paving Units.
7. D946 - Standard Test Method for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
8. C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.
9. D 977 - Standard Specification for Emulsified Asphalt
10. D1073 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures
11. C 1645 - Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units.
12. D 3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Descriptive data for pavers.
2. Samples: 12 x 12 inch samples showing colors and surface textures.
3. Mix Designs: Indicate composition of setting bed.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 2 years experience in work of this Section.

B. Obtain each stone from a single quarry and from the same area within the quarry.

C. Bituminous Setting Bed:
1. Perform work in accordance with AI MS-8.
2. Mixing plant: AI MS-3.

D. Mockups:
1. Size: Minimum 4 x 4 feet.
2. Show: Paver color and texture, maximum color range, and paver pattern.
3. Locate where directed.
4. Approved mockups may remain as part of the Work.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store pavers off ground; prevent contact with materials that could cause staining or damage.

1.6 PROJECT CONDITIONS

A. Do not place setting bed when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

1.7 MAINTENANCE

A. Extra Materials: 4 square feet of each color paver.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract documents are based on products by Keystone Hardscapes. (www.www.keystonehardscapes.com)

2.2 MATERIALS

A. Precast Concrete Pavers:
1. Source: Interlocking Concrete Paver Units, CityLock 4x12 units, #323, by Keystone Hardscapes, or approved substitute.
2. Physical requirements: Meet ASTM C936/C936M.
3. Coloring admixture: ASTM C979/C979M, pure mineral oxide, alkali resistant, colorfast, water insoluble, chemically inert, and weather resistant.
4. Average Compressive Strength (ASTM C 140): 8000 psi (55 MPa) with no individual unit under 7200 psi (50 Mpa).
5. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7 percent.
6. Freeze/Thaw Resistance (ASTM C 1645): 28 freeze-thaw cycles with no greater loss than 225 g/m2 of paver surface area or no greater loss than 500 g/m2 of paver surface area after 49 freeze-thaw cycles. Freeze-thaw testing requirements shall be waived for applications not exposed to freezing conditions.
7. Color and surface finish: To be selected from manufacturers full range of selections.

B. Bitumen Setting Bed Materials:
1. Primer for base: Anionic asphalt emulsion SS-1h, per ASTM D 977.
2. Sand for asphalt bed
   a. Clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
   b. Do not use limestone screenings, stone dust, or sand in the bedding material that does not conform to the grading requirements.
   c. Graded according to ASTM C 136.
   d. Bedding Sand Material Requirements: Conform to the grading requirements of ASTM C 33 with modifications as shown below:

SIEVE SIZE	PERCENT PASSING
No. 4	100
No. 8	85 to 100
No. 16	50 to 85
No. 30	25 to 60
No. 50	10 to 30
No. 100	2 to 10
No. 200	0 to 5

3. Asphalt cement: Meet ASTM D3381, viscosity grade AC-20; heated to 300 F, 7 percent asp mixed with 93 percent sand in batches 145 lbs. asphalt to 1,855 lbs. sand. Exact proportions to be determined by the Contractor.
4. Neoprene modified asphalt adhesive: Karnak 237 2 percent AF Neo-asphalt.

C. Polymer Modified Joint Sand:
1. ASTM C144, polymer modified joint sand produced specifically for placement in precast concrete paver joints.
2. Source: Joint-Lock Paver Finishing Sand by Package Pavement Co., Inc. (www.packagepavement.com) or approved substitute.
3. Color: To be selected from manufacturer's full color range.

2.3 ACCESSORIES

A. Cleaner, Sealers, and Joint Sand Stabilizers: Type recommended by paver manufacturer.

B. Sealant and backer materials: Refer to Section 079200.

PART 3 EXECUTION

3.1 PREPARATION

A. Concrete base preparation
1. Fill any cracks under 3/16 in. wide with mortar.
2. Sweep the surface clean.

3.2 INSTALLATION OF SETTING BED

A. Apply primer to contact surfaces of curbs and abutments at minimum rate of 1/3 gallon per square yard.

B. Place setting bed within 24 hours after applying primer.

C. Bituminous setting bed:
1. Place in panels between 3/4 in. high screed rails spaced approximately 12 ft. Rake and screed smooth with strike board.
2. Use screed rails to achieve a level setting bed conforming to elevations and slope shown on the drawings. After one panel is complete, advance screed rails to the next position in readiness for screeding adjacent panels with strike board. Fill depressions left from removed screed rails and smooth to height consistent with panel.
3. Place an area in size that will remain at least 270 degrees F during compaction.
4. Compact the setting bed with a powered roller compactor to an even, nominal thickness of 3/4 in. after compaction.
5. Re-heat, fill, and compact low areas with setting bed materials to conform to slope and elevation shown on the drawings.
6. Re-heat, remove, level, and compact setting bed in high areas to conform to slope and elevation shown on the drawings.
7. Irregularities or evenness in the grade of the concrete base surface may be corrected with setting bed materials only with approval by the Architect.

D. Neoprene modified asphalt adhesive: Apply to cold asphalt setting bed with a squeegee in a thickness not exceeding 1/16 in. Do not apply pavers to adhesive until dry skin forms on surface of adhesive.

3.3 INSTALLATION OF PAVERS

A. Concrete pavers:
1. Free from dust, dirt, and stains. Do not use soiled, cracked, or broken units.
2. Place paving units firmly onto adhesive with joints not to exceed 1/8 in. (3 mm), or as recommended in manufacturer's literature. Maintain straight pattern lines, joint lines and coursing per the drawings.

3. Cut pavers to fit edges with a masonry saw. No cut paver shall be smaller than 1/3 of a whol unit if exposed to vehicular traffic. Firmly place all edge units on adhesive.

B. Joint filler and sealant:
   1. Extend control and structural joints through full depth of paving units. Do not extend joints through bituminous bedding materials from joints in concrete base that control shrinkage cracking.
   2. Install joints at all building facades or other vertical surfaces.
   3. Install pre-molded joint filler as units are set in bituminous bed. Maintain top of filler 3/8 in. below exposed faces of paving units for insertion of sealant.
   4. Install joint sealant per manufacturer's recommendations.

C. Joint sand:
   1. After the pavers, joint filler, and sealant are installed, spread polymer modified joint sand and fill joints between the slabs in accordance with manufacturer’s instructions.
   2. Sweep surface clean.

3.4 FIELD QUALITY CONTROL

A. The final surface tolerance from grade elevations shall not deviate more than ±3/8 in. under a 10 ft straightedge.

B. Check final surface elevations for conformance to drawings.

C. The surface elevation of pavers shall be 1/8 in. to 1/4 in. above adjacent drainage inlets, concrete collars or channels.

D. Lippage: No greater than 1/8 in. difference in height between adjacent pavers.

3.5 CLEANING

A. Protect adjacent and underlying surfaces and plant materials.

B. Apply cleaner in accordance with manufacturer's instructions.

C. Thoroughly rinse surfaces with clean water after completion of cleaning; remove all traces of cleaning solution.

D. If recommended by manufacturer, apply sealer in accordance with manufacturer's instructions.

E. Apply joint sand stabilization materials between concrete pavers in accordance with the manufacturer's written recommendations.

END OF SECTION

SECTION 321500

AGGREGATE SURFACING

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Work included in this section.

1. Decomposed granite or crushed 3/8” minus aggregate paving with Stabilizer binder additive.
2. Pea gravel groundcover for exterior mechanical areas

1.2 SYSTEM DESCRIPTION

A. Decomposed granite or crushed 3/8” minus aggregate paving with Stabilizer binder additive.

1.3 SUBMITTALS

A. Products; 5 (five) lb. sample of each color and sieve analysis for grading of decomposed granite or crushed 3/8” minus aggregate.

1.4 TESTS

A. Perform gradation of decomposed granite material or 3/8” minus crushed aggregate in accordance with ASTM C 136 — Method for Sieve Analysis for Fine and Course.

1.5 ENVIRONM ENTAL CONDITIONS

A. Do not install decomposed granite or crushed 3/8” minus aggregate paving during rainy conditions.

1.6 EXCESS MATERIALS

A. Provide owner’s authorized rep. with the following excess materials for use infuture decomposed granite or 3/8” crushed aggregate paving repair:

1. 40 — 50 lb. bags of the aggregate paving.
2. 1— 40 lb. bag of the Stabilizer additive.

PART 2 PRODUCTS

2.1 DECOMPOSED GRANITE OR 3/8” CRUSHED AGGREGATE SCREENINGS

A. Crushed Stone Sieve Analysis Percentage of Weight Passing a Square Mesh SieveAASHTO T11-82 and T27-82.

3/8" MINUS AGGREGATE GRADATION	
Sieve Size	% Passing
3/8 inch	100
No. 4	95-100
No. 8	75-80
No. 16	55-65

No. 30	40-50

3/8" MINUS AGGREGATE GRADATION	
Sieve Size	% Passing
No. 50	25-35
No. 100	20-25
No. 200	5-15

Note: Gradation based upon AASHTO T11-82 and T27-82

B. Decomposed granite or 3/8” crushed aggregate screenings are to be the followingcolor (color must be uniform):

1. Color to be selected by Architect.
2. Submit sample for approval by Owner.

C. Products from Minick Materials, Kafka Granite, LLC, Living Earth, Silver Creek Materials, or equivalent approved by Engineer.

2.2 STABILIZER BINDER

A. Patented, non-toxic, organic binder that is a colorless and odorless concentrated powder that binds decomposed granite or crushed 3/8” minus aggregate together to produce a firm surface.

B. Product from stabilizer solutions, Inc., Living Earth, TechniSoil, or equivalent approved by Engineer.

2.3 EDGE RESTRAINTS

A. Border King Steel Edging, galvanized finish:

1. 1/4" thick x 5" depth.
2. 15" tapered steel anchoring stakes with finish to match edging.

PART 3 EXECUTION

3.1 BLENDING STABILIZER

A. Blend 12-16 lbs. of Stabilizer per ton of decomposed granite or crushed 3/8”minus aggregate screenings. It is critical that Stabilizer be thoroughly and uniformly mixed throughout decomposed granite or crushed 3/8” minus aggregatescreenings.

3.2 PLACEMENT OF DECOMPOSED GRANITE SCREENINGS OR CRUSHED 3/8” MINUS AGGREGATE SCREENINGS

A. Upon thorough moisture penetration, compact aggregate screenings to 95% relative compaction by compaction equipment such as double drum roller (2-4 ton) or single drum roller (1000 lbs.) vibratory plate tamp. Do not begin compaction for 6 hours after placement and up to 48 hours.

B. Take care in compacting decomposed granite or crushed 3/8” minus aggregatescreenings when adjacent to existing trees, new planting and irrigation systems.

END OF SECTION

SECTION 32 84 00
PLANTING IRRIGATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide an underground irrigation system as shown and specified. The work includes:
1. Automatic irrigation system including piping, fittings, sprinkle heads, controller, and accessories.
2. Valves, backflow preventer, and fittings.
3. Testing.
4. Excavating and backfilling irrigation system work.
5. Associated exterior plumbing, and accessories to complete the system
6. Pipe sleeves.

B. Related Work:
1. Turf Grasses - Section 32 9200
2. Plants – Section 32 9300

1.2 QUALITY ASSURANCE

A. Installer's qualifications: Minimum of 3 years experience installing irrigation systems of comparable size. Contractor shall be a licensed and bonded Irrigator.

B. Materials, equipment, and methods of installation shall comply with the following codes and standards:
1. Texas Commission On Environmental Quality (TCEQ) Chapter 34, Texas Water Code; Chapter 344 Rules for Irrigators.
2. National Fire Protection Association, (NFPA): National Electrical Code.
3. American Society for Testing and Materials, (ASTM).
4. National Sanitation Foundation, (NSF).
5. City of Dripping Springs Applicable Plumbing Code
6. City of Dripping Springs Uniform Development Code

C. Excavating, backfilling, and compacting operations: Comply with requirements and as specified.

D. Obtain Owner's acceptance of installed and tested irrigation system prior to installing backfill materials.

1.3 SUBMITTAL

A. Submit for approval, manufacturer's product data for all equipment and materials specified herein or proposed for use on this project. Provide information for, but not limited to:
1. Sprinklers, spray and rotary.
2. Nozzles
3. Check Valves for all sprinklers. (Check valves are required for all sprinklers).
4. Piping
5. Pipe Fittings
6. Swing Joints
7. Pipe Cement
8. Controller

9. Wire
10. Wire Splice Kits
11. Remote Control Valves
12. Gate or Manual Valves
13. Quick Coupler Valves
14. Backflow Prevention Devices
15. Valve Boxes (Remote control valves, backflow prevention devices, quick coupler, wire splice location, gate/manual valves, etc.
16. And any other equipment or product necessary to properly complete the work as shown on the drawings and specified herein.

B. On each copy of the submittal, circle in red or highlight in yellow, each specific product proposed for use. COPIES NOT SO MARKED WILL BE REJECTED.

C. Upon irrigation system acceptance, submit written operating and maintenance instructions. Provide format and contents as directed by the Landscape Architect.

D. Provide irrigation system record "as-built" drawings:
1. During the course of installation, legibly mark all changes on drawings to record actual construction.
2. Upon completion of the installation, transfer the record data to a clean professional quality base drawing and submit to the Landscape Architect for approval. Provide CAD files if required by Owner.
    a. Indicate horizontal and vertical locations referenced to permanent surface improvements.
    b. Identify field changes of dimension and detail and changes made by Change Order.

E. Sustainable Design Submittals
1. Materials Reuse
2. Recycled Content Materials
3. Regional Materials
4. Low Emitting Materials

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver irrigation system components in manufacturer's original undamaged and unopened containers with labels intact and legible.
B. Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends, both threaded or plain.
C. Store and handle materials to prevent damage and deterioration. Do not store PVC pipe in direct sunlight for more than 48 hours.
D. To prevent installation delays provide secure locked storage for valves, sprinkler heads, and similar components that can not be immediately replaced.

1.5 PROJECT CONDITIONS
A. Known underground and surface utility lines are indicated on the utility survey. Verify locations of all known underground and surface utilities by contacting the appropriate utility companies.
B. Protect existing trees, plants, lawns, and other features designated to remain as part of the final landscape work.
C. Promptly repair damage to adjacent facilities caused by irrigation system work operations. Cost of repairs at contractor's expense.
D. Promptly notify the Owner of unexpected sub-surface conditions.
E. Irrigation system layout is diagrammatic. Exact locations of piping, sprinkler heads, valves, and other components shall be established by contractor in the field at time of installation. Proposed

piping layout within tree drip lines will be reviewed by Architect prior to installation. Obtain Architect's approval prior to installation.
1. Space sprinkler components as designed, not to exceed manufacturer recommendations.
2. Minor adjustments in system layout will be permitted to clear existing fixed obstructions. Final system layout shall be acceptable to the Architect and Owner.

E. Cutting and patching: (if necessary)
1. Cut through concrete and masonry with core drills. Jack hammers not permitted.
2. Material and finishes for patching shall match existing cut surface materials and finish. Exercise special care to provide patching at openings in exterior walls watertight.
3. Methods and materials used for cutting and patching shall be acceptable to the Owner.

1.6 WARRANTY AND GUARANTEE

A. Materials and workmanship shall be fully guaranteed for one (1) year after substantial completion.

B. Backfilling of all excavation shall be guaranteed for the one (1) year guarantee period. Repair trenches which have settled.

C. Raise or lower heads to compensate for settling of lawn areas.

D. Provide a one (1) year warranty against material, installation and operation defects. Repairs, adjustments and replacement of defective irrigation system materials, including materials which have been installed on the work during the warranty period shall be at Contractor's expense.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer
1. Weathermatic
2. Rainbird
3. Conbraco
4. Hunter
5. Lasco
6. Nibco
7. Spears
8. NETAFIM
9. Leemco

B. If contractor chooses to install alternate equipment he shall submit to Architect for acceptance the following:
1. Equipment specifications and product literature
2. Pressure loss calculations including all lateral sections

2.2 MATERIALS

A. General:
1. Provide only new materials, without flaws or defects and of the highest quality of their specified class and kind and normally used in recycled water systems.
2. Comply with pipe sizes indicated. No substitution of smaller pipes will be permitted. Larger sizes may be used subject to acceptance of the Architect. Remove damaged and defective pipe.

B. Plastic pipe, fittings, and connections;

1. Polyvinyl chloride pipe: ASTM D2241, rigid, un-plasticized PVC, extruded from virgin parent material. Provide pipe homogenous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles, and dents.
2. Pressure Main Line:
   a. Pressure main line piping 4" and larger shall be Class 200 rubber gasket pipe and 3" and smaller shall be PVC Schedule 40 with solvent welded joints.
   b. Pipe shall be made from an NSF approved Type I, Grade I, PVC compound conform ing to ASTM resin specification D1785. All pipe must meet requirements as set forth in Federal Specification PS-22-70, with an appropriate standard dimension (S.D.R.) (Sol vent-weld Pipe).
3. PVC Non-Pressure Lateral Line Piping:
   a. Non-pressure buried lateral line piping shall be PVC class 200 with solvent-weld joints.
   b. Pipe shall be made from NSF approved, Type I, Grade II PVC compound conforming to ASTM resin specification D1784. All pipe must meet requirements set forth in Federal Specification PS-22-70 with an appropriate standard dimension ratio.
4. For mainline 4" and above: All changes of directions and reductions shall be mechanically restrained. Additional adjacent joints shall also be restrained as per manufactures recommendations. Joint Restraints shall be ductile iron and made in accordance with ASTM A-536, Grade 65-45-12 & AWWA C153. All Restraints shall have blunt cast serrations. Machine threaded restraints shall not be allowed. Optional Epoxy Coating shall be fusion bonded epoxy, 10-12 mil thickness. The epoxy coated restraints shall pass 90-Day immersion tests per CSA Z245.20-98. All Joint Restraints shall be manufactured by Leemco, Inc., U.S.A.
5. For fittings 4" and above: Fittings shall be ductile iron, slanted, deep bell, gasket style made in accordance with ASTM A-536, Grade 65-45-12 & AWWA C153.Fittings shall have four lugs to accommodate joint restraints and other fittings. Bell section shall allow 5-degree freedom of pipe deflection within the bell end. All gaskets shall be manufactured of high grade EPDM rubber and shall be rib-enforced "U-Cup" design to seal and assist in restraining pipe at all pressures. Epoxy Coating on interior & exterior surfaces of fittings shall be fusion bonded epoxy, 10-12 mil thickness. The epoxy coated fittings shall pass 90-Day immersion tests per CSA Z245.20-98. All DPS fittings shall have Epoxy Coating as standard finish. All fittings shall be manufactured by Leemco, Inc., U.S.A.

C. PVC pipe fittings: ASTM D2241 schedule 40 PVC molded fittings suitable for solvent weld or slip joint ring tight seal. For any threaded connections use only Sch 80 PVC. Fittings made of other materials are not permitted.
   1. Size slip fitting socket taper to permit a dry un-softened pipe end to be inserted no more than halfway into the socket. Saddle and cross fittings are not permitted.
   2. Schedule 80 PVC pipe may be threaded.
   3. Use PVC male adapters for plastic to metal connections. Hand-tighten male adapters plus one turn with a strap wrench.

D. Sprinkler heads, valves, and associated equipment.
   1. Refer to drawings for materials.
      a. Tree bubblers: Hunter PCN-50 Flood Bubbler on ProSpray PROS--06 where specified on plan.
      b. Remote control valves: Weathermatic Black Max Series
      c. Quick Coupler Valves: Rainbird 44LRC
      d. Underground Splices. 3M DBY
      e. Backflow Preventer required: Double Check Assembly.
      f. Netafim Drip Irrigation Components

E. Controls:
   1. Irrigation Controllers: Refer to drawing

F. Electric control wire:
1. Control wire shall be 14 AWG, UF Classification, UL approved for direct burial. Use two wire cabling recommended by controller manufacturer.
2. For runs longer than 5000 feet, larger cable may be used provided it conforms to controller manufacturer's specifications for both material specification and installation.
3. All wire splices shall be protected by a valve box. All wire splices shall be shown on "as-built" drawings. No splices will be allowed on runs of less than 500 feet.
4. Provide grounding as recommended by controller manufacturer.

2.3 ACCESSORIES

A. Drainage fill: No. 4 to 1/2-inch washed pea gravel.

B. Fill: Clean soil free of stones larger than 3/4-inch diameter, foreign matter, organic material, and debris.
1. Provide imported fill material as required to complete the work. Obtain rights and pay all costs for imported materials.
2. Suitable excavated materials removed to accommodate the irrigation system work may be used as fill material subject to the Landscape Architect's review and acceptance.

C. Clamps; Stainless steel, worm gear hose clamps with stainless steel screws or ear type clamps.

D. Low Voltage wire connectors: WC 014 splice by Wade Enterprises.

E. Valve access boxes: Tapered enclosure of rigid plastic material comprised of fibrous components chemically inert and unaffected by moisture corrosion and temperature changes. Provide lid of same material, black or green in color. Provide 10-inch Round Valve Box for remote control valves. Use valve box extensions as necessary to maintain proper level relative to grade. Provide 10-inch Valve Box for wire splices.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine final grades and installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.

B. This contractor to verify existing and proposed locations of all site utilities (i.e., gas, water, electric, telephone, sanitary and storm sewers, etc.) prior to any trenching and laying of pipe. In addition, this contractor shall coordinate all irrigation work with that of all other site work trades and contractors, as applicable.

3.2 PREPARATION

A. Lay out and stake the location of each sprinkler head and sprinkler valve. Obtain Architects acceptance of layout prior to excavating.
B. Remove existing paving for sleeve installation if required. Saw cut existing paving to provide uniform straight transition at new to existing paving.

3.2 INSTALLATION

A. Excavating and backfilling:
1. Excavation shall include all materials encountered, except materials that cannot be excavated by normal mechanical means.
2. Excavate trenches of sufficient depth and width to permit proper handling and installation of pipe and fittings as shown on Details.
3. Pulling method will not be allowed on this project. .
4. Excavate to depths required to provide earth fill or sand bedding for piping as shown on plans.
5. Fill to match adjacent grade elevations with approved earth fill material. Place and compact fill in layers not greater than 4-inch depth.
    a. Provide approved earth fill or sand to a point 4-inches above the top of pipe.
    b. Provide clean top soil fill free of rocks and debris for top 5-inches of fill.
6. Except as indicated, install irrigation mains with a minimum cover of 10 inches based on finished grades. Install irrigation laterals with a minimum cover of 8-inches based on finished grades.
7. Excavate trenches and install piping and fill during the same working day. Do not leave open trenches or partially filled trenches open overnight.
8. Replace paving of same materials, using joints and patterns to match existing adjoining paving surfaces. Removal of paving or wall material and replacement thereof shall only occur when it is determined by the Landscape Architect that the sleeves installed cannot be located and other methods (i.e., jacking under the construction or re-routing piping) are not able to be executed.

B. Plastic Pipe
1. Install plastic pipe in accordance with manufacturer's installation instructions. Provide for thermal expansion and contraction.
2. Saw cut plastic pipe larger than 2". Use a square-in sawing vice to insure a square cut. Remove burrs and shavings at cut ends prior to installation.
3. Make plastic to plastic joints with solvent weld joints or slip seal joints. Use only solvent recommended by the pipe manufacturer. Install plastic pipe fittings in accordance with pipe manufacturer's instructions. Contractor shall make arrangements with pipe manufacturer or distributor for all necessary field assistance.
4. Make plastic to metal joints with plastic male adapters.
5. Make solvent weld joints in accordance with manufacturer's recommendations.
6. Allow joints to set at least 24 hours before pressure is applied to the system.
7. Maintain pipe interiors free of dirt and debris. Close open ends of pipe by acceptable methods when pipe installation is not in progress.

C. Sprinkler, fittings, valves, and accessories:
1. Install fittings, valves, sprinkler heads, risers, and accessories in accordance with manufacturer's instructions, except as otherwise indicated.
2. Set sprinkler heads perpendicular to finished grades, except as otherwise indicated.
3. Provide pop-up spray heads (with internal check valve) with an adjustable swing joint riser assembled as shown on details.
    a. Pre-fabricated swing joint risers shall be schedule 80 rated.
4. Obtain Architect's review and acceptance of height for proposed sprinkler heads and valves prior to installation.
5. Locate sprinkler heads to assure proper coverage of indicated areas. Do not exceed sprinkler head spacing distances indicated.
6. Install backflow prevention valve, fittings, and accessories as shown or required to complete the system. Engineer to provide layout and details.
7. Install the specified controller in the location shown on the drawing, with lockable weatherproof controller housing. Controllers shall be pedestal mounted as directed by the owner. Install per manufacturer's recommendations.

a. Provide rigid conduit from controller down into grade to accommodate valve wires (see details).
b. This contractor shall pull valve wires, program controller by labeling station position for zones, and put controller in operation.

8. Install in-ground control valves in a valve access box as indicated.
9. Install valve access boxes on a suitable base of gravel to provide a level foundation at proper grade and to provide drainage of the access box. Factory valve box extensions shall be required to be used if necessary.
10. Seal threaded connections on pressure side of control valves with Teflon tape. Do not use pipe joint compound.

D. Control wiring
1. Install electric control cable in the mainline piping trenches wherever possible. Place wire in trench adjacent to pipe. Install wire with slack to allow for thermal expansion and contraction. Provide expansion joints at 100 foot intervals by making 5-6 turns around a piece of 1/2-inch pipe. Where necessary to run wire in a separate trench, provide a minimum cover of 12-inches. When more than one wire is placed in a trench the wire shall be taped together at intervals of 50 feet.
2. Provide sufficient slack (expansion coil consisting of 5-6 turns around a 1/2" piece of pipe) at remote control valves in control boxes, and at all wire splices to allow raising the valve bonnet or splice to the surface without disconnecting the wires when repair is required.
3. Connect remote control valve to one station of a controller only.
4. Make wire connections to remote control electric valves and splices of wire in the field, using wire connectors and in accordance with manufacturer's recommendations.

E. Sleeves:
1. Utilize existing sleeves if available for installation of the irrigation system.
2. Provide new sleeves for all locations where existing sleeves are not indicated. Install new sleeves prior to paving installation wherever possible.
3. Install pipe sleeves under existing concrete or asphalt surfaces where cutting is necessary. Obtain Owner's permission before cutting existing concrete and asphalt surfaces. Where piping is shown under paved areas which are adjacent to turf areas, install the piping in the turf areas.

F. Flushing, testing, and adjustment:
1. In the presence of the Landscape Architect or his Representative, hydrostatically test the mainline piping system in place, before backfilling. Test period shall be not less than four hours at 130 PSI. Test is acceptable if no leakage occurs during test period.
2. After sprinkler piping and risers are installed and before sprinkler heads are installed, open control valves and flush out the system with full head of water.
3. Perform system testing upon completion of each section. Make necessary repairs and retest repaired sections as required.
4. Adjust sprinklers after installation for proper and adequate distribution of water over the coverage pattern. Adjust for the proper arc of coverage.
5. Tighten nozzles on spray type sprinklers after installation. Adjust nozzle-adjusting screw on sprinklers as required for proper radius. Interchange nozzle patterns as directed by the Architect, to give best arc of coverage.
6. Adjust all electric remote control valve flow control stems for system balance and optimum performance.
7. Test and demonstrate the controller by operating appropriate day, hour, and station selection features as required to automatically start and shut down irrigation cycles to accommodate plant requirements and weather conditions.
8. Backflow device, shall be tested and certified before substantial completion will be issued.

3.3 SPARE PARTS

A. Provide the Owner additional parts as noted.
   1. 2 extra sprinkler head(s) of each size and type.
   2. 1 extra valve(s) of each size.
   3. 2 extra valve access boxes of each size.
   4. 2 C100 quick coupling keys and 2 #10 hose swivels.

3.4 DISPOSAL OF WASTE MATERIAL

A. Stockpile, haul from site, and legally dispose of waste materials, including unsuitable excavated materials, rock, and debris.

B. Maintain disposal route clear, clean, and free of debris.

3.5 SUBSTANTIAL COMPLETION

A. An inspection of the irrigation system will be made by the Landscape Architect upon request for Application of Substantial Completion by the Contractor. The irrigation system must be sufficiently complete so that all plant material can be sustained by the system.

B. Contractor will be required to train maintenance personnel on the use and basic upkeep of this system. If this responsibility is not fulfilled, the cost of obtaining this training by the Owner shall be shown as a deduction in the final payment.

C. The Contractor shall attach a reduced scale of the area controlled by the controller on the inside of the controller door identifying the location of the valves and the station assigned to each.

3.6 FINAL COMPLETION

A. An inspection of the irrigation system will be made by the landscape architect upon request for Final Completion by the Contractor. Provide notification of at least ten (10) working days before requested inspection date.

3.7 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from irrigation system installation.

END OF SECTION

SECTION 32 9300
PLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plants.
2. Planting soil
3. Mulch
4. Compost
5. Fertilzers

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1.2 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.

C. Finish Grade: Elevation of finished surface of planting soil.

D. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

E. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

F. Pests: Living organisms that occur where they are not desired, or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

G. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

H. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

I. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

J. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

K. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.3 SUBMITTALS

A. Submittals for Review

1. Provide certificates of inspection accompanying the invoice for each shipment of plants as may be required by law for transportation. File certificates with the Landscape Architect prior to acceptance of the material. Inspection by federal or state authorities at the place of growth does not preclude rejection of the plants at the site.

2. Manufacturers data for each type of product indicated, including soils.

3. Soils samples: submit samples of all topsoil, soil mixes, mulches and organic materials. Samples shall weigh 2 lbs. and be packaged in plastic bags. Samples shall be typical of the lot of material to be delivered to the site and provide accurate indication of color, texture, and organic make-up of the material.

4. Plant photographs: submit color photographs of representative specimens of each type of tree, shrub, and groundcover on the plant list. Photos shall be 3x5 in. taken from an angle that depicts the size and condition of the typical plant to be furnished. A scale rod or other measuring device shall be included in the photograph.

5. Nursery sources: submit a list of all nurseries that will supply plants, along with a list of the plants they will provide and the location of the nursery.

a. For groundcovers and shrubs in large quantities, the Contractor shall verify in writing one year in advance of installation that quantities can be acquired at the designated installation time. If quantities are not available, the Contractor shall provide a proposed contract for acquiring, growing and maintaining the required quantity of plants within the required lead time to meet the installation date. The Contractor shall notify the Landscape Architect and Owner of required lead times and cost for growing plants specified plants for the Owner's and Landscape Architect's consideration/approval.

6. Soil Test: Submit soil test analysis report for each sample of topsoil and planting mix from a soil testing laboratory approved by the Landscape Architect.

7. Provide a particle size analysis, including the following gradient of mineral content:

USDA Designation	Size in mm
Gravel	+2 mm
Very course sand	1-2 mm
Coarse sand	0.5 -1 mm
Medium sand	0.25-0.5 mm
Fine sand	0.1-0.25 mm
Very fine sand	0.05-0.1 mm
Silt	0.002-0.05 mm
Clay	smaller than 0.002 mm

8. Provide a chemical analysis, including the following:

a. pH and buffer pH

b. Percentage of organic content by oven-dried weight.

c. Nutrient levels by parts per million, including phosphorus, potassium magnesium, manganese, iron, zinc, and calcium. Nutrient test shall include the testing laboratory recommendations for supplemental additions to the soil based on the requirements of horticultural plants.

d. Soluble salt by electrical conductivity of a 1:2, soil: water, sample measured in millimho per cm.

e. Cation exchange capacity (CEC).

9. Material Testing: Submit the manufacturer's particle size analysis, and the pH analysis and provide a description and source location for the content material of all organic materials.

C. Close-out submittals:

1. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of plants during a calendar year. Instructions shall be submitted to the Landscape Architect for review and approval prior to submission to the Owner for review/approval.

2. During Maintenance Period, maintain a log of maintenance activity and submit a monthly report to the Owner containing all maintenance activities. Following the Maintenance period, compile a summary of activities that have taken place during the Maintenance Period.

1.4 QUALITY ASSURANCE

A. Landscape planting and related work shall be performed by a firm with a minimum of five years experience specializing in this type of work.

B. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

1. Pesticide Applicator: State licensed, commercial.

C. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory.

1. The soil-testing laboratory shall oversee soil sampling.
2. Report suitability of tested soil for plant growth.

a. State recommendations for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
b. Report presence of problem salts, minerals, or heavy metals; if present, provide additional recommendations for corrective action.
c. Report presence of soil compaction and recommendations for corrective action.

D. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

E. Pre-installation Conference: Conduct conference at job trailer at least three weeks in advance of installation.

1.5 PROJECT CONDITIONS

A. Planting shall be done within the following dates:

1. Trees, shrubs and groundcover: January to June and October to December.

2. Variance: if special conditions exist that warrant a variance in the above planting dates, a written request shall be submitted to the Landscape Architect stating the special conditions and the proposed variance. Permission for the variance will be given if warranted in the opinion of the Landscape Architect. Any variance in the planting season will not affect the guarantee period.

B. Utility verification

1. The Contractor shall contact the local utility companies for verification of the location of all underground utility lines in the area of work. The Contractor shall be responsible for all damage resulting from neglect or failure to comply with this requirement.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Should the roots be dried out, large branches broken, balls of earth broken or loosened, or areas of bark torn, the Landscape Architect may reject the injured tree(s)and order them replaced at no additional cost to the Owner. Provide protective covering of plants during shipping and delivery including tarpaulin or canvas. Loads that are not protected shall be rejected. Do not drop plants during delivery and handling.

B. Handle planting stock by the root ball and using belts or lifting harnesses of sufficient width to support the soil ball to avoid damaging it. In no instance shall the tree trunk be used to lift or handle the trees.

C. Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1.7 WARRANTIES

A. Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Death and unsatisfactory growth, except for defects resulting from abuse incidents that are beyond Contractor's control.
   b. Structural failures including plantings falling or blowing over.

2. Warranty Periods from Date of Planting Completion.
   a. Trees, Shrubs, Vines, and Ornamental Grasses:12 months.
   b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
   c. Annuals: 12 months.

1.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period below.

1. Maintenance Period for Trees and Shrubs: 90 days from date of substantial completion.
2. Maintenance Period for Ground Cover and Other Plants: 90 days from date of planting completion.

PART 2 - PRODUCTS

2.1 NURSERY SOURCES:

A. Acceptable Sources for Large and Small Trees:

1. Everde, Glen Flora TX, 1 Tree Town Rd. 77443, 979-677-9400
2. Native Texas Nursery, Austin, 512-276-9801
3. Rancho Encino993 County Road 207, Bay City, TX 77414979-245-8992
4. Approved substitute

B. Acceptable Sources for Shrubs, Groundcovers Vines

1. McNeal Growers, Austin, 512) 280-2233 (particularly for Sedges)
2.. Native Texas Nursery; Austin, 512-276-9801
3. Approved substitute

2.2 PLANT MATERIAL

A. Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, root girdling abrasions, and disfigurement.

1. Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged or crooked leader, bark abrasions, sunscald, disfiguring knots, insect damage, root girdling or cuts of limbs over ¾” in diameter that are not completely closed will be rejected.

B. Plants shall conform to the measurements specified, except that plants larger than those specified may be used if approved by the Landscape Architect. Use of larger plants shall not increase the contract price. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant.

1. Caliper measurements shall be taken on the trunk 6” above the natural ground line for trees up to and including 4 inches in caliper and 12 inches above the natural ground line for trees over 4 inches in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to branch tip. Plants shall be measured when branches are in their normal position. If a range of sizes is given, no plant shall be less than the minimum size, and no less than 50 percent of the plants shall be as large as the maximum size specified. Measurements specified are minimum sizes acceptable after pruning, where pruning is required. Plants that meet measurements but do not possess a standard relationship between height and spread, according to ANSI Z60.1

2. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of the root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting. Any plants with girdling roots shall be rejected.

C. Substitutions of plant materials will not be permitted unless authorized in writing by the Landscape Architect. If proof is submitted in writing that a plant specified is not obtainable, consideration will be given to the nearest available size or similar variety, with a corresponding adjustment of the contract price.

D. The Plant Schedule as shown in the drawings is for the Contractor’s information only, and no guarantee is expressed or implied that quantities therein are correct or that the list is complete. The Contractor shall ensure that all plant materials shown on the drawings are included in his or her bid.

E. All plants shall be labeled by plant name. Labels shall be attached securely to all plants, bundles, and containers of plant materials when delivered. Plant labels shall be durable and legible, with information given in weather-resistant ink or embossed process lettering.

F. Selection and Tagging:

1. Tree tagging: the Landscape Architect shall tag all trees at the Nursery prior to shipping. Prior to tagging, the Contractor shall submit photographs from three Nursery sources according to Section 1.3 E These photographs shall be

submitted two weeks in advance of the tagging trip. Based on the submitted photographs, a Nursery shall be selected for tree tagging. The Nursery shall confirm in writing, one week in advance of the tree tagging trip, that it has the required quantities and qualities of trees representative of those shown in the photograph submittals in terms of species, form, height, and spread as noted in the Planting Schedule. Any proposed substitutions from those requirements noted in the Plant Schedule shall be supplied in writing one week prior to the tree tagging trip. Only those trees approved and tagged by the Landscape Architect shall be shipped to the site for installation. Any trees that have not been previously tagged will be returned to the Nursery at the Contractor's expense. Any additional trips required due to the Contractor's not adhering to the above requirements, will be at the Contractor's expense.

2. Shrubs/Vines and Groundcover: all plants shall be subject to inspection for conformity to specification requirements and approval by the Landscape Architect at their place of growth and upon delivery. Such approval shall not impair the right of inspection and rejection during progress of the work. A written request for the inspection of plant material at their place of growth shall be submitted to the Landscape Architect at least ten calendar days prior to digging. This request shall state the place of growth and the quantity of plants to be inspected. The Landscape Architect may refuse inspection at this time if, in his or her judgment, sufficient quantities of plants are not available for inspection.

G. Container Plants:

1. Plants grown in containers shall be of appropriate size for the container as specified in the most recent addition of ANSI Z60.1 and shall be free of circling roots on the exterior and interior of the root ball.

2. Container plants shall have been grown in the container long enough to have established roots throughout the growing medium.

2.3 PLANTING SOILS

A. Planting Soil:

1. Planting soil shall meet the following criteria. Soil shall be a mixture of 30% Compost, 10% Mineral Sand, and 60% Native Soil.

2. Native soil shall meet be locally available and meet the following criteria:
   a. free of trash, weeds, deleterious materials, rocks and debris.
   b. 100% shall pass through a 1.5-inch (38-mm) screen.
   c. Native soil shall be loamy material that meets the following textural criteria in accordance with the USDA textural triangle.

Textural Class	Minimum	Maximum
Clay	10%	15%
Silt	25%	35%
Sand	50%	60%

   d. PH range 7.3 to 7.9
   e. Organic Matter Content: 3-6% dry weight basis

f. Moisture Content: 30-60%
g. Soluble salt concentrations shall not exceed 1.5 dS/m
h. Sodium adsorption ratio (SAR) shall be <5
i. Sufficient structure to give good tilth and aeration
j. An infiltration rate of 3 inches per hour
k. Soil shall not be compacted beyond the maximum allowable bulk density of 1.60 g/cm^3 or 75 - 82 percent Standard Proctor.

2.2 SUBSOILS

A. Subsoils – Existing subsoils shall be scarified and or amended with gravel if needed to have an infiltration rate of 0.3 inches per hour.

2.3. COMPOST

A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:

1. Compost shall come from local feedstock manufactured within 50 miles of the project site.

2. Feedstock: leaf and yard waste

3. Reaction: pH 5.5 to 8.0

4. Soluble-Salt Concentration: Shall not exceed 1.5 mS/cm

5. Organic-Matter Content: The organic material shall contain at least 40% organic matter (dry basis) and shall have 100% passing a ½ inch or smaller screen. Debris particles such as metal, glass, plastic, wood, asphalt, or masonry shall not exceed 10 mm jn size and shall not total more than 2% dry weight.
6. The carbon to nitrogen ration shall be between 11/1 and 22/1.
7. Maturity shall be greater than or equal to 6 “curing compost and very stable” as measured in a colormetric based maturity test (Woods End Research Laboratory, or equivalent).
8. The composed material shall not produce any unpleasant residual odor such as hydrogen sulfide, ammonia, or others.
9. The material shall contain some nitrogen, phosphorus, potassium, calcium, magnesium, sodium, and micronutrients including iron, copper, boron, manganese and molybdenum so that heavy applications of fertilizer are not required to sustain growth.
10. Concentrations of zinc, mercury, cadmium, lead, nickel, chromium, and copper must be below EPA and Texas Commission on Environmental Quality standards for applications to soils with human activity.

2.4 MULCHES

A.Organic Mulch: Shredded Texas Native Hardwood Mulch

1. Gardenville 1-888-655-6115

2.5 PESTICIDES

A. Pesticide registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application.

2.6 FERTILIZERS

A. Develop a list of organic or slow-release fertilizer products for use on the project site. Submit the list to the Owner's Designated Representative for approval prior to use.

B. Only organic fertilizers shall be used. All fertilizers shall be certified by Organic Material Review Institute (OMRI).

C. Composition: Macro and micro soil nutrients in amounts recommended in soil reports from a qualified testing agency.

D. Chelated Iron: In amounts recommended in soil reports from a qualified testing agency. Commercial-grade FeEDDHA for dicots and woody plants, and commercial-grade FeDTPA for ornamental grasses and monocots.

PART 3 - EXECUTION

3.1 TESTING

A. Permeability of the subgrade shall be tested, for at least three locations within each defined planting area. The Landscape Architect shall specify locations and numbers of tests based on the complexity of each planting area. Subgrade permeability is to be tested using a double ring infiltrometer and should be conducted by a soil scientist or geotechnical engineer.

3.2 PLANTING AREA ESTABLISHMENT

A. Mark utilities prior to start of work.

B. Loosen subgrade or scarify base material under planting areas to a minimum depth of 2 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

C. Spread planting soil to a minimum depth of 12 inches for shrubs & groundcover but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

E. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade the surface of all planted to meet finish grade. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.3 EXCAVATION FOR TREES AND SHRUBS

A. Locations for plants and/or outlines of areas to be planted are to be staked out at the site. Locate and mark all subsurface utility lines. Approval of stakeout by the Landscape Architect is required before excavation begins.

B. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.

1. Excavate approximately five times as wide as ball diameter.
2. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball. If the planting area under any tree is initially dug too deep, the soil added to bring it up to the correct level should be thoroughly tamped.

C. Subsoil and topsoil removed from excavations may not be used as planting soil.

D. Detrimental soil conditions: the Landscape Architect is to be notified, in writing, of soil conditions encountered, including poor drainage, that are detrimental to the growth of plant material. When detrimental conditions are uncovered, planting shall be discontinued until instructions to resolve the conditions are received from the Landscape Architect.

E. Obstructions: if rock, underground construction work, utilities, tree roots, or other obstructions are encountered in the excavation of planting areas, alternate locations for any planting shall be determined by the Landscape Architect.

3.4 TREE, SHRUB, AND VINE PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1.

B. Remove injured roots by cutting cleanly; do not break.

C. Set stock plumb and in center of planting pit or trench with root flare 2 inches above adjacent finish grades.

1. Use specified planting soil for backfill.
2. Container-Grown: Carefully remove root ball from container without damaging root ball or plant.
3. Set plants on flat-tamped or unexcavated pads. Plants must be set plumb and braced in position until planting soil has been placed and tamped around the base of the root ball. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Note: Improper compacting of the soil around

the root ball may result in the tree settling or leaning. Plants shall be set so that they will be at the same depth and so that the root ball does not shift or move laterally one year later.

4. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

E. Remove any excess soil, debris, and planting material from the job site at the end of each workday.

F. Form watering saucers 4" high immediately outside the area of the root ball of each tree as indicated in the drawings.

3.5 STAKING AND GUYING

A. Stake or guy a tree only when necessary for the specific conditions encountered and with the approval of the Landscape Architect. Trees that settle out of plumb due to inadequate soil compaction either under or adjacent to the root ball shall be excavated and reset. In no case shall trees that have settled out of plumb be pulled upright using guy wires.

B. When required, staking and guying methods shall be approved by the Landscape Architect. If no staking or guying requirements appear on the drawings, submit for approval a drawing of the staking or guying method to be used. Stakes, anchors, and wires shall be of sufficient strength to maintain the tree in an upright position that overcomes the particular circumstances that initiated the need for staking and guying. Guy wires shall be galvanized, multi-strand, twisted wire.

C. Where guy wires are attached around the tree, the trunk shall be protected with 3/4" rubber hose, black in color, and of sufficient length to extend past the trunk by more than 6 inches.

D. Stakes and guys shall be installed immediately upon approval of the planting, and shall be removed at the end of the first growing season. Any tree that is not stable at the end of this time shall be rejected.

3.6 TREE, SHRUB, AND VINE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape. Healthy lower branches and interior small twigs should not be removed except as necessary to clear walks and roads. In no case should more than one quarter of the branching structure be removed. Retain the normal and natural shape of the plant.

B. All pruning shall be completed using clean, sharp tools. All cuts shall be clean smooth, with the bark intact with no rough edges or tears.

C. Except in circumstances dictated by the needs of specific pruning practices for specific tree species, tree paint shall not be used unless approved by the Landscape Architect.

Tree paint, where required, shall be paint specifically formulated and manufacturing for horticultural use.

D. Pruning of large trees shall be done from a hydraulic man-lift such that it is not necessary to climb the tree.

3.7 GROUND COVER PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated in drawings in even rows with triangular spacing.

B. Use planting soil as specified for backfill.

C. Dig holes large enough to allow spreading of roots.

D. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

E. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

F. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

G. Do not plant groundcover within the root ball area of newly planted trees. For groundcover within the dripline of formerly transplanted trees, the Contractor shall acquire written approval from the Landscape Architect before proceeding with plantings within the dripline area to assure that transplanted trees are deemed healthy and well-established prior to planting.

3.8 PLANTING AREA MULCHING

A. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees and Tree-like Shrubs in Turf Areas: Apply organic mulch ring of 3-inch average thickness, with 36-inch radius around trunks or stems. Do not place mulch within 6 inches of trunks or stems.
2. Organic Mulch in Planting Areas: Apply 3-inch average thickness of mulch extending 12 inches beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.9 ACCEPTANCE

A. The Landscape Architect shall inspect all work for acceptance upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date of inspection. Acceptance of plant material shall be for general conformance to specified size, character, and quality and shall not relieve the Contractor of responsibility for full conformance to the Contract Documents, including correct species. Upon completion and re-inspection of all repairs or renewals necessary in the

judgment of the Landscape Architect, the Landscape Architect shall verify in writing that the work has been accepted.

3.10 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease in accordance with the Specification.

B. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

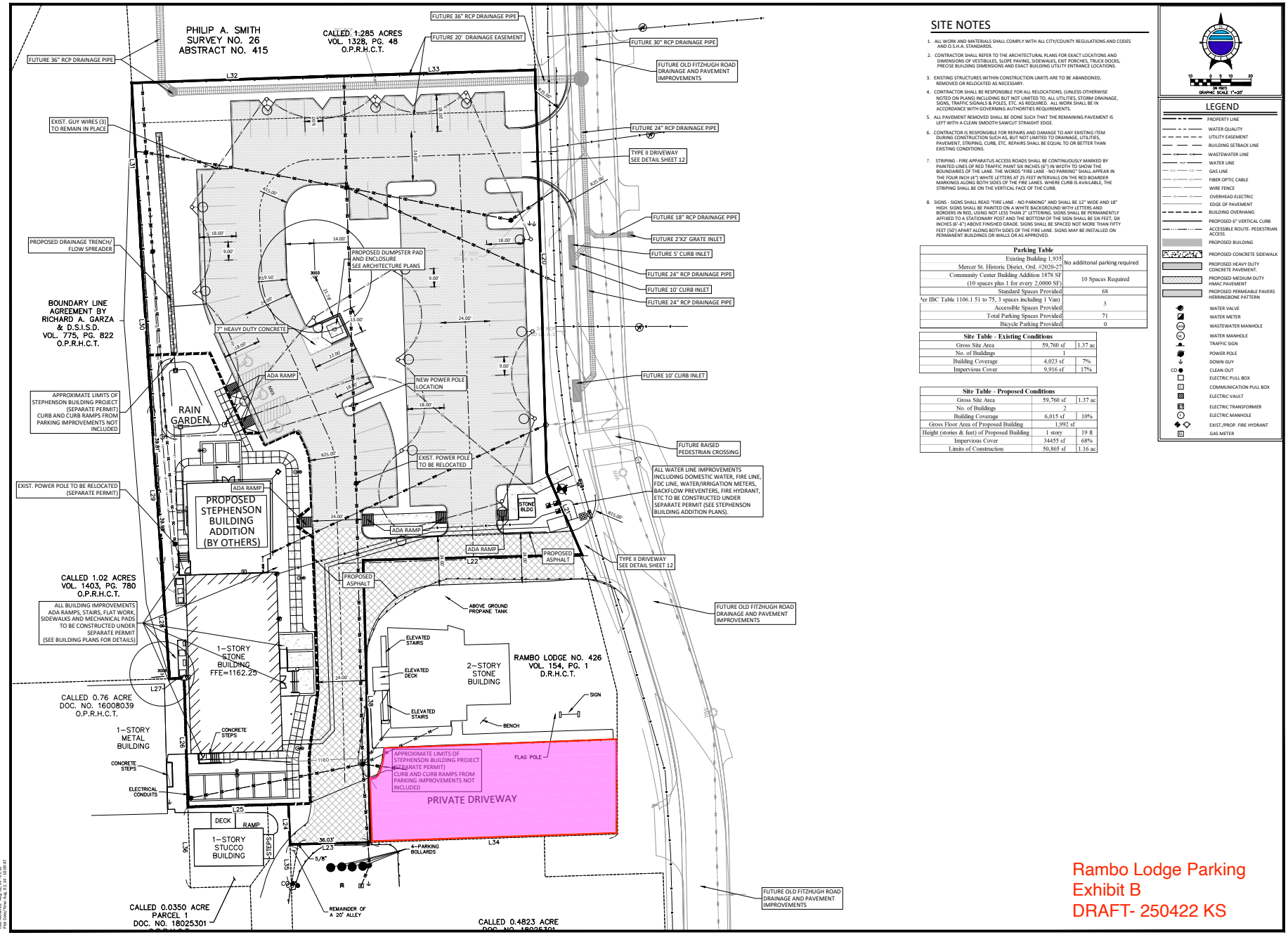
C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use practices to minimize the use of pesticides.

D. Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

E. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

END OF SECTION 32 9300

Rambo Lodge Parking - Add Alternate "B"



SITE NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL CITY/COUNTY REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
2. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULES, SLOPE PAVING, SIDEWALKS, EXIT PORCHES, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
3. EXISTING STRUCTURES WITHIN CONSTRUCTION LIMITS ARE TO BE ABANDONED, REMOVED OR RELOCATED AS NECESSARY.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS, (UNLESS OTHERWISE NOTED ON PLANS) INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES REQUIREMENTS.
5. ALL PAVEMENT REMOVED SHALL BE DONE SUCH THAT THE REMAINING PAVEMENT IS LEFT WITH A CLEAN SMOOTH SAWCUT STRAIGHT EDGE.
6. CONTRACTOR IS RESPONSIBLE FOR REPAIRS AND DAMAGE TO ANY EXISTING ITEM DURING CONSTRUCTION SUCH AS, BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. REPAIRS SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
7. STRIPING - FIRE APPARATUS ACCESS ROADS SHALL BE CONTINUOUSLY MARKED BY PAINTED LINES OF RED TRAFFIC PAINT SIX INCHES (6") IN WIDTH TO SHOW THE BOUNDARIES OF THE LANE. THE WORDS "FIRE LANE - NO PARKING" SHALL APPEAR IN THE FOUR INCH (4") WHITE LETTERS AT 25 FEET INTERVALS ON THE RED BOARDER MARKINGS ALONG BOTH SIDES OF THE FIRE LANES. WHERE CURB IS AVAILABLE, THE STRIPING SHALL BE ON THE VERTICAL FACE OF THE CURB.
8. SIGNS - SIGNS SHALL READ "FIRE LANE - NO PARKING" AND SHALL BE 12" WIDE AND 18" HIGH. SIGNS SHALL BE PAINTED ON A WHITE BACKGROUND WITH LETTERS AND BORDERS IN RED, USING NOT LESS THAN 2" LETTERING. SIGNS SHALL BE PERMANENTLY AFFIXED TO A STATIONARY POST AND THE BOTTOM OF THE SIGN SHALL BE SIX FEET, SIX INCHES (6'-6") ABOVE FINISHED GRADE. SIGNS SHALL BE SPACED NOT MORE THAN FIFTY FEET (50') APART ALONG BOTH SIDES OF THE FIRE LANE. SIGNS MAY BE INSTALLED ON PERMANENT BUILDINGS OR WALLS OR AS APPROVED.

Parking Table	
Existing Building 1,935 Mercer St. Historic Distrct, Ord. #2020-27	No additonal parking required
Community Center Building Addition 1878 SF (10 spaces plus 1 for every 2,0000 SF)	10 Spaces Required
Standard Spaces Provided	68
Per IBC Table 1106.1.51 to 75, 3 spaces including 1 Van) Accessible Spaces Provided	3
Total Parking Spaces Provided	71
Bicycle Parking Provided	0

Site Table - Existing Conditions		
Gross Site Area	59,760 sf	1.37 ac
No. of Buildings	1	
Building Coverage	4,023 sf	7%
Impervious Cover	9,916 sf	17%

Site Table - Proposed Conditions		
Gross Site Area	59,760 sf	1.37 ac
No. of Buildings	2	
Building Coverage	6,015 sf	10%
Gross Floor Area of Proposed Building	1,992 sf	
Height (stories & feet) of Proposed Building	1 story	19 ft
Impervious Cover	34455 sf	68%
Limits of Construction	50,865 sf	1.16 ac

GRAPHIC SCALE 1"=20'

LEGEND

- PROPERTY LINE
- WATER QUALITY
- UTILITY EASEMENT
- BUILDING SETBACK LINE
- WASTEWATER LINE
- WATER LINE
- GAS LINE
- FIBER OPTIC CABLE
- WIRE FENCE
- OVERHEAD ELECTRIC
- EDGE OF PAVEMENT
- BUILDING OVERHANG
- PROPOSED 6" VERTICAL CURB
- ACCESSIBLE ROUTE- PEDESTRIAN ACCESS
- PROPOSED BUILDING
- PROPOSED CONCRETE SIDEWALK
- PROPOSED HEAVY DUTY CONCRETE PAVEMENT.
- PROPOSED MEDIUM DUTY HMAC PAVEMENT
- PROPOSED PERMEABLE PAVERS HERRINGBONE PATTERN
- WATER VALVE
- WATER METER
- WASTEWATER MANHOLE
- WATER MANHOLE
- TRAFFIC SIGN
- POWER POLE
- DOWN GUY
- CLEAN OUT
- ELECTRIC PULL BOX
- COMMUNICATION PULL BOX
- ELECTRIC VAULT
- ELECTRIC TRANSFORMER
- ELECTRIC MANHOLE
- EXIST./PROP. FIRE HYDRANT
- GAS METER

Rambo Lodge Parking
Exhibit B
DRAFT- 250422 KS

DOUCET
A Kleinfelder Company
Civil Engineering // Entitlements // Geospatial
7401 B. Highway 71 W, Ste. 160
Austin, Texas 78735 (512) 583-2600
www.doucetengineers.com
TBPE Firm Number: 3137
TBPELS Firm Number: 10105800

SITE PLAN

STEPHENSON BUILDING
PARKING IMPROVEMENTS
311 OLD FITZHUGH ROAD,
HAYS COUNTY, DRIPPING SPRINGS, TEXAS

THESE PLANS ARE RELEASED UNDER THE AUTHORITY OF JOE GRASSO, P.E., TBPE#73285, ON 8/2/24, FOR THE PURPOSES OF REVIEW AND ARE NOT TO BE USED FOR CONSTRUCTION PRIOR TO APPROVAL BY THE CITY OF AUSTIN.

STATE OF TEXAS
JOE GRASSO
73285
REGISTERED
PROFESSIONAL ENGINEER
8-2-24

Designed:	RLE/PM
Drawn:	RLE
Reviewed:	TM/JG
Date:	8/2/24

SHEET
6
OF 26

Project No.:
1577-009C
SP-YEAR-XXXXX

APPENDIX

Stephenson School Building
Rehabilitation & Addition
Dripping Springs, Texas

Geotechnical Solutions

2922 NW Loop 410, Ste. 105
San Antonio, Texas 78230 • 210. 209. 4472 : geotechsltns@gmail.com
Firm No. F-19672

Mr. Larry Irsik, AIA **July 24, 2023**
Architexas |Create+Conserve **No.: 23-257 (Page 1 of 8)**
Lirsik@architexas.com

RE: Geotechnical Study (Proposed Addition to Stephenson School Bldg.)
103 Old Fitzhugh Road
Dripping Springs, Texas 78620

Sir:

Pursuant to your request, a representative of Geotechnical Solutions traveled to the above referenced location on July 19, 2023, to obtain soil samples **(by means of 2 borings,)** for the purposes of determining the Atterberg Limits (PI), soil classification/s, allowable bearing capacities, potential soil vertical movement estimations, and to provide foundation design parameters for a proposed building, which will have a slab surface of at least 1000 square feet. **Pavement design parameters** were also provided. The laboratory test results and our findings are summarized herein. **Representative Site Photos are attached.**

Typical Stratigraphy & Atterberg Limits (PI)

Depth / Interval	*Soil Classification*	*Symbol*	LL, %	PL, %	PI
½"	**7"** Light brown, Clayey-Silt, with gravel, stone fragments & cobbles		35	12	**23**
	Tan, Cobbly/Stony-soil stratum;		26	9	**17**
2.7'	**overlying** weathered stone / limestone stratum, semi-moist, dense to very dense		--	--	--
5.5'	***(Boring B-1)***				
½"	**13"** Light brown, Clayey-Silt, with gravel, stone fragments & cobbles		41	14	**27**
	Tan, Cobbly/Stony-soil stratum;		22	8	**14**
2.7'	**overlying** weathered stone/limestone stratum, semi-moist, desne to very dense		--	--	--
5.5'	***(Boring B-2)***				

Overall Effective PI: 15 - 17 ; PVR/PVM: -1-1/2" to +1-1/4" (at soil surface)
Allowable q_a: 1700 psf at minimum depth of 10" below existing elevation

103 Old Fitzhugh Road: Proposed Addition

Reinforced Beam-and-Slab-on-Grade Foundation

A slab-on-grade foundation may be considered for the proposed building. Geotechnical and pertinent PTI design parameters, based on general design analysis methods in Chapters 3 and 4 PTI - 2004 Edition, along with the 2008 Supplement, were evaluated and are summarized in the following table. **BRAB-WRI** parameters are also provided.

(OPTION 1 – Select Fill Method)

CRITERIA BASED ON PVR/PVM OF APPROX.: -3/4" to +3/4"

(Design PI: 25)

Thornthwaite Moisture Index	**-15 to -14**
Allowable Bearing Capacity	**3500 psf**
BRAB-WRI: C_w & Climatic Rating Factor:	**0.88 ; 0.12**
Edge Moisture Variation Distance (Em)	**5.9' (c)**
	2.8' (e)
Differential Vertical Soil Movement (Ym)	**0.95" (c)**
	1.25" (e)
Site Slope Correction Coefficient, C_s	**Slope to Grade**
Minimum Perimeter Grade Beam Penetration into Compacted Granular, Select Fill:	**12 in.**
Minimum (") Existing Soil to Remove and Replace with Granular, Select Fill:	**1-1/4 ft.**

The above design parameters assume that the granular Select Fill has a PI range of (7 – 22); and that the subgrade soil will be scarified to a depth of 6 inches and moistened within optimal soil-moisture range, prior to densely compacting; and that the moist-condition granular select fill will be introduced in loose lifts (not thicker than 9") prior to compacting. Compaction Method ASTM D698 is recommended to verify in-place density of subgrade clay-soil and compacted select fill.

OPTION 2: AS IS (Beam-and-Slab-on Grade)

CRITERIA BASED ON PVR/PVM OF APPROX.: *-1.5" to +1.5"*

(Design PI: 27)

Thornthwaite Moisture Index	**-15 to -14**
Allowable Bearing Capacity	**2300 psf**
Edge Moisture Variation Distance (Em)	**6.6' (center)**
	3.5' (edge)
Differential Vertical Soil Movement (Ym)	**1.36" (center)**
	1.76" (edge)
BRAB-WRI: C_w and Climatic Rating Factor:	**0.87 ; 0.13**
Minimum Perimeter Grade Beam Penetration into the existing Gravelly/Stony Soil, After Achieving Subgrade Elevation:	**16 in.**

The above design parameters assume that vertical moisture barrier (perimeter beam) is designed to extend to the recommended embedment depth and that **subgrade soil / fill soil** and excavated grade beam trenches are free of roots and loose soil and should be in a **moist and dense / well-compacted condition**, prior to concrete discharge. **Voids created by the removal of trees, boulders or previously existing flatwork/structures,** should be **backfilled** with moistened, low PI, sandy/gravelly soil and densely compacted.

The PTI method of predicting soil movement is mostly applicable when site moisture conditions are controlled by climatic conditions. Of course, foundation performance can be significantly influenced by adding perimeter pavement/s, yard drainage and yard maintenance, flower beds adjacent to foundation, rain gutters, utility line leaks, trees before and after construction, post construction subsurface or surface alterations near the foundation perimeter; and exceptional dry/wet prolonged conditions. The above criterion also assumes that proper irrigation methods and drainage **will be maintained after construction.** ***If proper drainage / irrigation is not maintained, potential vertical movements greater than that anticipated may occur.***

The use of **sacked fill** between the beams should be at the discretion of the structural engineer. In this case, the structural engineer should provide anticipated foundation performance information if sacked fill is incorporated in the overall foundation specifications/details.

Recommended Rigid Pavement Design

The pavement design analysis was generally based on the design procedures developed by *ACI Manual of Concrete Practice*.

Traffic Type	Concrete (JRCP)	Compacted Flexible Base Course (in.)	Moist, Firm Subgrade Soil
Light Duty	***5" (min. 3500 psi)***	***8"***	***6"***
Heavy Duty Traffic	***6" to 7" (min. 3500 psi)***	***10"***	***6"***

Compacted Gravel Road Specifications:

Prepared Subgrade: ***8"*** *(Scarified, Moistened & Recompacted)*

Compacted Base Course: ***8"*** *(Moistened & Compacted********)*

****Moistened & Compacted per ASTM D698 Compaction Test Method)***

Flexible Pavement Design Recommendations

The (flexible, HMAC) pavement design analysis was generally based on the design procedures developed by *AASHTO Guide of Pavement Structures*.

Summary of Estimated Serviceability over a 20 year period:

- Moderate Traffic: ***100,000 (18-kip) ESALs***
- Dumpster Pad / Heavy Duty Traffic: ***2,000,000 (18-kip) ESALs***

ASPHALT PAVEMENT PARAMETERS

Traffic Type	Type "D" Hot-Mix (in.)	Compacted Flexible Base Course (in.)	Moist, Firm Subgrade Soil
Light Duty	***1-3/4 – 2-1/4***	***6" (2 lifts)***	***6"***
Heavy Duty Traffic	***3"***	***10" (2 lifts)***	***6"***

- Organics, soft or excessively wet soils or unsuitable soils encountered should be removed prior to proofrolling activities. The proofrolling process is typically implemented in order to identify localized soft-soil areas and should be performed with construction equipment weighing at least **12 tons**. Voids created by the removal of trees should be backfilled with moist, A-1 or A-2 crushed limestone or gravelly soil which has a PI range of **8 to 22,** and then densely compacted in place.

- Moisture content of Subgrade should be maintained between -1 to +3 percent of optimum moisture content, and compacted to at least 95 percent of the maximum dry density as determined by Proctor method ASTM D-698. A slightly moist condition should be maintained prior to installation and compaction of moistened flexible base course material.

- Flexible base material should meet the grading and **PI** requirements as illustrated in TxDot Item 247: *Type A, Grade 1 or 2*.

- A **prime coat** should be applied on the finished base course section; and Type "D" section degree of compaction should be between **92 and 96 percent** of Max. Theoretical Density.

- The flexible base course section should extend horizontally at least **12 inches** beyond the outside edge of the proposed curbline.

- **Flexible Base Course** section should be compacted to a minimum of 97 percent of the maximum dry density as determined by proctor method TEX-113-E, with in-place moisture content maintained between -1 to +2 percent of the proctor optimum moisture value.

- A minimum of **one (1)** in-place density test per 5000 square feet should be performed.

- **Final pavement surface grades** should be established by the project civil engineer.

Common Causes of Premature Asphalt Pavement Failure

1) Absence of deepened curbs and/or moisture barriers which can lead to water entering the permeable base materials, saturating the base and underlying subgrade soils;
2) Soft/wet subgrade conditions;
3) Inadequately compacted base course / inadequately compacted subgrade soil;
4) Subgrade that is not well drained and not of uniform bearing capacity;
5) Not utilizing Proof rolling techniques to help identify soft spots or areas of unstable soils;
6) A finished pavement that does not provide a uniform, well-draining surface;
7) Failure to allow proper curing time of newly placed asphalt pavement prior to traffic loads;
8) Inadequate asphalt pavement thickness;
9) Failure to provide positive drainage at perimeter edge of pavement which can lead to negative drainage under the pavement; and
10) Repetitive load magnitudes that exceeds design traffic loads.

The asphalt design criteria illustrated above along with a properly prepared stabilized subgrade and base course section should adequately handle anticipated traffic loads; however, the pavement thickness cannot always counter the detrimental shrink-swell effects of the underlying expansive soils or the effects of future excessive traffic loads. Successful long-term performance may depend in part on the implementation of **good construction practices, proper subgrade/base preparation, and good surface drainage.**

GENERAL SUPPLEMENT INFORMATION FOR PROPOSED STRUCTURE

Grading & Drainage Considerations

Positive drainage during and after foundation construction, is particularly important to the long-term performance of the proposed structure. We suggest the following information be considered for perimeter drainage:

- The building pad/s should be elevated above grade to prevent surface water from entering the structure. Where possible extend paved surfaces up to the building line to serve as a barrier to water infiltration and evaporation. These surfaces should slope away from the building.
- Provide proper grading and drainage around foundations to prevent ponding and to facilitate the surface runoff away from foundation edges to minimize water infiltration to the soils below the foundation.
- Outlets for gutter systems should discharge water onto surfaces which quickly direct the water away from the perimeter of the buildings.
- Final grades within 10 feet of the buildings should be adjusted to slope away, preferably at a minimum slope of 3 percent.
- Planters located adjacent to structures should be self-contained, and sprinkler mains should be located a minimum of 5 feet from the building edge.
- Planter boxes placed/installed adjacent to the building should be configured so that concentrations of water are not available to underlying clay soils.
- Large trees/shrubs should not be allowed closer to foundations than a horizontal distance equal to their height due to their significant moisture demand as they mature.

LIMITATIONS OF GEOTECHNICAL STUDY
Proposed Addition to Stephenson School Building
103 Old Fitzhugh Road
Dripping Springs, Texas 78620

The analysis and recommendations contained in this report were based on the data from two (2) test borings, the laboratory test results, the observations associated with this site and our experience in the area. This report may not reflect precise variations of the soil conditions across the site. If different subsurface conditions are encountered at the time of construction/excavations, we should be contacted to evaluate the conditions encountered.

This report was prepared for this project exclusively for the use of *Architexas | Create+Conserve and their design team, and the builder / foundation contractor.*

Thank you for the opportunity to be of service
Geotechnical Solutions (F-19672)

Alan J. Vasquez
Geotechnical Consultant

Conan C. Bear, P.E.
Engineering Consultant



7/ 24/ 23

Representative Site Photos

103 Old Fitzhugh Road



Location of Proposed Addition



LIMITED LEAD BASED PAINT INSPECTION REPORT

Stephenson Building
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

Project #23-1730

Prepared for:

Michelle Fischer
City Administrator
City of Dripping Springs
511 Mercer Street
Dripping Springs, Texas 78620

October 11, 2023

LIMITED LEAD INSPECTION REPORT

Stephenson Building
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

Prepared by:



Cole Allen
Lead Inspector / Risk Assessor
Certificate No. 2071247

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Appendix B Analytical Results
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EXECUTIVE SUMMARY[1]

Champion Environmental Consulting, Inc. (CECI) was retained by **City of Dripping Springs** (hereinafter the Client) to conduct a lead-based paint inspection of the **Stephenson Building, 101 Old Fitzhugh Road, Dripping Springs, Texas** (hereinafter the Site). CECI's approach to this assessment was to inspect the designated areas of the Site, for lead-based paint (LBP) by physically accessing the painted substrates throughout the selected areas of the Site and to verify the uniformity (homogeneity) of the paints used in the construction of the Site.

During the sampling event a total of **50 assay points**, including calibration and standardizing samples, of suspect paints from areas throughout the interior of the Site were analyzed for determination of lead content. An x-ray fluorescence (XRF) analyzer was utilized for LBP detection for this project. All operators of the XRF analyzer are certified for proper use by CECI.

LBP is defined as any homogeneous paint that detects lead content at 1.0 milligrams per square centimeter (mg/cm^2) or greater by the XRF Analyzer. ***LBP was identified in the following painted substrates analyzed at the Site:***

Room/Location	Substrate	Location
Exterior	Shiplap Ceiling White Wood	East Side Main Entrance
Exterior	Door Frames Brown Wood	East Side Main Entrance
Interior	Window Frames Multi Colors Wood	Room A, B, D, East Side Restroom and Room C West Wall
Interior	Front of Stage Green Wood	Room C

[1]This is a summary of the contents of this report. Please refer to the full text for a complete explanation and supporting information.

1.0 INTRODUCTION

Champion Environmental Consulting, Inc. (CECI) was retained by the Client to conduct a lead-based paint inspection of the Site. CECI's approach to this assessment was to inspect the designated areas of the Site, for lead-based paint (LBP) by physically accessing the painted substrates throughout the selected areas of the Site and to verify the uniformity (homogeneity) of the paints used in the construction of the Site.

CECI conducted its sampling program at the Site utilizing an X-Ray Fluorescence (XRF) Analyzer. LBP is identified as those paints that were analyzed to have lead content at ***1.0 milligram per square centimeter (mg/cm^2)*** or greater.

1.1 Standard of Care and Limitations

This report was prepared for the exclusive use of the Client named herein to aid in the identification and management of LBP at the Site. CECI performed its services in a manner consistent with the level of care and expertise exercised by environmental professionals performing the same or similar services at the same time and in the same geographic area.

Samples for this LBP sampling program were collected from discrete sample locations associated with the areas specifically identified herein (i.e., Target Areas). While attempts were made to obtain representative samples most likely to contain LBP, findings and conclusions herein are necessarily limited by the number of samples taken and access provided for sampling activities. Conclusions and recommendations herein represent the professional opinions of the CECI personnel involved with the project. CECI assumes no responsibility or liability for errors in information or data provided by third party sources.

2.0 BUILDING SURVEY

2.1 General

The LBP sampling inspection was of the designated substrates of the site for the identification of homogeneous areas accessible at the time of the site visits. Copies of CECI's certifications and licenses are in Appendix A of this report.

2.2 Lead-Based Paint Analysis

The LBP sampling and analysis involved the physical inspection of the Site, a sampling program for suspect LBP, and field analysis utilizing a Viken Pb200i XRF Analyzer to determine the lead content of each painted surface. Locations of components tested are designated as room locations (e.g., Room Numbers) and location within each room (e.g., North [N], East [E], South [S], West [W]). CECI identified substrates with homogeneous areas of suspect LBP that, based on historical uses, have the potential of containing lead. ***LBP was identified in the following painted substrates analyzed at the Site:***

Room/Location	Substrate	Location
Exterior	Shiplap Ceiling White Wood	East Side Main Entrance
Exterior	Door Frames Brown Wood	East Side Main Entrance
Interior	Window Frames Multi Colors Wood	Room A, B, D, East Side Restroom and Room C West Wall
Interior	Front of Stage Green Wood	Room C

All paints that contain any level of lead are regulated by the OSHA Lead in Construction Standard 29CFR 1926.62. Construction work covered by this standard includes demolition or salvage of structures where lead-containing materials are present; removal or encapsulation of lead-containing materials; renovation of structures, substrates, or portions thereof that have lead-containing materials; installation of materials containing lead; lead contamination cleanup; transportation, storage, and disposal of lead-containing materials; and maintenance operations associated with these construction activities.

In performing these activities, OSHA requires an initial determination that the construction activities used at the job site do not create airborne emissions of lead above the Action Level of 30 $\mu g/m^3$ (i.e., negative exposure assessment). This exposure assessment may include initial exposure monitoring, historical data that meet certain requirements, or objective data demonstrating that a product or material containing lead, or a specific process cannot result in employee exposures to lead above the Action Level.

During the exposure assessment, the workers must be protected in the assumption that the work process is going to create airborne concentrations above the Permissible Exposure Level (PEL)

of 50 μg/m^3. This requires medical monitoring (blood test) for blood lead levels, personal protective equipment (PPE), respiratory protection, a Hazard Communication Program, and a written Compliance Program. If a negative initial determination is achieved during a certain work process, no further monitoring is required. Additional exposure assessment and monitoring is required with any change in process, equipment, controls, or environmental conditions. Employers subject to these work conditions should refer to the OSHA Lead Standard for complete compliance.

APPENDIX A
ACCREDITATION

Department of State Health Services certifies that

COLE H ALLEN

is certified as a

Lead Risk Assessor

Certification No: 2071247

Control No: 8102

Expires: 4/27/2025

Jennifer A. Shuford M.D., M.P.H
Commissioner of Health

Texas Department of State Health Services

BE IT KNOWN THAT

COLE H ALLEN

is certified to perform as a

Lead Risk Assessor

in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1955 and Title 25, Texas Administrative Code, Chapter 295 relating to Texas Environmental Lead Reduction, as long as this license is not suspended or revoked.

Certification Number: 2071247

Expiration Date: 04/27/2025

Jennifer Shuford, MD, MPH, Commissioner of Health

Control Number: 8102

(Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

SEE BACK

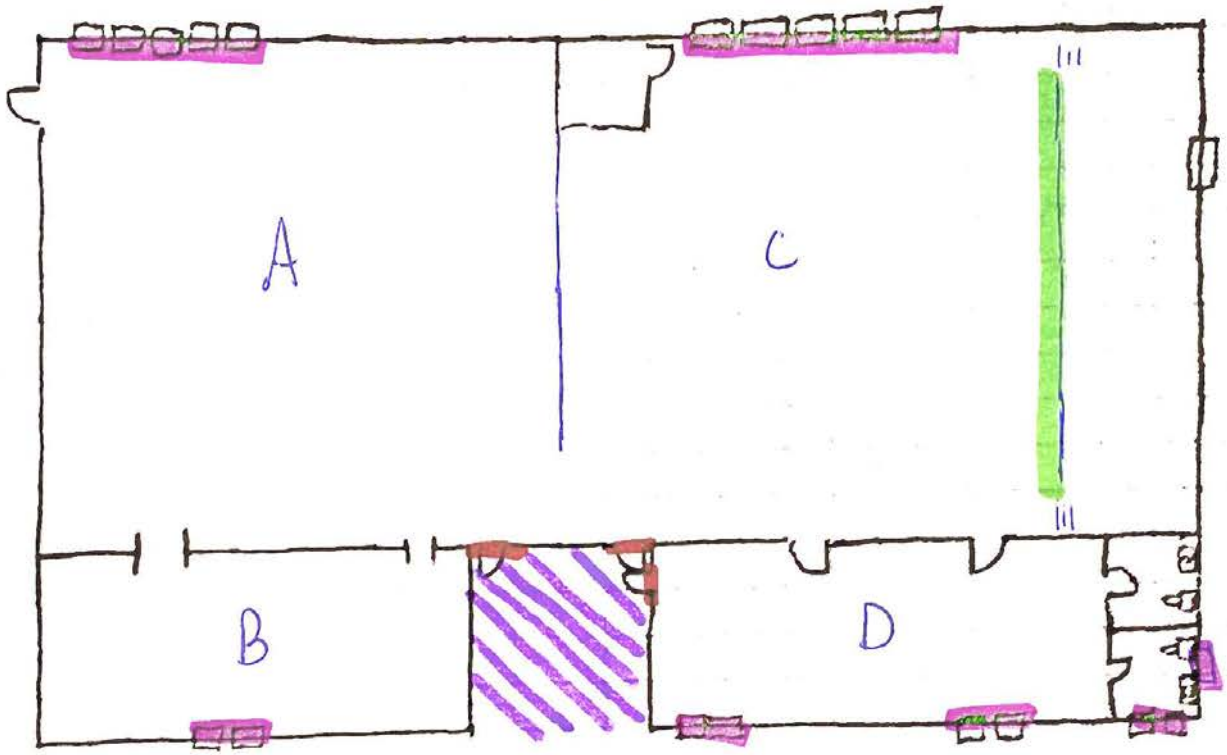
APPENDIX B
ANALYTICAL RESULTS

Lead-Based Paint XRF Survey
Stephenson Building
Inspection Date(s) October 4, 2023
Project # 23-1730

Reading #	Con.	Result	Room	Structure	Substrate	Location	Color
1	1.1	Positive	CALIBRATE				
2	1	Positive	CALIBRATE				
3	1	Positive	CALIBRATE				
4	0	Negative	Entry to A	Door	Wood	West	White
5	**4.1**	**Positive**	**Entry to A**	**Door Frame**	**Wood**	**South**	**Brown**
6	0.2	Negative	Room A	Wall	Plaster	West	White
7	0.2	Negative	Room A	Wall	Plaster	East	Purple
8	0	Negative	Room A	Wall	Plaster	South	Green
9	0.2	Negative	Room A	Window Frame	Wood	Center	White
10	**3**	**Positive**	**Room A**	**Window Frame**	**Wood**	**East**	**White**
11	**1.5**	**Positive**	**Room A**	**Window Frame**	**Wood**	**East**	**White**
12	**3.1**	**Positive**	**Room A**	**Window Frame**	**Wood**	**East**	**Purple**
13	0.1	Negative	Room A	Floor	Wood	Center	Green
14	0.2	Negative	Room A	Floor	Wood	Center	Green
15	0	Negative	Room A	Door	Metal	North	White
16	0.5	Negative	Room A	Door Frame	Metal	West	Brown
17	**3.2**	**Positive**	**Room A**	**Sliding Door**	**Wood**	**South**	**Brown**
18	**3.1**	**Positive**	**Room A**	**Sliding Door**	**Wood**	**South**	**Brown**
19	**6.5**	**Positive**	**Room A**	**Sliding Door Frame**	**Wood**	**South**	**Brown**
20	0.2	Negative	Room B	Wall	Plaster	West	White
21	0	Negative	Room B	Wall	Dry Wall	East	White
22	0	Negative	Room B	Wall	Plaster	East	Green
23	0.2	Negative	Room B	Window Frame	Wood	West	White
24	**2.3**	**Positive**	**Room B**	**Window Frame**	**Wood**	**West**	**White**
25	0.1	Negative	Entry to C	Door	Wood	West	White
26	**5**	**Positive**	**Entry to C**	**Door Frame**	**Wood**	**North**	**White**
27	**2.2**	**Positive**	**Room C**	**Sliding Door**	**Wood**	**North**	**Red**
28	0	Negative	Room C	Wall	Plaster	East	White
29	0	Negative	Room C	Wall	Plaster	West	White
30	0	Negative	Room C	Wall	Plaster	South	Green
31	**3.8**	**Positive**	**Room C**	**Stage**	**Wood**	**South**	**Green**
32	0	Negative	Room C	Stage Floor	Wood	Center	Green
33	0.3	Negative	Room C	Stage Stairs	Wood	Center	Green
34	**1.8**	**Positive**	**Room C**	**Window Frame**	**Wood**	**East**	**White**
35	0.1	Negative	Room D	Door	Wood	South	Natural
36	0.1	Negative	Room D	Door Frame	Metal	North	Brown
37	0	Negative	Room D	Wall	Dry Wall	East	White
38	**3**	**Positive**	**Room D**	**Window Frame**	**Wood**	**West**	**White**
39	0	Negative	Room D	Wall	Plaster	East	White
40	**1.2**	**Positive**	**Exterior Front Entry**	**Ceiling**	**Wood**	**Center**	**White**
41	**1.5**	**Positive**	**Exterior Front Entry**	**Ceiling**	**Wood**	**Center**	**White**
42	**1.7**	**Positive**	**Exterior Front Entry**	**Ceiling**	**Wood**	**Center**	**White**
43	0.6	Negative	Exterior	Soffit	Wood	Center	Maroon
44	0.5	Negative	Exterior	Soffit	Wood	Center	Maroon
45	**4.4**	**Positive**	**Exterior Entry to D**	**Door Frame**	**Wood**	**South**	**Brown**
46	0	Negative	Exterior	Window Frame	Wood	East	Brown
47	0.1	Negative	Exterior	Window Frame	Wood	East	Brown
48	1.1	Positive	CALIBRATE				
49	1.1	Positive	CALIBRATE				
50	1.1	Positive	CALIBRATE				

APPENDIX C
REFERENCE DRAWING(S)

Stephenson Building 23-1730
101 Old Fitzhugh Rd, Dripping Springs
Lead Location Plans



Front of Stage Wood
Green paint ~ 70 SF

Exterior Door Frames Wood
~ 3 Brown Door Frames

Window Frames Interior Multi Colors
Wood
~ 29 windows

Exterior Shiplap Ceiling Wood
White
~ 120 SF

October 11, 2023

Michelle Fischer
City Administrator
City of Dripping Springs
511 Mercer Street
Dripping Springs, Texas 78620

RE: Limited Asbestos Survey of Target Areas at the Site Related to Proposed Demolition/Renovation
Stephenson Building
101 Old Fitzhugh Road, Dripping Springs, Texas 78620
Project #23-1730

Dear Ms. Fischer:

Champion Environmental Consulting Inc. (Champion Environmental) was retained by **City of Dripping Springs** (Hereinafter, the Client) to conduct a limited asbestos survey at the Site within the following Target Areas as identified by the Client.

Stephenson Building – Dripping Springs, TX

The attached report summarizes these services in accordance with our discussion. **Regulated amounts of asbestos were detected in the following materials and in the approximate quantities**

Sample #(s)	Location	Material	Result – Asbestos %	APPROXIMATE Quantity
19-21	All Exterior Windows except the one on the North Side Northwest corner	Window Glazing	2% Chrysotile	29 Windows

The laboratory analytical results are attached in Appendix A of this report. Licenses are attached in Appendix B of this report. The Sample Location Drawing is attached in Appendix C of this report. If you have any questions on this report or any other matter, please do not hesitate to call me at (512) 992-5383.

Sincerely,

Champion Environmental Consulting, Inc.

Wade Champion
Individual Asbestos Consultant
DSHS License No. 10-5410
Expiration Date 8/25/25

1.0 Services

Table I Services Summary	
Client	City of Dripping Springs 511 Mercer Street Dripping Springs, Texas 78620
Site Address	101 Old Fitzhugh Road, Dripping Springs, Texas 78620
Target Areas identified by Client	Stephenson Building – Dripping Springs, TX
Scope of Work 1. Conduct a preliminary visual reconnaissance of the renovation /demolition Target Areas identified by the client to visually determine the presence of suspect ACM 2. In the event suspect ACM is identified, visually assess suspect ACM for variations in color, texture, thickness, and other characteristics useful in determining the material's uniformity and homogenous area 3. In the event suspect ACM is identified, evaluate current physical condition, friability and potential for damage, assign hazard ratings and estimate quantities 4. Collect samples of identified and reasonably accessible suspect ACM within Target Areas 5. Send suspect ACM samples to laboratory for analysis of asbestos content, if any 6. Prepare report summarizing results	
Sample Date(s)	October 4, 2022
Inspector(s) DSHS License #	Cole Allen 603654
Samples Collected:	A total of 24 samples of suspect asbestos-containing materials were collected, as agreed with the Client, within reasonably accessible portions of the Target Areas
Analytical Lab:	CA Labs, LLC asbestos laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) through the National Institute for Standards and Technology (ID Code No 200772-0) and licensed as a DSHS licensed asbestos bulk laboratory (License No. 30-0370)
No. of Samples Analyzed	24
Analyzed Date:	October 6, 2022
Report Number:	CBR23107716
Analytical Method:	Polarized Light Microscopy (PLM) using the Environmental Protection Agency (EPA) "Interim Method for Determination of Asbestos in Bulk Insulation Samples" [40 CFR Chapter 1 (1-1-87 Edition) Part 763, Subpart F, Attachment III]
General Information about Suspect ACM Asbestos has historically been a component of a wide variety of building materials. These types of building materials, which may potentially contain asbestos, are termed suspect asbestos-containing materials" or suspect ACM). Suspect ACM may or may not contain asbestos. The actual asbestos content of a suspect material can be determined only through proper sampling and analysis performed by a qualified building inspector and laboratory. Pursuant to the National Emission Standards for Hazardous Air Pollutants (NESHAP) asbestos regulations (40 CFR§61:141, et seq) ACM can be classified into two categories; friable ACM which can be reduced to powder or crumbled under light hand pressure (e.g. ceiling textures and thermal system insulation) and non-friable ACM, which are materials that cannot be easily crumbled (e.g. floor tile and floor tile mastic). Regulated asbestos containing materials (RACM) which are those materials containing over 1% asbestos as defined under asbestos NESHAP.	

2.0 Standard of Care and Limitations:

This report was prepared for the exclusive use of the Client named herein to aid in the identification and management of ACM and RACM in the renovation/demolition Target Areas identified by the Client. Champion Environmental performed its service in a manner consistent with the level of care and expertise exercised by asbestos professional performing the same or similar services at the same time and in the same geographic area.

Samples for this asbestos survey were collected from discrete sample location within the rooms and areas specifically identified herein (i.e., Target Areas). While attempts were made to obtain representative samples most likely to contain asbestos, finding and conclusions herein are necessarily limited by the number of samples taken and access provided for sampling activities. *The results herein cannot guarantee that no asbestos is present in any area not sampled*. This asbestos survey *was not intended to be a comprehensive asbestos inspection of the site*, nor was it intended to be used for evaluation of worker health and safety conditions. To determine whether regulated ACM is present at other locations not sampled herein, *a comprehensive asbestos inspection of the site* would be necessary.

Conclusions and recommendations herein represent the professional opinions of the Champion Environmental Consulting personnel involved with the project. The results of this report should not be considered as legal interpretation of existing federal, state or local environmental, health and safety laws or regulations. Champion Environmental Consulting, Inc., assumes no responsibility or liability for errors in information or data provided by third party sources.

3.0 Report Use and Reliance:

This report represents Champion Environmental's services as of the sampling date. As our final document, it may not be altered after final issuance. This study and report were prepared on behalf of and for the exclusive use of the Client solely its use and reliance in determining the presence of FACM in identified Target Areas of the site. The Client was the only party to which Champion Environmental explained the risks and was solely involved in shaping the scope of the services. Accordingly, reliance on this report by any other party may involve assumptions leading to an unintended interpretation of findings and opinions. With the consent of Champion Environmental and the Client, Champion Environmental may offer reliance to third parties or contract with other parties to develop findings and opinions related to such party's unique risk management concerns. Notwithstanding the foregoing, any and all third party reliance upon this Report shall be limited to the fair market value of services undertaken to perform this Report as of the report date.

4.0 Methodologies:

4.1 Sampling

This limited inspection was guided by the Texas Asbestos Health Protection Rules (TAHPR) (see 25 TAC §296) and generally in accord with AHERA (the Asbestos Hazard Emergency Response Act of 1986, Public law 99-519) sampling protocols (see 40 CFR §§ 763.86 and 763.88). The AHERA sampling protocols are statistically-based and were originally developed to implement AHERA which amends the Federal Toxic Substances Control Act (see 15 USC, §2641, et seq). These rules are often followed by the OSHA, and the Department of State Healthy Services (DSHS). Champion Environmental generally followed these sampling protocols to in an effort to collect representative samples of the various suspect building materials in the Target Areas.

Suspect ACM samples were collected by physically removing a small portion (approximately one square inch) of the suspect material using a sharp instrument. All layers of the material samples were penetrated and registered as separate samples. Disturbance of adjacent material was minimized during the sampling activities. Each sample was place into a separate container and then sealed. Each sample was labeled with the sample number and collected location, and a chain-of-custody form was completed. The sampling instrument was cleaned between each sample collected to mitigate potential cross contamination between samples collected.

4.2 Analytical Procedures

If the results of the bulk laboratory analysis reveal asbestos, the percentage of asbestos contained within the sample is compared with the criteria outlined in the EPA definition of asbestos-containing material (and which value is also followed by OSHA and DSHS). If a concentration of greater than one percent (1%) asbestos is reported, it is defined by the Asbestos NESHAP as a positive identification and the material could be considered RACM depending upon the nature of the ACM and its coverage.

The Asbestos NESHAP states the RACM (as defined in 40 CFR §61.141) containing less than 10% asbestos should be verified by point counting. If bulk sampling analysis determines that asbestos content of a friable asbestos sample is less than 10%, the building owner may;(i) elect to assume the asbestos content to be greater than 1% and treat the material as RACM, or (ii) require verification of asbestos content by point counting. If a result obtained by point counting is different from a result obtained by visual estimation, the point count result is used.

5.0 Recommendations:

Based upon the forgoing results, **if applicable,** Champion Environmental Consulting, Inc. offers the recommendations presented below. Such recommendations should be implemented prior to the commencement of any renovation or demolition activities or any other activities that would potentially disturb the identified ACM or RACM at the site.

- Identified ACM. Including non-friable ACM *that will be disturbed by renovation or demolition activities* should be removed as soon as feasibly possible by appropriately licensed personnel and in accordance with applicable laws and regulations.

- Identified ACM which *will not be disturbed by renovation or demolition activities but which is damaged* should be repaired or encapsulated (by appropriately licensed personnel and in accordance with applicable laws and regulations) to prevent future damage.

- *ACM to remain* in place should be enclosed in airtight impermeable barrier or encapsulated to prevent damage.

- An *Asbestos Operation and Maintenance Program* should be implemented to manage existing ACM in place.

In the event renovation or demolition activities are slated for portions of the site outside of the Target Areas, an asbestos survey should be performed for those portions of the site –prior to the initiation of renovation or demolition activities.

APPENDIX A

Laboratory Results

Limited Asbestos Survey of Target Areas at the Site Related to Proposed Demolition/Renovation

Stephenson Building – Dripping Springs, TX

Project #23-1730

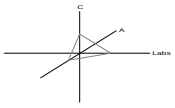
Laboratory Analytical Results Summary

Sample #(s)	Location	Material	Result – Asbestos %	APPROXIMATE Quantity
19-21	All Exterior Windows except the one on the North Side Northwest corner	Window Glazing	2% Chrysotile	29 Windows

Note: Refer to attached laboratory report for details

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Phone 225-751-5632
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NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Materials Characterization - Bulk Asbestos Analysis

Laboratory Analysis Report - Polarized Light

Champion Environmental
109 W 7th St, Suite 210
Georgetown, TX 78626

Attn: Wade Champion
Customer Project: Stephenson Building-Dripping Springs
Reference #: CBR23107776 Date: 10/6/2023

Analysis and Method

Summary of polarizing light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved). The sample is first viewed with the aid of stereomicroscopy. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are preformed. Calibrated liquid refractive oils are used as liquid mouting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjugation with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated of asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

Discussion

Vermiculite containing samples may have trace amounts of actinolite-tremolite, where not found be PLM should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may even contain a related asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Quantification of <1% will actually be reported as <=1% (allowable variance close to 1% is high). Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos and the "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

Qualifications

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). All analysts have a college degree in a natural science (geology, biology, or environmental science) or are recognized by a state professional board in one these disciplines .Extensive in-house training programs are used to augment education background of the analyst. The group leader of polarized light has received supplemental McCrone Research training for asbestos identification. This report is not covered by the scope of AIHA accreditation. Analysis performed at CA Labs, LLC 12232 Industriplex, Suite 32 Baton Rouge, LA 70809.

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NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Overview of Project Sample Material Containing Asbestos

Customer Project: Stephenson Building-Dripping Springs **CA Labs Project #:** CBR23107776

Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types
				White Sealant
19	***19-1***	***White Sealant***	***2% Chrysotile***	
20	***20-1***	***White Sealant***	***2% Chrysotile***	
21	***21-1***	***White Sealant***	***2% Chrysotile***	

Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):

ca - carbonate
gypsum - gypsum
bi - binder
or - organic
ma - matrix
mi - mica
ve - vermiculite
ot - other
pe - perlite
qu - quartz
fg - fiberglass
mw - mineral wool
wo - wollastinite
ta - talc
sy - synthetic
ce - cellulose
br - brucite
ka - kaolin (clay)
pa - palygorskite (clay)

This report relates to the items tested. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

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LELAP #03069

Polarized Light Asbestiform Materials Characterization

Customer Info: **Attn:** Wade Champion
Champion Environmental
109 W 7th St, Suite 210
Georgetown, TX 78626

Phone # 512-992-5383
Fax # 512-597-8787

Customer Project: Stephenson Building-Dripping Springs

Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

Date: 10/6/2023
Samples Received: 10/6/2023
Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
1		***1-1***	***White Textured Surfacing***	***N***	***None Detected***		100% qu, mi, bi, ca
		1-2	***White Drywall with Paper***	***N***	***None Detected***	10% ce	90% qu, gy
2		***2-1***	***White Textured Surfacing***	***N***	***None Detected***		100% qu, mi, bi, ca
		2-2	***White Drywall with Paper***	***N***	***None Detected***	10% ce	90% qu, gy
3		***3-1***	***White Compound***	***Y***	***None Detected***		100% qu, mi, ca
		3-2	***White Drywall with Paper***	***N***	***None Detected***	10% ce	90% qu, gy
4		***4-1***	***White Textured Surfacing***	***N***	***None Detected***		100% qu, mi, bi, ca

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot -other	wo - wollastinite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

Zo Andriampenomanana
Analyst

Senior Analyst
Alicia Stretz

Laboratory Director
Chris Williams

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze
6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

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Polarized Light Asbestiform Materials Characterization

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Fax # 512-597-8787

Customer Project: Stephenson Building-Dripping Springs

Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

Date: 10/6/2023
Samples Received: 10/6/2023
Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
5		***5-1***	***White Textured Surfacing***	***N***	***None Detected***		100% qu, mi, bi, ca
		5-2	***White Drywall with Paper***	***N***	***None Detected***	10% ce	90% qu, gy
6		***6-1***	***White Compound***	***Y***	***None Detected***		100% qu, mi, ca
7		***7-1***	***Tan Surfaced Gray Plaster***	***N***	***None Detected***		100% qu, ma, bi, ca
8		***8-1***	***Tan Surfaced Gray Plaster***	***N***	***None Detected***		100% qu, ma, bi, ca
9		***9-1***	***Tan Surfaced Gray Plaster***	***N***	***None Detected***		100% qu, ma, bi, ca
10		***10-1***	***White Sealant on Wrap***	***N***	***None Detected***	10% fg 40% ce	50% qu, ma, ot

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot -other	wo - wollastinite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

Zo Andriampenomanana
Analyst

Senior Analyst
Alicia Stretz

Laboratory Director
Chris Williams

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
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4. Layer not analyzed - attached to previous positive layer and contamination is suspected
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6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

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Customer Project: Stephenson Building-Dripping Springs

Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

Date: 10/6/2023
Samples Received: 10/6/2023
Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
11		***11-1***	***White Sealant on Wrap***	***N***	***None Detected***	10% fg 40% ce	50% qu, ma, ot
12		***12-1***	***White Sealant on Wrap***	***N***	***None Detected***	10% fg 40% ce	50% qu, ma, ot
13		***13-1***	***Black Cove Base***	***Y***	***None Detected***		100% qu, ma
		13-2	***Yellow and Brown Mastic***	***N***	***None Detected***		100% qu, bi
14		***14-1***	***Black Cove Base***	***Y***	***None Detected***		100% qu, ma
		14-2	***Yellow and Brown Mastic***	***N***	***None Detected***		100% qu, bi
15		***15-1***	***Black Cove Base***	***Y***	***None Detected***		100% qu, ma

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gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot -other	wo - wollastinite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

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Senior Analyst
Alicia Stretz

Laboratory Director
Chris Williams

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Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

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Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
		15-2	***Yellow and Brown Mastic***	***N***	***None Detected***		100% qu, bi
16		***16-1***	***Yellow Mastic***	***Y***	***None Detected***		100% qu, bi
17		***17-1***	***Yellow Mastic***	***Y***	***None Detected***		100% qu, bi
18		***18-1***	***Yellow Mastic***	***Y***	***None Detected***		100% qu, bi
19		***19-1***	***White Sealant***	***Y***	***2% Chrysotile***		98% qu, ma, ca
20		***20-1***	***White Sealant***	***Y***	***2% Chrysotile***		98% qu, ma, ca
21		***21-1***	***White Sealant***	***Y***	***2% Chrysotile***		98% qu, ma, ca

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
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Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
22		***22-1***	***Gray Mortar***	***Y***	***None Detected***		100% qu, ma, ca
23		***23-1***	***Gray Mortar***	***Y***	***None Detected***		100% qu, ma, ca
24		***24-1***	***Gray Mortar***	***Y***	***None Detected***		100% qu, ma, ca

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot -other	wo - wollastinite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

Zo Andriampenomanana
Analyst

Senior Analyst
Alicia Stretz

Laboratory Director
Chris Williams

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze
6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

1034

CA Labs

C.A. Labs, LLC.
12232 Industriplex
Suite 32
Baton Rouge, LA 70809

Phone: 225-751-5632
Fax: 225-751-5634
Mobile: 225-993-3471

Chain of Custody

Client Name:	Champion Environmental Consulting	**CA Labs job #**	**CBR23107776**
Client Address:	109 W 7th St.	Billing Address:	Same
	Suite 210	(if different)	
	Georgetown TX 78626		
phone number:	512 992 5383		
fax number:	N/A	Send Reports to:	wchampion@c-eci.com
Project Number:	23-1730	Project Name:	Stephenson Building - Dripping Springs
Contact:	Wade Champion	**Reports Results VIA:**	**EMAIL** X **FAX** ____ **VERBAL** ____

Total # Samples Submitted:	**Total # Samples to be Analyzed:**	**Material Matrix:**
24	24	Air / (Bulk) / Water

Asbestos: *please call ahead for availability of all rush and/or after hours samples.*

TEM	**TA Time**	**PLM**	**TA Time**	**Optical / IAQ**	**TA Time**
Circle analysis and TA time		*Circle analysis and TA time*	*2 hour*	**Allergen Particle:**	*2 hour*
AHERA	*4 hour*	Improved	4 hour	tape/bulk/swab	4 hour
EPA Level II	8 hour	Interim	8 hour	Cyclex-d cassettes	8 hour
Drinking Water	16 hour		16 hour	Air-o-cell cassettes	16 hour
Wipe	24 hour	AHERA	24 hour	Anderson cultures	24 hour
Micro-vac	2 days		2 days	Bulk/swab cultures	2 days
NIOSH 7402	3 days	Point Count -	3 days	Bacteria cultures	3 days
Chatfield Bulk	5 days	(NESHAPS)	5 days	**PCM**: NIOSH 7400	5-10 days

Lead: *Circle analysis and TA time*

Matrix:	Paint Chips	Soil	Air	Wipes	Wastewater	TCLP
TA Time:	***8 hour***	1 day	2 days	3 days	5 days	6-10 days

Sample Information:

Sample Number:	**Sample Location:**	**Sample Date/Time:**	**Sample Volume (L)**
1	WT/DW - Restrooms	10-4-23	
2	↓ ↓	↓	
3	↓ Room B	↓	
4	3C Restrooms	↓	
5	↓ ↓		

Custody Information:

Samples relinquished: [signature] 10-4-23/1500 — Signature / Date / Time

Samples received: Carli Brazer 9:40 10/6/23 — Signature / Date / Time

Samples relinquished: _____ — Signature / Date / Time

Samples received: _____ — Signature / Date / Time

CA Labs

12232 Industriplex
Suite 32
Baton Rouge, LA 70809

Phone: 225-751-5632
Fax: 225-751-5634
After hours Mobile: 225-993-3471

Client Name: Champion Environmental Consulting

Client Address: 109 W 7th St. Suite 210
Georgetown TX 78626

phone number: 512 992 5383

fax number: N/A

Project Number: 23-1730

Contact: Wade Champion

CA Labs job # **CBR** 23107776

Billing Address: Same
(if different)

Send Reports to: wchampion@c-eci.com

Project Name: Stephenson Building - Dripping Springs

Reports Results
VIA: EMAIL X **FAX**____ **VERBAL**___

Sample Number:	Sample Location:	Sample Date/Time:	Sample Volume (L)
6	JC - Room B	10-4-23	
7	Plaster Texture		
8	↓		
9	↓		
10	Duct Mastic		
11	↓		
12	↓		
13	CBM		
14	↓		
15	↓		
16	Residual Mastic on Duct Frame		
17	↓		
18	↓		
19	Window Glazing		
20	↓		
21	↓		
22	Ext Stone Mortar		
23	↓		
24	↓		
		↓	

For internal use:
Any initial changes regarding project (indicate yes by checking line)_____

Custody Information:
Samples relinquished: 10-4-23 1500
Signature / Date / Time

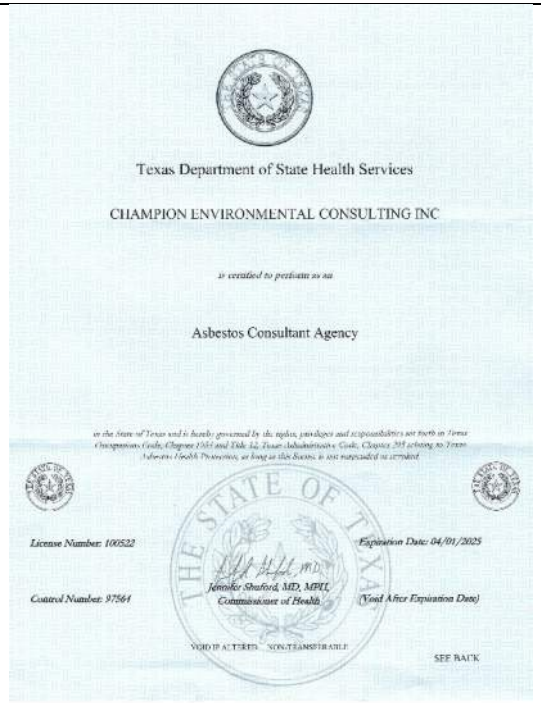
Samples received: 9:40 10/6/23
Signature / Date / Time

Samples relinquished:
Signature / Date / Time

Samples received:
Signature / Date / Time

APPENDIX B

Licenses



Texas Department of State Health Services

CHAMPION ENVIRONMENTAL CONSULTING INC

is certified to perform as an

Asbestos Consultant Agency

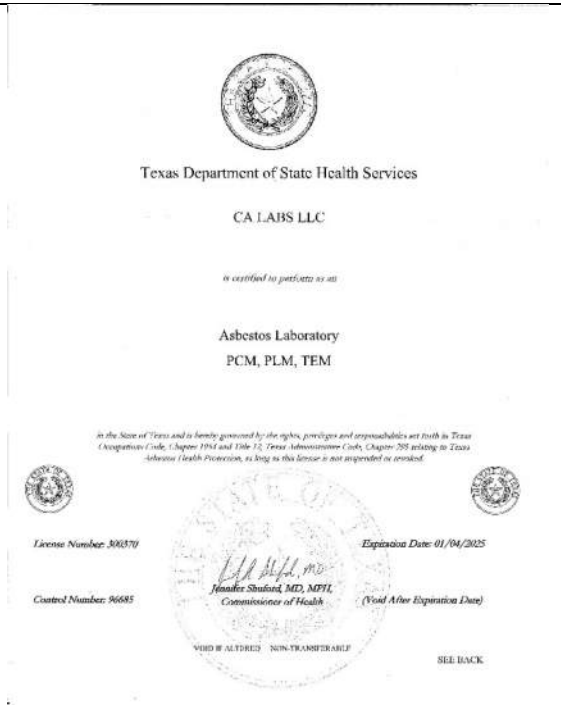
in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 25, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked.

License Number: 100522 Expiration Date: 04/01/2025

Control Number: 97564 Jennifer Shuford, MD, MPH, Commissioner of Health (Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

SEE BACK



Texas Department of State Health Services

CA LABS LLC

is certified to perform as an

Asbestos Laboratory

PCM, PLM, TEM

in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 25, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked.

License Number: 300370 Expiration Date: 01/04/2025

Control Number: 96685 Jennifer Shuford, MD, MPH, Commissioner of Health (Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

SEE BACK



Texas Department of State Health Services

Asbestos Individual Consultant

WADE E CHAMPION

License No. 105410

Control No. 98246

Expiration Date: 25-Aug-2025



Texas Department of State Health Services

Asbestos Inspector

COLE H ALLEN

License No. 603654

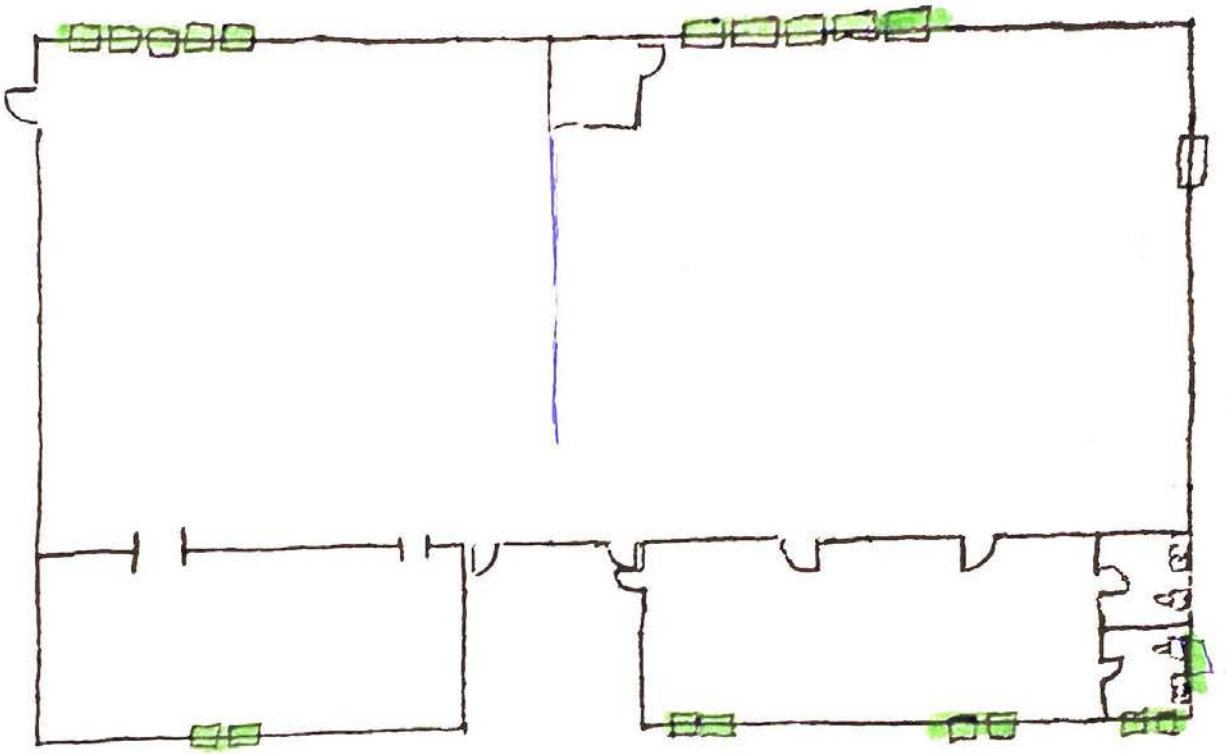
Control No. 100198

Expiration Date: 10-Jan-2024

APPENDIX C

Sample Location Drawing(s)

Stephenson Building
101 old Fitzhugh Rd, Dripping Springs
Asbestos Location Plan 23-1730

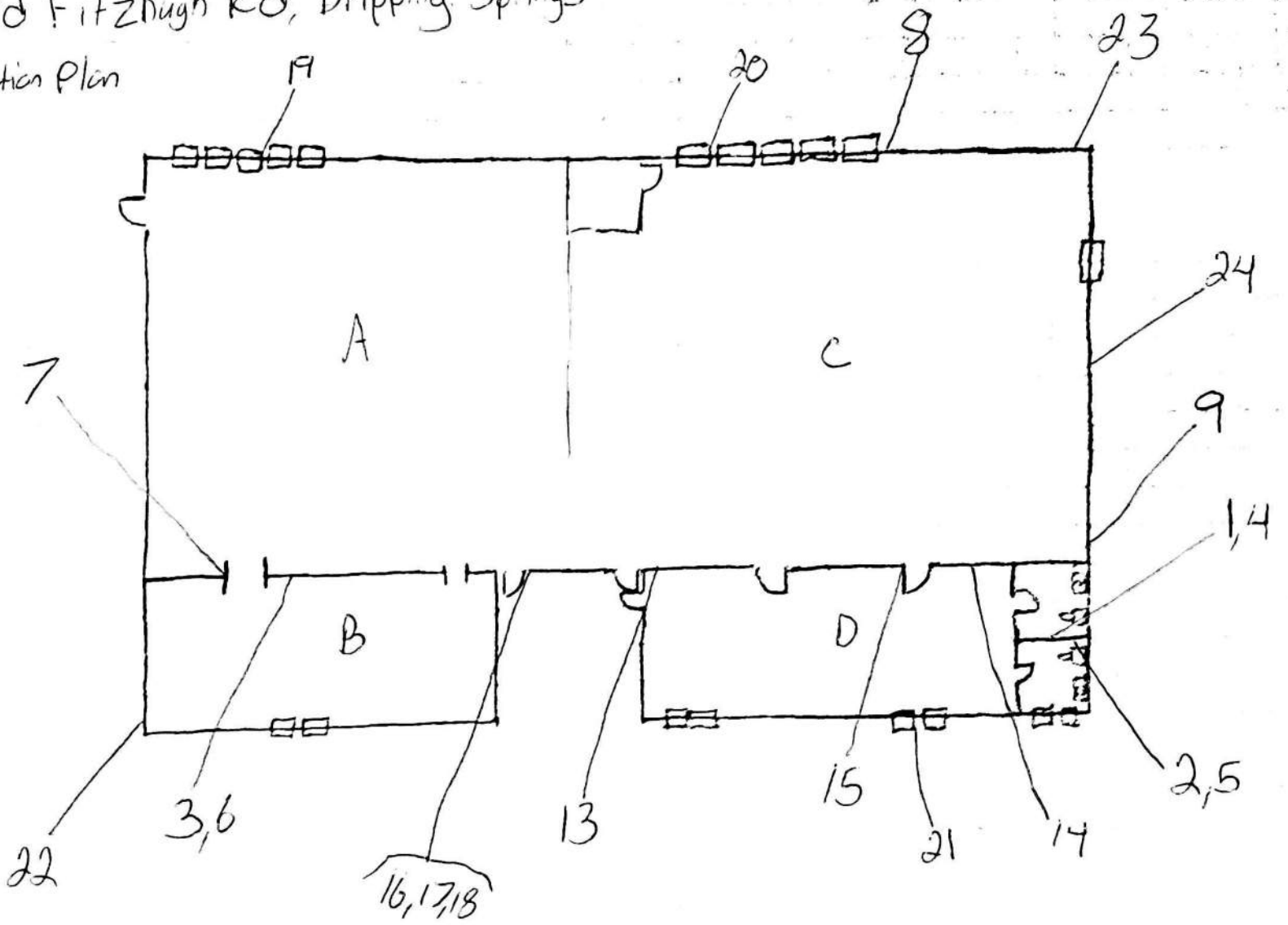


Exterior Window Glazing
~ 29 windows
Sample # 19-21

Stephenson Building
101 Old Fitzhugh Rd, Dripping Springs

23-1730

Sample Location Plan



October 11, 2023

Michelle Fischer
City Administrator
City of Dripping Springs
511 Mercer Street
Dripping Springs, Texas 78620

RE: Limited Asbestos Survey of Target Areas at the Site Related to Proposed Demolition/Renovation
Stephenson Building
101 Old Fitzhugh Road, Dripping Springs, Texas 78620
Project #23-1730

Dear Ms. Fischer:

Champion Environmental Consulting Inc. (Champion Environmental) was retained by **City of Dripping Springs** (Hereinafter, the Client) to conduct a limited asbestos survey at the Site within the following Target Areas as identified by the Client.

Stephenson Building – Dripping Springs, TX

The attached report summarizes these services in accordance with our discussion. **Regulated amounts of asbestos were detected in the following materials and in the approximate quantities**

Sample #(s)	Location	Material	Result – Asbestos %	APPROXIMATE Quantity
19-21	All Exterior Windows except the one on the North Side Northwest corner	Window Glazing	2% Chrysotile	29 Windows

The laboratory analytical results are attached in Appendix A of this report. Licenses are attached in Appendix B of this report. The Sample Location Drawing is attached in Appendix C of this report. If you have any questions on this report or any other matter, please do not hesitate to call me at (512) 992-5383.

Sincerely,

Champion Environmental Consulting, Inc.

Wade Champion
Individual Asbestos Consultant
DSHS License No. 10-5410
Expiration Date 8/25/25

1.0 Services

Table I Services Summary	
Client	City of Dripping Springs 511 Mercer Street Dripping Springs, Texas 78620
Site Address	101 Old Fitzhugh Road, Dripping Springs, Texas 78620
Target Areas identified by Client	Stephenson Building – Dripping Springs, TX
Scope of Work 1. Conduct a preliminary visual reconnaissance of the renovation /demolition Target Areas identified by the client to visually determine the presence of suspect ACM 2. In the event suspect ACM is identified, visually assess suspect ACM for variations in color, texture, thickness, and other characteristics useful in determining the material's uniformity and homogenous area 3. In the event suspect ACM is identified, evaluate current physical condition, friability and potential for damage, assign hazard ratings and estimate quantities 4. Collect samples of identified and reasonably accessible suspect ACM within Target Areas 5. Send suspect ACM samples to laboratory for analysis of asbestos content, if any 6. Prepare report summarizing results	
Sample Date(s)	October 4, 2022
Inspector(s) DSHS License #	Cole Allen 603654
Samples Collected:	A total of 24 samples of suspect asbestos-containing materials were collected, as agreed with the Client, within reasonably accessible portions of the Target Areas
Analytical Lab:	CA Labs, LLC asbestos laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) through the National Institute for Standards and Technology (ID Code No 200772-0) and licensed as a DSHS licensed asbestos bulk laboratory (License No. 30-0370)
No. of Samples Analyzed	24
Analyzed Date:	October 6, 2022
Report Number:	CBR23107716
Analytical Method:	Polarized Light Microscopy (PLM) using the Environmental Protection Agency (EPA) "Interim Method for Determination of Asbestos in Bulk Insulation Samples" [40 CFR Chapter 1 (1-1-87 Edition) Part 763, Subpart F, Attachment III]
General Information about Suspect ACM Asbestos has historically been a component of a wide variety of building materials. These types of building materials, which may potentially contain asbestos, are termed suspect asbestos-containing materials" or suspect ACM). Suspect ACM may or may not contain asbestos. The actual asbestos content of a suspect material can be determined only through proper sampling and analysis performed by a qualified building inspector and laboratory. Pursuant to the National Emission Standards for Hazardous Air Pollutants (NESHAP) asbestos regulations (40 CFR§61:141, et seq) ACM can be classified into two categories; friable ACM which can be reduced to powder or crumbled under light hand pressure (e.g. ceiling textures and thermal system insulation) and non-friable ACM, which are materials that cannot be easily crumbled (e.g. floor tile and floor tile mastic). Regulated asbestos containing materials (RACM) which are those materials containing over 1% asbestos as defined under asbestos NESHAP.	

2.0 Standard of Care and Limitations:

This report was prepared for the exclusive use of the Client named herein to aid in the identification and management of ACM and RACM in the renovation/demolition Target Areas identified by the Client. Champion Environmental performed its service in a manner consistent with the level of care and expertise exercised by asbestos professional performing the same or similar services at the same time and in the same geographic area.

Samples for this asbestos survey were collected from discrete sample location within the rooms and areas specifically identified herein (i.e., Target Areas). While attempts were made to obtain representative samples most likely to contain asbestos, finding and conclusions herein are necessarily limited by the number of samples taken and access provided for sampling activities. *The results herein cannot guarantee that no asbestos is present in any area not sampled*. This asbestos survey *was not intended to be a comprehensive asbestos inspection of the site*, nor was it intended to be used for evaluation of worker health and safety conditions. To determine whether regulated ACM is present at other locations not sampled herein, *a comprehensive asbestos inspection of the site* would be necessary.

Conclusions and recommendations herein represent the professional opinions of the Champion Environmental Consulting personnel involved with the project. The results of this report should not be considered as legal interpretation of existing federal, state or local environmental, health and safety laws or regulations. Champion Environmental Consulting, Inc., assumes no responsibility or liability for errors in information or data provided by third party sources.

3.0 Report Use and Reliance:

This report represents Champion Environmental's services as of the sampling date. As our final document, it may not be altered after final issuance. This study and report were prepared on behalf of and for the exclusive use of the Client solely its use and reliance in determining the presence of FACM in identified Target Areas of the site. The Client was the only party to which Champion Environmental explained the risks and was solely involved in shaping the scope of the services. Accordingly, reliance on this report by any other party may involve assumptions leading to an unintended interpretation of findings and opinions. With the consent of Champion Environmental and the Client, Champion Environmental may offer reliance to third parties or contract with other parties to develop findings and opinions related to such party's unique risk management concerns. Notwithstanding the foregoing, any and all third party reliance upon this Report shall be limited to the fair market value of services undertaken to perform this Report as of the report date.

4.0 Methodologies:

4.1 Sampling

This limited inspection was guided by the Texas Asbestos Health Protection Rules (TAHPR) (see 25 TAC §296) and generally in accord with AHERA (the Asbestos Hazard Emergency Response Act of 1986, Public law 99-519) sampling protocols (see 40 CFR §§ 763.86 and 763.88). The AHERA sampling protocols are statistically-based and were originally developed to implement AHERA which amends the Federal Toxic Substances Control Act (see 15 USC, §2641, et seq). These rules are often followed by the OSHA, and the Department of State Healthy Services (DSHS). Champion Environmental generally followed these sampling protocols to in an effort to collect representative samples of the various suspect building materials in the Target Areas.

Suspect ACM samples were collected by physically removing a small portion (approximately one square inch) of the suspect material using a sharp instrument. All layers of the material samples were penetrated and registered as separate samples. Disturbance of adjacent material was minimized during the sampling activities. Each sample was place into a separate container and then sealed. Each sample was labeled with the sample number and collected location, and a chain-of-custody form was completed. The sampling instrument was cleaned between each sample collected to mitigate potential cross contamination between samples collected.

4.2 Analytical Procedures

If the results of the bulk laboratory analysis reveal asbestos, the percentage of asbestos contained within the sample is compared with the criteria outlined in the EPA definition of asbestos-containing material (and which value is also followed by OSHA and DSHS). If a concentration of greater than one percent (1%) asbestos is reported, it is defined by the Asbestos NESHAP as a positive identification and the material could be considered RACM depending upon the nature of the ACM and its coverage.

The Asbestos NESHAP states the RACM (as defined in 40 CFR §61.141) containing less than 10% asbestos should be verified by point counting. If bulk sampling analysis determines that asbestos content of a friable asbestos sample is less than 10%, the building owner may;(i) elect to assume the asbestos content to be greater than 1% and treat the material as RACM, or (ii) require verification of asbestos content by point counting. If a result obtained by point counting is different from a result obtained by visual estimation, the point count result is used.

5.0 Recommendations:

Based upon the forgoing results, **if applicable,** Champion Environmental Consulting, Inc. offers the recommendations presented below. Such recommendations should be implemented prior to the commencement of any renovation or demolition activities or any other activities that would potentially disturb the identified ACM or RACM at the site.

- Identified ACM. Including non-friable ACM *that will be disturbed by renovation or demolition activities* should be removed as soon as feasibly possible by appropriately licensed personnel and in accordance with applicable laws and regulations.

- Identified ACM which *will not be disturbed by renovation or demolition activities but which is damaged* should be repaired or encapsulated (by appropriately licensed personnel and in accordance with applicable laws and regulations) to prevent future damage.

- *ACM to remain* in place should be enclosed in airtight impermeable barrier or encapsulated to prevent damage.

- An *Asbestos Operation and Maintenance Program* should be implemented to manage existing ACM in place.

In the event renovation or demolition activities are slated for portions of the site outside of the Target Areas, an asbestos survey should be performed for those portions of the site –prior to the initiation of renovation or demolition activities.

APPENDIX A

Laboratory Results

Limited Asbestos Survey of Target Areas at the Site Related to Proposed Demolition/Renovation

Stephenson Building – Dripping Springs, TX

Project #23-1730

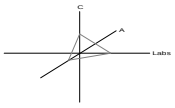
Laboratory Analytical Results Summary

Sample #(s)	Location	Material	Result – Asbestos %	APPROXIMATE Quantity
19-21	All Exterior Windows except the one on the North Side Northwest corner	Window Glazing	2% Chrysotile	29 Windows

Note: Refer to attached laboratory report for details

CA Labs
Dedicated to Quality

CA Labs, L.L.C.
12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634



NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Materials Characterization - Bulk Asbestos Analysis

Laboratory Analysis Report - Polarized Light

Champion Environmental
109 W 7th St, Suite 210
Georgetown, TX 78626

Attn: Wade Champion
Customer Project: Stephenson Building-Dripping Springs
Reference #: CBR23107776 Date: 10/6/2023

Analysis and Method

Summary of polarizing light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved). The sample is first viewed with the aid of stereomicroscopy. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are preformed. Calibrated liquid refractive oils are used as liquid mouting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjugation with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated of asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

Discussion

Vermiculite containing samples may have trace amounts of actinolite-tremolite, where not found be PLM should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may even contain a related asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Quantification of <1% will actually be reported as <=1% (allowable variance close to 1% is high). Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos and the "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

Qualifications

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). All analysts have a college degree in a natural science (geology, biology, or environmental science) or are recognized by a state professional board in one these disciplines .Extensive in-house training programs are used to augment education background of the analyst. The group leader of polarized light has received supplemental McCrone Research training for asbestos identification. This report is not covered by the scope of AIHA accreditation. Analysis performed at CA Labs, LLC 12232 Industriplex, Suite 32 Baton Rouge, LA 70809.

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CA Labs
Dedicated to Quality

CA Labs, L.L.C.
12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Overview of Project Sample Material Containing Asbestos

Customer Project: Stephenson Building-Dripping Springs **CA Labs Project #:** CBR23107776

Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types
				White Sealant
19	***19-1***	***White Sealant***	***2% Chrysotile***	
20	***20-1***	***White Sealant***	***2% Chrysotile***	
21	***21-1***	***White Sealant***	***2% Chrysotile***	

Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):

ca - carbonate
gypsum - gypsum
bi - binder
or - organic
ma - matrix
mi - mica
ve - vermiculite
ot - other
pe - perlite
qu - quartz
fg - fiberglass
mw - mineral wool
wo - wollastinite
ta - talc
sy - synthetic
ce - cellulose
br - brucite
ka - kaolin (clay)
pa - palygorskite (clay)

This report relates to the items tested. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

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CA Labs
Dedicated to Quality

CA Labs, L.L.C.
12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Polarized Light Asbestiform Materials Characterization

Customer Info: **Attn:** Wade Champion
Champion Environmental
109 W 7th St, Suite 210
Georgetown, TX 78626

Phone # 512-992-5383
Fax # 512-597-8787

Customer Project: Stephenson Building-Dripping Springs

Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

Date: 10/6/2023
Samples Received: 10/6/2023
Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
1		***1-1***	***White Textured Surfacing***	***N***	***None Detected***		100% qu, mi, bi, ca
		1-2	***White Drywall with Paper***	***N***	***None Detected***	10% ce	90% qu, gy
2		***2-1***	***White Textured Surfacing***	***N***	***None Detected***		100% qu, mi, bi, ca
		2-2	***White Drywall with Paper***	***N***	***None Detected***	10% ce	90% qu, gy
3		***3-1***	***White Compound***	***Y***	***None Detected***		100% qu, mi, ca
		3-2	***White Drywall with Paper***	***N***	***None Detected***	10% ce	90% qu, gy
4		***4-1***	***White Textured Surfacing***	***N***	***None Detected***		100% qu, mi, bi, ca

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot -other	wo - wollastinite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

Zo Andriampenomanana
Analyst

Senior Analyst
Alicia Stretz

Laboratory Director
Chris Williams

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze
6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

1050

CA Labs
Dedicated to Quality

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Phone 225-751-5632
Fax 225-751-5634

NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Polarized Light Asbestiform Materials Characterization

Customer Info: **Attn:** Wade Champion
Champion Environmental
109 W 7th St, Suite 210
Georgetown, TX 78626

Phone # 512-992-5383
Fax # 512-597-8787

Customer Project: Stephenson Building-Dripping Springs

Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

Date: 10/6/2023
Samples Received: 10/6/2023
Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
5		***5-1***	***White Textured Surfacing***	***N***	***None Detected***		100% qu, mi, bi, ca
		5-2	***White Drywall with Paper***	***N***	***None Detected***	10% ce	90% qu, gy
6		***6-1***	***White Compound***	***Y***	***None Detected***		100% qu, mi, ca
7		***7-1***	***Tan Surfaced Gray Plaster***	***N***	***None Detected***		100% qu, ma, bi, ca
8		***8-1***	***Tan Surfaced Gray Plaster***	***N***	***None Detected***		100% qu, ma, bi, ca
9		***9-1***	***Tan Surfaced Gray Plaster***	***N***	***None Detected***		100% qu, ma, bi, ca
10		***10-1***	***White Sealant on Wrap***	***N***	***None Detected***	10% fg 40% ce	50% qu, ma, ot

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot -other	wo - wollastinite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

Zo Andriampenomanana
Analyst

Senior Analyst
Alicia Stretz

Laboratory Director
Chris Williams

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze
6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

1051

CA Labs
Dedicated to Quality

CA Labs, L.L.C.
12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Polarized Light Asbestiform Materials Characterization

Customer Info: **Attn:** Wade Champion
Champion Environmental
109 W 7th St, Suite 210
Georgetown, TX 78626

Phone # 512-992-5383
Fax # 512-597-8787

Customer Project: Stephenson Building-Dripping Springs

Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

Date: 10/6/2023
Samples Received: 10/6/2023
Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
11		***11-1***	***White Sealant on Wrap***	***N***	***None Detected***	10% fg 40% ce	50% qu, ma, ot
12		***12-1***	***White Sealant on Wrap***	***N***	***None Detected***	10% fg 40% ce	50% qu, ma, ot
13		***13-1***	***Black Cove Base***	***Y***	***None Detected***		100% qu, ma
		13-2	***Yellow and Brown Mastic***	***N***	***None Detected***		100% qu, bi
14		***14-1***	***Black Cove Base***	***Y***	***None Detected***		100% qu, ma
		14-2	***Yellow and Brown Mastic***	***N***	***None Detected***		100% qu, bi
15		***15-1***	***Black Cove Base***	***Y***	***None Detected***		100% qu, ma

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot -other	wo - wollastinite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

Zo Andriampenomanana
Analyst

Senior Analyst
Alicia Stretz

Laboratory Director
Chris Williams

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7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

1052

CA Labs
Dedicated to Quality

CA Labs, L.L.C.
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Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Polarized Light Asbestiform Materials Characterization

Customer Info: **Attn:** Wade Champion
Champion Environmental
109 W 7th St, Suite 210
Georgetown, TX 78626

Phone # 512-992-5383
Fax # 512-597-8787

Customer Project: Stephenson Building-Dripping Springs

Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

Date: 10/6/2023
Samples Received: 10/6/2023
Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
		15-2	***Yellow and Brown Mastic***	***N***	***None Detected***		100% qu, bi
16		***16-1***	***Yellow Mastic***	***Y***	***None Detected***		100% qu, bi
17		***17-1***	***Yellow Mastic***	***Y***	***None Detected***		100% qu, bi
18		***18-1***	***Yellow Mastic***	***Y***	***None Detected***		100% qu, bi
19		***19-1***	***White Sealant***	***Y***	***2% Chrysotile***		98% qu, ma, ca
20		***20-1***	***White Sealant***	***Y***	***2% Chrysotile***		98% qu, ma, ca
21		***21-1***	***White Sealant***	***Y***	***2% Chrysotile***		98% qu, ma, ca

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

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gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot -other	wo - wollastinite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

Zo Andriampenomanana
Analyst

Senior Analyst
Alicia Stretz

Laboratory Director
Chris Williams

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7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

1053

CA Labs
Dedicated to Quality

CA Labs, L.L.C.
12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

NVLAP #200772-0
TDSHS #300370
CDPHE #AL-18111
LELAP #03069

Polarized Light Asbestiform Materials Characterization

Customer Info: **Attn:** Wade Champion
Champion Environmental
109 W 7th St, Suite 210
Georgetown, TX 78626

Phone # 512-992-5383
Fax # 512-597-8787

Customer Project: Stephenson Building-Dripping Springs

Turnaround Time: 24 hr

CA Labs Project #: CBR23107776

Date: 10/6/2023
Samples Received: 10/6/2023
Date Of Sampling: 10/4/2023
Purchase Order #: 23-1730

Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
22		***22-1***	***Gray Mortar***	***Y***	***None Detected***		100% qu, ma, ca
23		***23-1***	***Gray Mortar***	***Y***	***None Detected***		100% qu, ma, ca
24		***24-1***	***Gray Mortar***	***Y***	***None Detected***		100% qu, ma, ca

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116)
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

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gypsum - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
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or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

Zo Andriampenomanana
Analyst

Senior Analyst
Alicia Stretz

Laboratory Director
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8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

1054

CA Labs

C.A. Labs, LLC.
12232 Industriplex
Suite 32
Baton Rouge, LA 70809

Phone: 225-751-5632
Fax: 225-751-5634
Mobile: 225-993-3471

Chain of Custody

Client Name:	Champion Environmental Consulting	**CA Labs job #**	**CBR23107776**
Client Address:	109 W 7th St.	Billing Address: (if different)	Same
	Suite 210		
	Georgetown TX 78626		
phone number:	512 992 5383		
fax number:	N/A	Send Reports to:	wchampion@c-eci.com
Project Number:	23-1730	Project Name:	Stephenson Building - Dripping Springs
Contact:	Wade Champion	**Reports Results VIA:**	**EMAIL** X **FAX** ____ **VERBAL** ____

Total # Samples Submitted:	**Total # Samples to be Analyzed:**	**Material Matrix:**
24	24	Air / (Bulk) / Water

Asbestos: *please call ahead for availability of all rush and/or after hours samples.*

TEM	**TA Time**	**PLM**	**TA Time**	**Optical / IAQ**	**TA Time**
Circle analysis and TA time		*Circle analysis and TA time*	*2 hour*	**Allergen Particle:**	*2 hour*
AHERA	*4 hour*	Improved	4 hour	tape/bulk/swab	4 hour
EPA Level II	8 hour	Interim	8 hour	Cyclex-d cassettes	8 hour
Drinking Water	16 hour		16 hour	Air-o-cell cassettes	16 hour
Wipe	24 hour	AHERA	24 hour	Anderson cultures	24 hour
Micro-vac	2 days		2 days	Bulk/swab cultures	2 days
NIOSH 7402	3 days	Point Count -	3 days	Bacteria cultures	3 days
Chatfield Bulk	5 days	(NESHAPS)	5 days	**PCM**: NIOSH 7400	5-10 days

Lead: *Circle analysis and TA time*

Matrix:	Paint Chips	Soil	Air	Wipes	Wastewater	TCLP
TA Time:	***8 hour***	1 day	2 days	3 days	5 days	6-10 days

Sample Information:

Sample Number:	**Sample Location:**	**Sample Date/Time:**	**Sample Volume (L)**
1	WT/DW - Restrooms	10-4-23	
2	↓ ↓	↓	
3	↓ Room B	↓	
4	3C Restrooms	↓	
5	↓ ↓		

Custody Information:

Samples relinquished: [signature] 10-4-23/1800 — Signature / Date / Time

Samples received: Carli Brane 9:40 10/6/23 — Signature / Date / Time

Samples relinquished: _____ — Signature / Date / Time

Samples received: _____ — Signature / Date / Time

CA Labs

12232 Industriplex
Suite 32
Baton Rouge, LA 70809

Phone: 225-751-5632
Fax: 225-751-5634
After hours Mobile: 225-993-3471

Client Name: Champion Environmental Consulting

Client Address: 109 W 7th St. Suite 210
Georgetown TX 78626

phone number: 512 992 5383

fax number: N/A

Project Number: 23-1730

Contact: Wade Champion

CA Labs job # CBR 23107776

Billing Address: Same
(if different)

Send Reports to: wchampion@c-eci.com

Project Name: Stephenson Building - Dripping Springs

Reports Results
VIA: EMAIL X **FAX**____ **VERBAL**____

Sample Number:	Sample Location:	Sample Date/Time:	Sample Volume (L)
6	JC - Room B	10-4-23	
7	Plaster Texture	↓	
8	↓	↓	
9	↓	↓	
10	Duct Mastic	↓	
11	↓	↓	
12	↓	↓	
13	CBM	↓	
14	↓	↓	
15	↓	↓	
16	Residual Mastic on Duct Frame	↓	
17	↓	↓	
18	↓	↓	
19	Window Glazing	↓	
20	↓	↓	
21	↓	↓	
22	Ext Stone Mortar	↓	
23	↓	↓	
24	↓	↓	
		↓	
		↓	
		↓	
		↓	
		↓	

For internal use:
Any initial changes regarding project (indicate yes by checking line)_____

Custody Information:
Samples relinquished: 10-4-23 1500
Signature / Date / Time

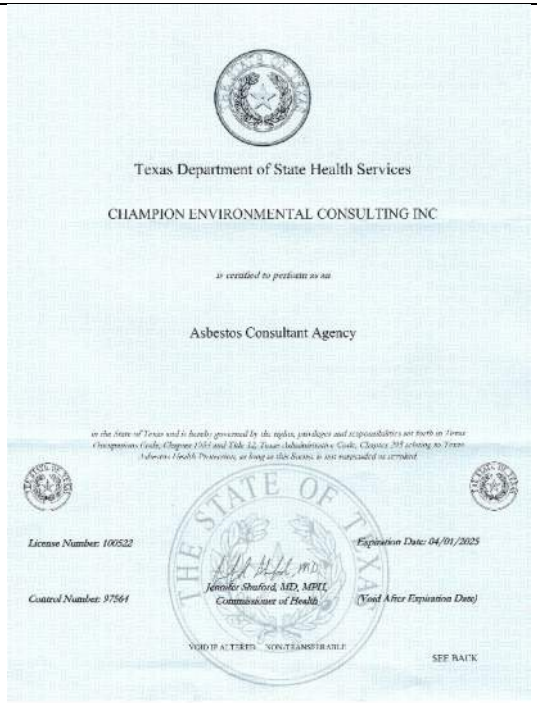
Samples received: 9:40 10/6/23
Signature / Date / Time

Samples relinquished:
Signature / Date / Time

Samples received:
Signature / Date / Time

APPENDIX B

Licenses



Texas Department of State Health Services

CHAMPION ENVIRONMENTAL CONSULTING INC

is certified to perform as an

Asbestos Consultant Agency

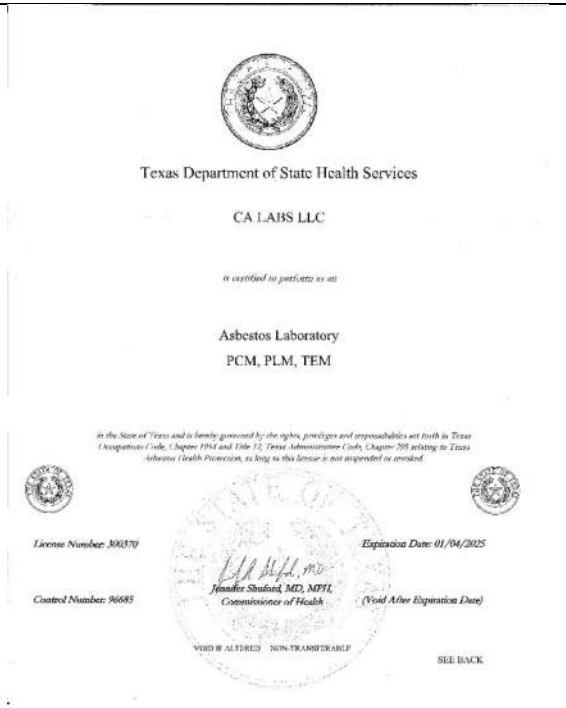
in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 25, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked.

License Number: 100522 Expiration Date: 04/01/2025

Control Number: 97564 Jennifer Shuford, MD, MPH, Commissioner of Health (Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

SEE BACK



Texas Department of State Health Services

CA LABS LLC

is certified to perform as an

Asbestos Laboratory
PCM, PLM, TEM

in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 25, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked.

License Number: 300370 Expiration Date: 01/04/2025

Control Number: 96685 Jennifer Shuford, MD, MPH, Commissioner of Health (Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

SEE BACK



Texas Department of State Health Services

Asbestos Individual Consultant

WADE E CHAMPION

License No. 105410

Control No. 98246

Expiration Date: 25-Aug-2025



Texas Department of State Health Services

Asbestos Inspector

COLE H ALLEN

License No. 603654

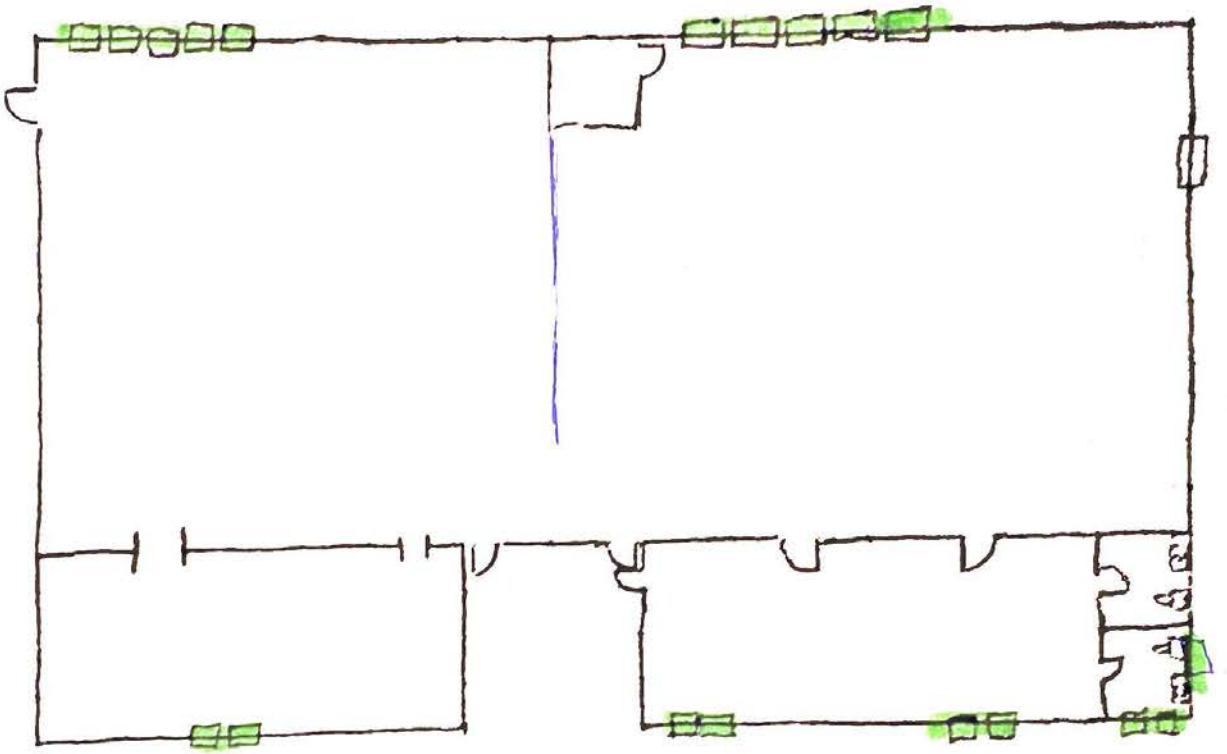
Control No. 100198

Expiration Date: 10-Jan-2024

APPENDIX C

Sample Location Drawing(s)

Stephenson Building
101 old Fitzhugh Rd, Dripping Springs
Asbestos Location Plan 23-1730

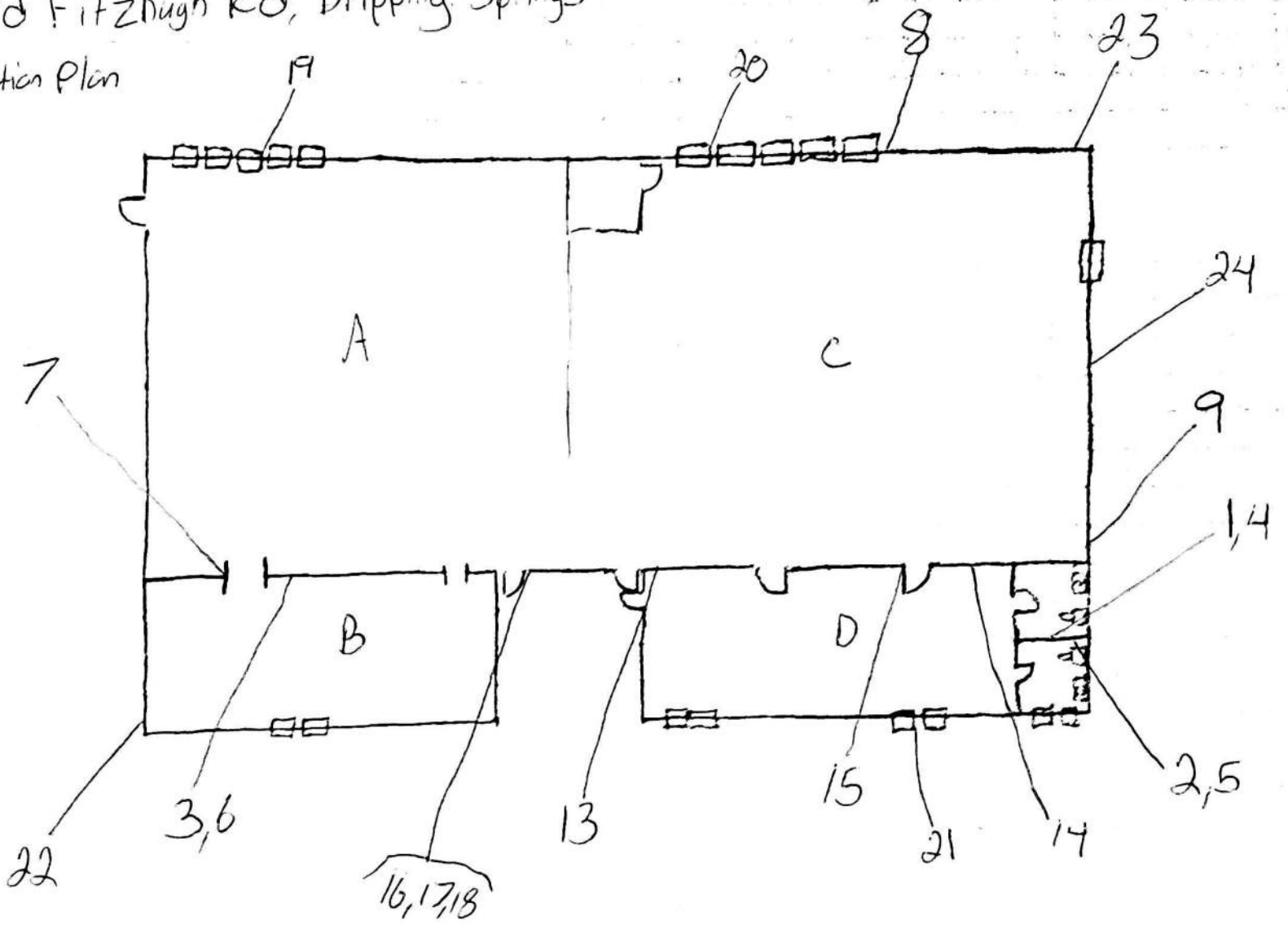


Exterior Window Glazing
~ 29 windows
Sample # 19-21

Stephenson Building
101 Old Fitzhugh Rd, Dripping Springs

23-1730

Sample Location Plan



ASBESTOS ABATEMENT PROJECT DESIGN

Stephenson Building
Window Sashes
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

CEC PROJECT NUMBER 23-1730

October 18, 2024

Champion Environmental Consulting, Inc.
109 W 7th St, Suite 210, Georgetown, TX 78626 *main* (512) 992-5383

SITE: Stephenson Building
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

CONTRACTOR: TBD
Texas Licensed Asbestos Abatement Contractor

1.0 SCOPE OF ASBESTOS ABATEMENT PROJECT

The Scope of the asbestos abatement project consists of removal of the following:

Material/Area		APPROX Quantity
Window Glazing All exterior windows except the one on the North Side Northwest corner (Remove and dispose of sashes only - frames to remain in place for LBP removal)		29 Windows

Refer to attached sketch/drawing(s)

Contractor shall abate window/exterior materials utilizing NESHAP Methods and properly dispose of the aforementioned building materials as asbestos containing material (ACM) or asbestos contaminated materials for this project.

This project will be completed under the guidelines of all federal, state, and local regulations regarding the removal of asbestos containing materials as well as this project specification. Final clearance for this project will utilize Phase Contrast Microscopy (PCM) and aggressive sampling techniques. OSHA Compliance Air Monitoring will be the responsibility of the contractor. **It is the Contractor's responsibility to verify the quantities of all materials.**

Wade Champion, IAC
DSHS License Number 10-5410
Expiration Date 08/25/2025

Wade Champion
License No. 10-5410
Expires 08/25/2025

PART 1 – GENERAL

1.01 REGULATIONS:

A. Comply with the requirements of the Environmental Protection Agency (EPA) regulations. National Emission Standards for Hazardous Air Pollutants (Asbestos NESHAP), U. S. Department of Labor, Occupational Safety and Health Administration (OSHA) regulations on asbestos, Respiratory Protection, Toxic Air Pollutants and License to Remove or Encapsulate Asbestos, Texas Department of Health (*Texas Asbestos Health Protection Rules)* as revised July 8, 2021, and any applicable local government regulations which are incorporated by reference.

1.02 SCOPE OF WORK:

A. The Contractor shall furnish all labor, materials, services, insurance, and equipment necessary to carry out the asbestos abatement of ACM in accordance with all current and applicable Federal Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and Texas Department of Health (*Texas Asbestos Health Protection Rules)* as revised July 8, 2021.
B. Remove material, which is Asbestos Containing Building Materials (ACBM) (See Drawings Appendix C).
C. Dispose of all ACBM materials in accordance with all applicable Federal and State of Texas regulations and these specifications at an approved disposal site. The Contractor shall be responsible for obtaining approval for disposal of all asbestos contaminated material generated by the abatement project, prior to start, at an EPA approved landfill in compliance with all federal, state, and local regulations.

1.03 ON-SITE DOCUMENTATION

A. The Contractor shall post all applicable permits and regulations.
B. The Contractor shall maintain at the job site all Federal, EPA, OSHA, State of Texas, and city notifications and regulations (as applicable).
C. The Contractor shall maintain at the job site all employee medical asbestos physicals indicating medical clearance to wear a respirator; respirator fit tests, employee roster sign-in sheets, and SDS sheet for products used.

1.04 CONTRACTOR QUALIFICATIONS

A. The Contractor must be able to comply with all requirements of this solicitation and specification.
B. The Contractor must comply to the following requirements for the project:
1. Document to CONSULTANT, the Asbestos Consultant, that all employees who will come into contact with the ACBM or be responsible for the asbestos work are medically qualified to wear a respirator and have a current asbestos physical. CONSULTANT will supervise and perform respirator fit tests for all of the Contractor employees who will come into contact with ACBM.
2. Demonstrate prior experience on jobs of similar nature and scope.

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License No. 10-5410
Expires 08/25/2025

1.05 SUBMITTALS

A. Items shall be submitted to and approved by CONSULTANT in this section prior to commencing work involving asbestos materials.
B. Landfill: Submit written evidence that the landfill for disposal is licensed for asbestos disposal by the USEPA and state or local regulatory agency(s) and is in accordance with all other terms and conditions for landfills addressed in other paragraphs of this specification.
C. Submit documentation that each employee has received an asbestos physical and has received medical clearance to wear a respirator; submit certificates signed by each employee that the employee understands the health implications and risks involved, including illnesses possible from exposure to airborne asbestos fibers, understands the use and limits of the respiratory equipment to be used, and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment.
D. Properly completed notification(s) to the Texas Department of Health Toxic Substance Control Division, and any other City or local departments required by this specification.
E. Copies of all Federal, EPA, OSHA, State of Texas, or any other necessary regulations to be maintained at the job site.

1.06 AIR MONITORING

A. Air monitoring will be performed during the entire removal, as specified, or as deemed necessary by CONSULTANT.

1.07 UTILITIES

A. The Owner shall provide electrical power for the project from available power outlets. The Contractor shall furnish all extension cords and construction type ground fault protected power outlet assemblies.
B. The Owner shall furnish water for the project from readily available hose bibs. The Contractor shall furnish all water hoses and devices.

1.08 ASBESTOS REMOVAL LOCATIONS

A. The asbestos abatement work shall generally include the following:
1. *EXTERIOR Window materials* (See Appendix C – REFERENCE DRAWING(S)).

1.09 PROJECT AND AREA CLEANUP

A. On a daily basis, the Contractor shall clean the asbestos work area immediately upon completion of the removal procedures. The Contractor shall also police the entire building perimeter grounds for ACBM and properly dispose of any loose ACBM debris on a daily basis.
B. At the end of each day, prior to leaving the job site, the Contractor shall thoroughly clean the entire job site in a manner acceptable to CONSULTANT.

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Expires 08/25/2025

PART 2 – PRODUCTS

1.01 GENERAL

A. Products and materials required for the project shall be new, of best quality and grade of standard manufacturer, and shall conform to the requirements of the asbestos abatement industry.

B. Typical products required for the project are listed below:
   1. Full-bodied protective coveralls including hood and boots;
   2. Half-face, full-face or powered air purifying respirators. All respirators shall be NIOSH approved;
   3. High efficiency particulate air (HEPA) filters (P100 or equivalent) for respirators;
   4. True six (6) mil asbestos disposal bags pre-labeled with the dangers related to asbestos;
   5. Danger signs and barrier tape;
   6. Surfactant (Wetting Agent): Mixture consisting of 50% poly-oxyethylene ether and 50% poly-glycol ether, or equivalent, and shall be mixed with water to provide “amended water” with a concentration of one ounce of surfactant to five (5) gallons of water; and
   7. Sealing tape.

PART 3 – EXECUTION

3.01 GENERAL

A. The Contractor shall perform the asbestos abatement and disposal according to the requirements stipulated and outlined in these specifications.

3.02 METHOD OF REMOVAL

A. Workers shall wear approved, properly fitted, and fit-tested National Institute for Occupational Safety and Health (NIOSH) respirators equipped with high efficiency particulate air (P100 or equivalent) filters approved for asbestos removal. CONSULTANT shall perform and document the fit testing of the employees as previously stated. Workers shall wear disposable, full-bodied coveralls with head covers and footwear at the work areas. These will be disposed of in asbestos disposal bags at the end of each asbestos removal work period.

B. Provide danger signs at all approaches to asbestos regulated areas. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos. Signs and labels shall be in accordance with 29 CFR 1926.1101 OSHA Asbestos Standard. Ensure that roof level heating and ventilation air intake sources are shut down. Seal all openings with true weight six (6) mil polyethylene.

C. For the entire project the air will be monitored both personally for workers and environmentally to ensure that the Contractor meets EPA Clean Air Standards. The air monitoring will be conducted by CONSULTANT. During the time the air is being monitored, the Contractor must ensure that all workers directly involved with the ACBM removal procedures wear full-bodied protective clothing and at a minimum half face dual cartridge air purifying respirators with High Efficiency Particulate Air (HEPA) filters (P100 or equivalent).

D. ACBM removal shall be consistent with the OSHA Asbestos Standard (29 CFR 1926.1101), August 1994, as corrected June 29, 1995, Section (g) Method of Compliance, Paragraph 8(ii), as outlined below:

Wade Champion
License No. 10-5410
Expires 08/25/2025



1. For removing material which contains ACBM, the employer shall ensure that the following work practices are followed:
   a. material shall be removed in an intact state to the extent feasible.
   b. Wet methods shall be used to remove materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards.
   c. The wetted ACBM shall be double bagged in approved true weight six (6) mil polyethylene labeled bags. At the end of each removal operation, the bags shall be placed in an enclosed dumpster/trailer, contained and pad locked. All asbestos contaminated articles such as suits, gloves, filters, etc. shall also be disposed of in double six (6) mil labeled polyethylene bags. Bags shall not be damaged in any way. To ensure that the bags do not become damaged, the Contractor may elect to place the bags in sealed and labeled fiber drums. CONSULTANT will determine the integrity of the sealed asbestos labeled bags and instruct the Contractor accordingly. All polyethylene bags utilized for the ACBM must be pre-labeled from the factory with the appropriate asbestos label. In addition, the Contractor must label the top bag of each double bagged ACBM with the appropriate generator information.
   d. The asbestos materials shall be transported from the work areas to the enclosed container in a method that protects the integrity of the bags or drums from asbestos fiber release and/or spreading of asbestos debris. Through discussion with the Contractor, CONSULTANT will determine the safest method to accomplish this procedure:

1. Refer to OSHA Asbestos Standard (29 CFR 1926.1101), August 1994 as corrected June 29, 1995, listed below:

a. Asbestos containing material that has been removed *shall not be dropped or thrown to the ground*. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust tight chute, crane, or hoist:

1.) Any ACBM that is not intact shall be lowered to the ground as soon as it is practicable, but in any event no later than the end of the work shifts. While the material remains on the roof it shall either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting.

2.) Intact ACBM shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.

b. Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.

c. Roof level heating and ventilation air intake sources shall be isolated, or the ventilation system shall be shut down.

E. Transporting of the ACBM to an EPA approved landfill must be accomplished by an approved and Texas Department of Health licensed asbestos transporting company. The asbestos shall be properly labeled. It is the Contractor's responsibility to ensure that the ACBM reaches the approved landfill in an acceptable condition. Final disposal of asbestos-containing waste material shall be within 30 days of the project completion or when receiving container is full, whichever is sooner.

F. No later than thirty (30) days after completion of the ACBM removal, the Contractor shall furnish CONSULTANT three (3) copies of project documentation which shall include at a minimum, waste shipment records (manifest), employee physicals, employee respirator clearances, employee certificates of understanding regarding the handling of asbestos, typed daily project details, notifications, insurance certificates, SDS sheets, and all other relevant documents as determined by CONSULTANT.

Wade Champion
License No. 10-5410
Expires 08/25/2025



TECHNICAL SPECIFICATION USE AND RELIANCE

The technical specifications presented herein are an instrument of professional service developed by Champion Environmental Consulting, Inc. (CEC) in contemplation of a wide array of project-specific variables, including how the documents will be used, by whom and under what project management scheme. Because CEC may be liable for the adequacy of these technical specifications and any unauthorized reuse could result in misuse of CEC's findings, recommendations or other service elements for which CEC cannot anticipate risk and liability, use of these technical specifications (including reliance, duplication, copying, quoting or excerpting) is limited to CEC, as project manager of the above-referenced project for the client named herein. Any other party, including contractors or consultants, wishing to use, rely upon, excerpt, copy, duplicate or otherwise reproduce these specifications must apply to CEC for written authorization to do so with such approval in the sole discretion of CEC.

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Expires 08/25/2025



APPENDIX A
LICENSES



Texas Department of State Health Services

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is certified to perform as an

Asbestos Consultant Agency

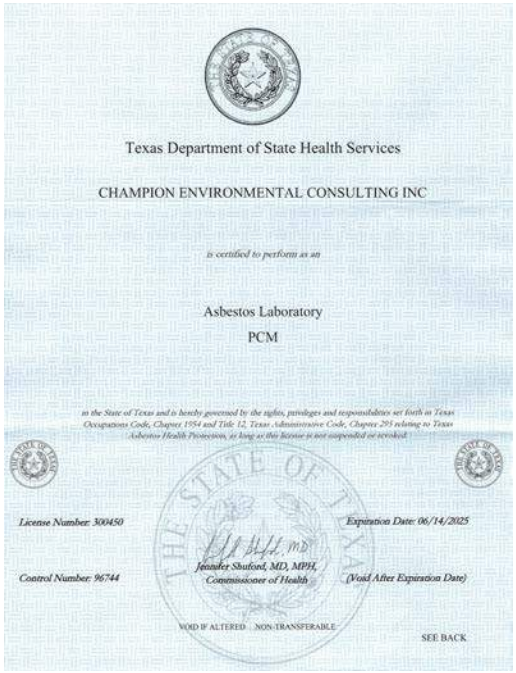
in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 12, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked.

License Number: 100522 — Expiration Date: 04/01/2025

Control Number: 97564 — Jennifer Shuford, MD, MPH, Commissioner of Health — (Void After Expiration Date)

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License Number: 300450 — Expiration Date: 06/14/2025

Control Number: 96744 — Jennifer Shuford, MD, MPH, Commissioner of Health — (Void After Expiration Date)

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Texas Department of State Health Services

Asbestos Individual Consultant

WADE E CHAMPION

License No. 105410

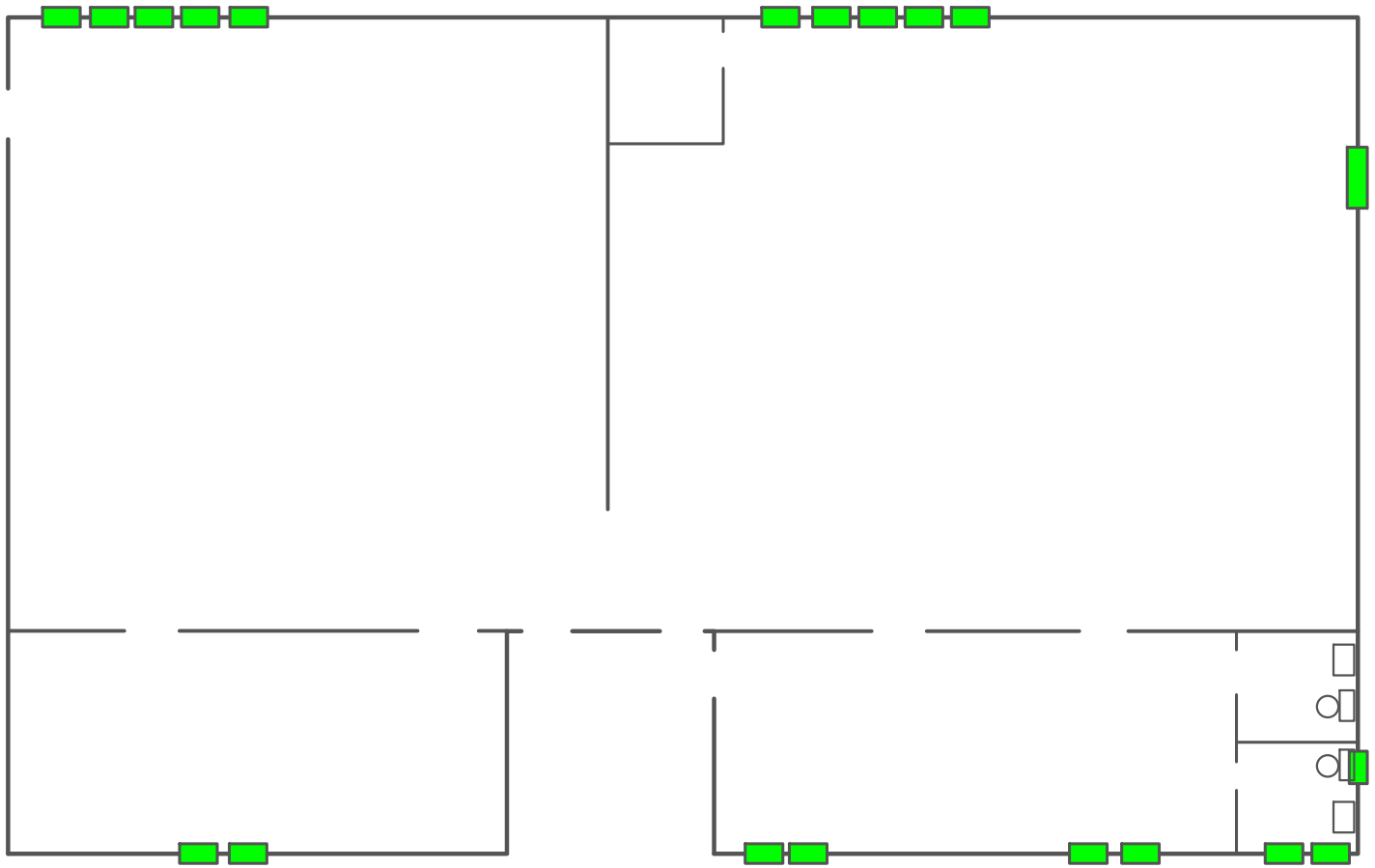
Control No. 98246

Expiration Date: 25-Aug-2025

APPENDIX B
NOTIFICATION(S)

(As Submitted By Licensed Abatement Contractor)

APPENDIX C
REFERENCE DRAWING(S)



Exterior Window Glazing (~29 Windows)
Remove and dispose of sashes only
Frames to remain in place for LBP removal

Wade Champion
Asbestos Individual Consultant
TDSHS License No. 10-5410
Expiration Date 8/25/2025

109 West 7th Street
Suite 210
Georgetown, Texas 786

CLIENT:
CITY OF DRIPPING SPRINGS

511 Mercer Street
Cripping Springs, Texas 78620

SITE: STEPHENSON BUILDING

101 Old Fitzhugh Road
Dripping Springs, Texas 78620

C-ECI Project No. 23-1730
By: N Hackney
Approved By: W Champion
Submitted: 4/4/2024
Not To Scale

Asbestos Abatement Plan

ASBESTOS ABATEMENT PROJECT DESIGN

Stephenson Building
Window Sashes
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

CEC PROJECT NUMBER 23-1730

October 18, 2024

Champion Environmental Consulting, Inc.
109 W 7th St, Suite 210, Georgetown, TX 78626 *main* (512) 992-5383

SITE: Stephenson Building
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

CONTRACTOR: TBD
Texas Licensed Asbestos Abatement Contractor

1.0 SCOPE OF ASBESTOS ABATEMENT PROJECT

The Scope of the asbestos abatement project consists of removal of the following:

Material/Area		APPROX Quantity
Window Glazing All exterior windows except the one on the North Side Northwest corner (Remove and dispose of sashes only - frames to remain in place for LBP removal)		29 Windows

Refer to attached sketch/drawing(s)

Contractor shall abate window/exterior materials utilizing NESHAP Methods and properly dispose of the aforementioned building materials as asbestos containing material (ACM) or asbestos contaminated materials for this project.

This project will be completed under the guidelines of all federal, state, and local regulations regarding the removal of asbestos containing materials as well as this project specification. Final clearance for this project will utilize Phase Contrast Microscopy (PCM) and aggressive sampling techniques. OSHA Compliance Air Monitoring will be the responsibility of the contractor. **It is the Contractor's responsibility to verify the quantities of all materials.**

Wade Champion, IAC
DSHS License Number 10-5410
Expiration Date 08/25/2025

Wade Champion
License No. 10-5410
Expires 08/25/2025

PART 1 – GENERAL

1.01 REGULATIONS:

A. Comply with the requirements of the Environmental Protection Agency (EPA) regulations. National Emission Standards for Hazardous Air Pollutants (Asbestos NESHAP), U. S. Department of Labor, Occupational Safety and Health Administration (OSHA) regulations on asbestos, Respiratory Protection, Toxic Air Pollutants and License to Remove or Encapsulate Asbestos, Texas Department of Health (*Texas Asbestos Health Protection Rules)* as revised July 8, 2021, and any applicable local government regulations which are incorporated by reference.

1.02 SCOPE OF WORK:

A. The Contractor shall furnish all labor, materials, services, insurance, and equipment necessary to carry out the asbestos abatement of ACM in accordance with all current and applicable Federal Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and Texas Department of Health (*Texas Asbestos Health Protection Rules)* as revised July 8, 2021.
B. Remove material, which is Asbestos Containing Building Materials (ACBM) (See Drawings Appendix C).
C. Dispose of all ACBM materials in accordance with all applicable Federal and State of Texas regulations and these specifications at an approved disposal site. The Contractor shall be responsible for obtaining approval for disposal of all asbestos contaminated material generated by the abatement project, prior to start, at an EPA approved landfill in compliance with all federal, state, and local regulations.

1.03 ON-SITE DOCUMENTATION

A. The Contractor shall post all applicable permits and regulations.
B. The Contractor shall maintain at the job site all Federal, EPA, OSHA, State of Texas, and city notifications and regulations (as applicable).
C. The Contractor shall maintain at the job site all employee medical asbestos physicals indicating medical clearance to wear a respirator; respirator fit tests, employee roster sign-in sheets, and SDS sheet for products used.

1.04 CONTRACTOR QUALIFICATIONS

A. The Contractor must be able to comply with all requirements of this solicitation and specification.
B. The Contractor must comply to the following requirements for the project:
1. Document to CONSULTANT, the Asbestos Consultant, that all employees who will come into contact with the ACBM or be responsible for the asbestos work are medically qualified to wear a respirator and have a current asbestos physical. CONSULTANT will supervise and perform respirator fit tests for all of the Contractor employees who will come into contact with ACBM.
2. Demonstrate prior experience on jobs of similar nature and scope.

1.05 SUBMITTALS

A. Items shall be submitted to and approved by CONSULTANT in this section prior to commencing work involving asbestos materials.
B. Landfill: Submit written evidence that the landfill for disposal is licensed for asbestos disposal by the USEPA and state or local regulatory agency(s) and is in accordance with all other terms and conditions for landfills addressed in other paragraphs of this specification.
C. Submit documentation that each employee has received an asbestos physical and has received medical clearance to wear a respirator; submit certificates signed by each employee that the employee understands the health implications and risks involved, including illnesses possible from exposure to airborne asbestos fibers, understands the use and limits of the respiratory equipment to be used, and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment.
D. Properly completed notification(s) to the Texas Department of Health Toxic Substance Control Division, and any other City or local departments required by this specification.
E. Copies of all Federal, EPA, OSHA, State of Texas, or any other necessary regulations to be maintained at the job site.

1.06 AIR MONITORING

A. Air monitoring will be performed during the entire removal, as specified, or as deemed necessary by CONSULTANT.

1.07 UTILITIES

A. The Owner shall provide electrical power for the project from available power outlets. The Contractor shall furnish all extension cords and construction type ground fault protected power outlet assemblies.
B. The Owner shall furnish water for the project from readily available hose bibs. The Contractor shall furnish all water hoses and devices.

1.08 ASBESTOS REMOVAL LOCATIONS

A. The asbestos abatement work shall generally include the following:
1. *EXTERIOR Window materials* (See Appendix C – REFERENCE DRAWING(S)).

1.09 PROJECT AND AREA CLEANUP

A. On a daily basis, the Contractor shall clean the asbestos work area immediately upon completion of the removal procedures. The Contractor shall also police the entire building perimeter grounds for ACBM and properly dispose of any loose ACBM debris on a daily basis.
B. At the end of each day, prior to leaving the job site, the Contractor shall thoroughly clean the entire job site in a manner acceptable to CONSULTANT.

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Expires 08/25/2025

PART 2 – PRODUCTS

1.01 GENERAL

A. Products and materials required for the project shall be new, of best quality and grade of standard manufacturer, and shall conform to the requirements of the asbestos abatement industry.

B. Typical products required for the project are listed below:
   1. Full-bodied protective coveralls including hood and boots;
   2. Half-face, full-face or powered air purifying respirators. All respirators shall be NIOSH approved;
   3. High efficiency particulate air (HEPA) filters (P100 or equivalent) for respirators;
   4. True six (6) mil asbestos disposal bags pre-labeled with the dangers related to asbestos;
   5. Danger signs and barrier tape;
   6. Surfactant (Wetting Agent): Mixture consisting of 50% poly-oxyethylene ether and 50% poly-glycol ether, or equivalent, and shall be mixed with water to provide “amended water” with a concentration of one ounce of surfactant to five (5) gallons of water; and
   7. Sealing tape.

PART 3 – EXECUTION

3.01 GENERAL

A. The Contractor shall perform the asbestos abatement and disposal according to the requirements stipulated and outlined in these specifications.

3.02 METHOD OF REMOVAL

A. Workers shall wear approved, properly fitted, and fit-tested National Institute for Occupational Safety and Health (NIOSH) respirators equipped with high efficiency particulate air (P100 or equivalent) filters approved for asbestos removal. CONSULTANT shall perform and document the fit testing of the employees as previously stated. Workers shall wear disposable, full-bodied coveralls with head covers and footwear at the work areas. These will be disposed of in asbestos disposal bags at the end of each asbestos removal work period.

B. Provide danger signs at all approaches to asbestos regulated areas. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos. Signs and labels shall be in accordance with 29 CFR 1926.1101 OSHA Asbestos Standard. Ensure that roof level heating and ventilation air intake sources are shut down. Seal all openings with true weight six (6) mil polyethylene.

C. For the entire project the air will be monitored both personally for workers and environmentally to ensure that the Contractor meets EPA Clean Air Standards. The air monitoring will be conducted by CONSULTANT. During the time the air is being monitored, the Contractor must ensure that all workers directly involved with the ACBM removal procedures wear full-bodied protective clothing and at a minimum half face dual cartridge air purifying respirators with High Efficiency Particulate Air (HEPA) filters (P100 or equivalent).

D. ACBM removal shall be consistent with the OSHA Asbestos Standard (29 CFR 1926.1101), August 1994, as corrected June 29, 1995, Section (g) Method of Compliance, Paragraph 8(ii), as outlined below:

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Expires 08/25/2025



1. For removing material which contains ACBM, the employer shall ensure that the following work practices are followed:
   a. material shall be removed in an intact state to the extent feasible.
   b. Wet methods shall be used to remove materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards.
   c. The wetted ACBM shall be double bagged in approved true weight six (6) mil polyethylene labeled bags. At the end of each removal operation, the bags shall be placed in an enclosed dumpster/trailer, contained and pad locked. All asbestos contaminated articles such as suits, gloves, filters, etc. shall also be disposed of in double six (6) mil labeled polyethylene bags. Bags shall not be damaged in any way. To ensure that the bags do not become damaged, the Contractor may elect to place the bags in sealed and labeled fiber drums. CONSULTANT will determine the integrity of the sealed asbestos labeled bags and instruct the Contractor accordingly. All polyethylene bags utilized for the ACBM must be pre-labeled from the factory with the appropriate asbestos label. In addition, the Contractor must label the top bag of each double bagged ACBM with the appropriate generator information.
   d. The asbestos materials shall be transported from the work areas to the enclosed container in a method that protects the integrity of the bags or drums from asbestos fiber release and/or spreading of asbestos debris. Through discussion with the Contractor, CONSULTANT will determine the safest method to accomplish this procedure:

1. Refer to OSHA Asbestos Standard (29 CFR 1926.1101), August 1994 as corrected June 29, 1995, listed below:

a. Asbestos containing material that has been removed *shall not be dropped or thrown to the ground*. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust tight chute, crane, or hoist:

1.) Any ACBM that is not intact shall be lowered to the ground as soon as it is practicable, but in any event no later than the end of the work shifts. While the material remains on the roof it shall either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting.

2.) Intact ACBM shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.

b. Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.

c. Roof level heating and ventilation air intake sources shall be isolated, or the ventilation system shall be shut down.

E. Transporting of the ACBM to an EPA approved landfill must be accomplished by an approved and Texas Department of Health licensed asbestos transporting company. The asbestos shall be properly labeled. It is the Contractor's responsibility to ensure that the ACBM reaches the approved landfill in an acceptable condition. Final disposal of asbestos-containing waste material shall be within 30 days of the project completion or when receiving container is full, whichever is sooner.

F. No later than thirty (30) days after completion of the ACBM removal, the Contractor shall furnish CONSULTANT three (3) copies of project documentation which shall include at a minimum, waste shipment records (manifest), employee physicals, employee respirator clearances, employee certificates of understanding regarding the handling of asbestos, typed daily project details, notifications, insurance certificates, SDS sheets, and all other relevant documents as determined by CONSULTANT.

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License No. 10-5410
Expires 08/25/2025



TECHNICAL SPECIFICATION USE AND RELIANCE

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License No. 10-5410
Expires 08/25/2025



APPENDIX A
LICENSES



Texas Department of State Health Services

CHAMPION ENVIRONMENTAL CONSULTING INC

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Asbestos Consultant Agency

in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 12, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked.

License Number: 100522

Expiration Date: 04/01/2025

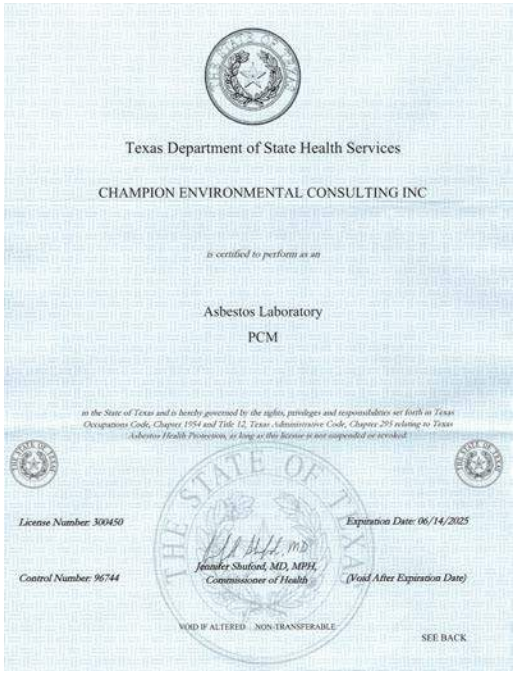
Control Number: 97564

Jennifer Shuford, MD, MPH, Commissioner of Health

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Asbestos Laboratory

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License Number: 300450

Expiration Date: 06/14/2025

Control Number: 96744

Jennifer Shuford, MD, MPH, Commissioner of Health

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Asbestos Individual Consultant

WADE E CHAMPION

License No. 105410

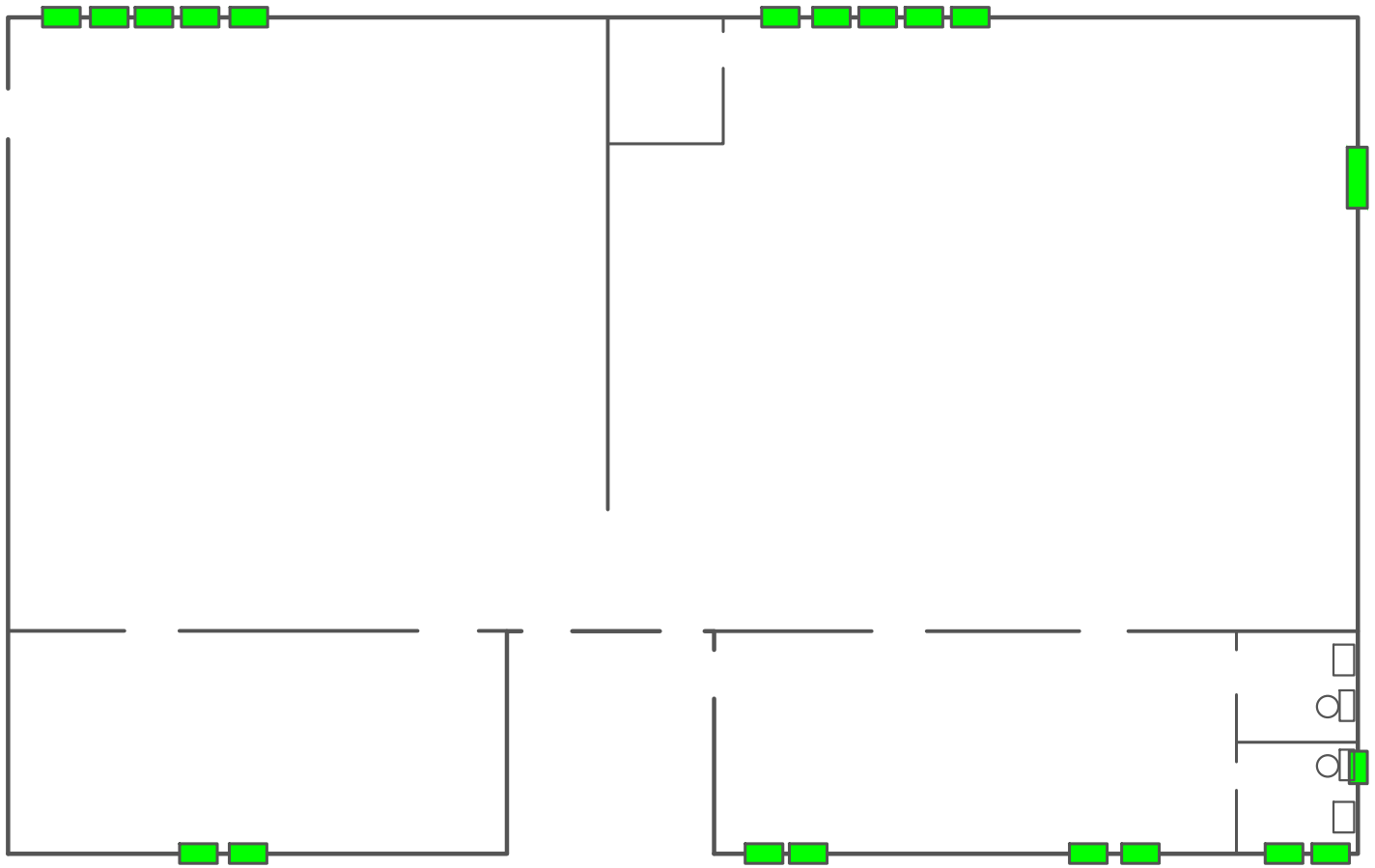
Control No. 98246

Expiration Date: 25-Aug-2025

APPENDIX B
NOTIFICATION(S)

(As Submitted By Licensed Abatement Contractor)

APPENDIX C
REFERENCE DRAWING(S)



Exterior Window Glazing (~29 Windows)
Remove and dispose of sashes only
Frames to remain in place for LBP removal

CHAMPION environmental consultants
109 West 7th Street
Suite 210
Georgetown, Texas 78626

CLIENT:
CITY OF DRIPPING SPRINGS

511 Mercer Street
Cripping Springs, Texas 78620

SITE: STEPHENSON BUILDING
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

C-ECI Project No. 23-1730
By: N Hackney
Approved By: W Champion
Submitted: 4/4/2024
Not To Scale

Asbestos Abatement Plan

1085

Wade Champion
Asbestos Individual Consultant
TDSHS License No. 10-5410
Expiration Date 8/25/2025

LEAD PAINT REMOVAL WORKPLAN

Stephenson Building
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

October 18, 2024

Project No. 23-1730

Prepared for:
City of Dripping Springs
511 Mercer Street
Dripping Springs, Texas 78620

And

Architexas
1023 Springdale Rd., Bldg. 11, Suite E
Austin, Texas 78721

Prepared by:



Wade Champion
Project Manager
TDLR Lead Inspector/Risk Assessor 2070357

LEAD BASED PAINT WORKPLAN

DIVISION 1 – GENERAL REQUIREMENTS

01014 Summary of the Work

DIVISION 2 – SITE WORK

Section 02064 - Removal of Lead-Based Paint Substrates

Section 02065 - Removal of Loose and Flaking Lead-Based Paint

Section 02066 - Chemical Stripping of Lead-Based Paint

Section 02067 - Disposal of Lead-Based Paint Waste Material

SECTION 01014 - SUMMARY OF THE WORK

PART 1 - GENERAL

The project name is "**Stephenson Building** Renovation Areas Lead Based Paint Workplan" as shown on the Contract Documents prepared by Owner. The workplan is dated **October 18, 2024**

All phases of the Work shall be executed by skilled craftsmen experienced in their respective trades. This section includes a general scope of work, while Division 2 includes a description of procedures for work procedures in each work area.

1.1 RELATED DOCUMENTS

General provisions of the Contract, including the General and Supplementary Conditions and other Division 1 General Requirements, apply to work of this section. Additional sections include:

Division 2 - Site Work

Section 02064 - Removal of Lead-Based Paint Substrates
Section 02065 - Removal of Loose and Flaking Lead-Based Paint
Section 02066 - Chemical Stripping of Lead-Based Paint
Section 02067 - Disposal of Lead-Based Paint Waste Material

1.2 SUMMARY OF WORK

The Work includes the removal or partial removal of lead-based paint or lead-based paint substrates identified in the designated areas of the Project which include.

Refer to the guidance herein: Work consists of stripping LBP from painted substrates.

Room/ Location	Substrate	Location	Approx. Quantity
Exterior	Shiplap Ceiling White Wood	East Side Main Entrance	120 SF
Exterior	Door Frames Brown Wood	East Side Main Entrance	3 Door Frames
Interior	Window Frames Multi Colors Wood	Room A, B, D, East Side Restroom and Room C West Wall	29 Windows
Interior	Front of Stage Green Wood	Room C	70 SF

The Work at the project shall commence on the date established by the Notice to Proceed and shall be completed within the time specified on the proposal form. The Work shall be performed in accordance with the requirements of all applicable sections of these Workplans. Contractor shall perform the Work in a manner that minimizes disruption to construction operations.

The Work includes the removal and disposal of lead-based paint, lead-based paint contaminated building materials according to the requirements of the following workplan sections in the sequence indicated:

Work:

Contractor will comply with applicable Codes, Regulations, and Standards. governmental agencies before start of work.

Contractor will provide Air Monitoring - Test Laboratory Services to demonstrate to the Owner so that the building areas beyond the work areas will remain uncontaminated. Air monitoring to determine required respiratory protection is the responsibility of Contractor.

Contractor will provide Worker Protection. Contractor will provide the equipment and procedures for protecting workers against lead contamination and other workplace hazards.

Work Procedures:

Section 02064 - Removal of Lead-Based Paint Substrates
Section 02065 - Removal of Loose and Flaking Lead-Based Paint
Section 02066 - Chemical Stripping of Lead-Based Paint
Section 02067 - Disposal of Lead-Based Paint Waste Material

1.3 WORK PLAN

Submit detailed plans of the procedures proposed for use in complying with the requirements of these Workplans. Include in the plans the locations and layouts of decontamination areas; the sequencing of lead work; the interface of trades involved in the performance of work; methods to be used to assure the safety of building occupants and visitors to the site; the disposal plan, including location of approved disposal site; and a detailed description of the methods to be employed to control pollution. Expand upon the use of the portable high-efficiency particulate air (HEPA) ventilation system, closing out of the building's heating, ventilation, and air conditioning (HVAC) system, method of removal to prevent visible emissions in work areas, and bagging of removed lead debris. The plan must be approved by the Consultant prior to commencement of work.

1.4 INSPECTION

Prior to commencement of work, inspect areas in which work will be performed. List damage to structure, surfaces, equipment, or surrounding properties noted during the inspection that could be misconstrued as damage resulting from the Work. Submit to Consultant prior to starting work.

1.5 POTENTIAL LEAD HAZARD

The disturbance or dislocation of lead-based painted materials may cause lead dust to be released into the building's atmosphere, thereby creating a potential health hazard to workers and building occupants. Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the hazard and of proper work procedures, which must be followed.

Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified lead-based paint, take appropriate continuous measures as necessary to protect all building occupants from the potential hazard of exposure to lead dust. Such measures shall

include the procedures and methods described herein, and compliance with regulations and guidelines of applicable federal, state, and local agencies.

1.6 STOP WORK

If Owner or Consultant presents a written Stop Work Order, immediately and automatically stop all work. Do not re-commence work until authorized by Consultant.

1.7 CONTRACTOR USE OF PREMISES

Limit use of the premises to the Work indicated, so as to allow for Owner occupancy and use by other trades required in the buildings. Confine operations at the site to the areas permitted under the Contract.

Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the Work while engaged in project construction.

Keep existing driveways and entrances serving the premises clear and available to Owner and his employees at all times. Do not use these areas for parking or storage of materials.

Do not encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas designated by Owner. If additional storage is necessary, obtain and pay for such storage off-site.

Lock automotive-type vehicles, such as passenger cars and trucks, and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place or accessible to unauthorized persons.

Maintain existing buildings in a safe and weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the buildings and their occupants during the construction period.

Keep public areas such as hallways, stairs, elevator lobbies, and toilet rooms free from accumulation of waste, rubbish, or construction debris.

Smoking or open fires will not be permitted within any of the buildings on the premises.

Except for toilet rooms designated by Owner for use by Contractor's personnel, use of existing toilets within the buildings, by Contractor and his personnel, will not be permitted.

1.8 LOADS AND STRESSES

Contractor shall have full responsibility for preventing overstresses of any structure or any part or member of the structure during the Work. Contractor shall fully check the effect of the operation in this regard and shall provide all support necessary.

1.9 VERIFICATION OF QUANTITIES

It is the responsibility of Contractor to verify all LBP locations and quantities of LBP in each work area. Contractor shall fully inform himself of the conditions relating to construction of the Work and employment of labor thereon. Failure to do so will not relieve a successful Offeror of his

obligation to furnish all material, equipment, and labor necessary to carry out the provisions of the Contract.

1.10 OWNER OCCUPANCY

Separate Contract: Owner has been awarded a separate contract for performance of certain construction operations at the site. Those operations will be conducted simultaneously with work under this Contract and Contractor shall work in cooperation with the other trades performing said operations.

Owner reserves the right to place and install equipment as necessary in areas of the building in which all lead removal and project decontamination procedures have been completed and to occupy such completed areas prior to substantial completion, provided that such occupancy does not substantially interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the Work or any part of the Work.

1.11 SUBMITTALS

Submit all required documents, identified in Section 01301 - Submittals, to Consultant for review prior to the start of work in any given work area. Do not begin work until these submittals are returned, approved by Owner and Consultant.

1.12 PROJECT SCHEDULE

The project is scheduled to begin on the date established in the Notice to Proceed and shall be completed as specified on the Proposal Form and in these Contract Documents. Contractor shall submit his work schedule to the Owner for approval. Work schedule shall be coordinated based on the availability of the work area and whether or not the building is occupied. Work hours will initially be scheduled as outlined in paragraph 1.2 of this Section.

Removal of lead-containing waste material from temporary storage inside containment to waste dumpsters shall be approved by the Owner or shall be conducted as otherwise specifically approved in writing. During transportation of all waste materials, the lead bags, dumpsters, and warning labels will be visually obscured from public view.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01014

SECTION 02064 - REMOVAL OF LEAD-BASED PAINTED SUBSTRATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Workplan sections, apply to work of this section.

1.2 SUMMARY OF WORK

Work of this section includes the removal and off-site disposal of the following lead-based painted substrates

Not Applicable: components coated with LBP will be chemically stripped and prepared for repainting per section 02066

1.3. EXISTING CONDITIONS

Existing conditions are reflected accurately to the best of Owner's knowledge. Should minor conditions be encountered that are not exactly as indicated, modification to the Work shall be made as required at no additional expense to Owner. Contractor is responsible for thoroughly familiarizing himself with all conditions and requirements of the Work, including Lead-Based Paint (LBP) locations and quantities, prior to submittal of a Proposal. Contractor shall refer to the attached tables, hereby listed in Appendix B of the Contract Documents for assistance in identifying LBP locations.

PART 2 - PRODUCTS

2.1 DISPOSAL BAGS/PLASTIC SHEETING

Provide 6 mil polyethylene disposal bags or wrap substrates to be disposed of in 6-mil polyethylene, sealed with duct tape.

2.2 WET DETERGENT WASH

Provide detergent with a high phosphate content (at least 5%) trisodium phosphate (TSP). Follow dilution ratio recommended by the manufacturer's instructions.

Wet Detergent Wash: Provide detergent or cleaning agent formulated to be effective in removing lead dust. Follow dilution ratio recommended by the manufacturer's instructions.

PART 3 - EXECUTION

Prior to initiating Work, Contractor shall ensure compliance with Section 01555 - Worker Protection - Lead Based Paint

3.1 SECURING WORK AREA:

Secure work area from access by occupants, staff or users of the building. Accomplish this where possible, by locking doors, windows, or other means of access to the area.

3.2 DEMARCATION OF REGULATED AREA:

Demarcate each exterior regulated area with a sheet plastic drop sheet and barricade fence. Provide barricade fence with support posts four feet (4') on center. Provide barrier-warning tape at perimeter with the following legend "Caution Lead Hazard - Do Not Enter Work Area Unless Authorized." Barricade fence shall be securely fastened and no closer than twelve feet (12') radius from the work.

3.3 EXTERIOR RENOVATION GENERAL PROCEDURES

The following precautions and procedures have application to the work of this section. Workers must exercise caution to avoid the release of lead dust into the air and to contain lead dust and debris on drop sheet.

Before start of work comply with requirement for worker protection and respiratory requirements as specified in the Contract Documents.

Do not allow eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics in the regulated area.

Provide one layer of 6-mil polyethylene sheeting as close to foundation as possible. Extend the sheeting out from the foundation a distance of 3 feet per story being abated or a minimum of 6 feet and a maximum of 15 feet. Weight the sheeting at the foundation and along edges and seams. Erect vertical shrouds or suspend work if constant wind speed exceeds 20 mph or there is visible movement of debris beyond ground sheeting.

On a daily basis, collect dust and debris by HEPA vacuuming the surface and by wet sweeping. At the end of each workday, remove polyethylene sheeting and place in 6 mil disposal bags. Visually examine the immediate area to ensure that no lead debris has escaped containment. Wet sweep or rake up any debris found and place in 6 mil disposal bags. Securely store with other waste.

Suspend work activities during inclement weather; including but not limited to rain, snow, ice, and hail.

3.4 GENERAL

Score paint at edges, corners etc. to reduce chipping of paint. Carefully remove by wet scraping loose and flaking paint prior to removal of substrate in accordance with the following procedure:

- Fine mist the painted surface with wet wash detergent or water using plant mister or garden sprayer and carefully scrape loose and flaking material.
- Clean up paint chips and flakes by HEPA vacuuming or wet wiping with wet towels. Care shall be taken to avoid damage to adjacent areas during the removal of substrates.
- Using wet-demolition techniques, remove substrate from building framing or structural members by tooling the substrate from the structural members. Substrates coated with LBP

shall be kept wet at all times during the removal, cleanup, and containerizing of the substrates. Under no circumstances shall the contractor let the removed substrate drop more than six feet from its location to the floor or ground.

- Carefully remove the lead based painted substrates to minimize the disturbance of lead-based paint and the generation of lead dust.
- HEPA vacuum and/or wet wipe to remove all paint chips, debris and dust generated during the work. Do not allow dust or debris to accumulate.
- Substrates that are removed shall be wrapped, labeled and disposed of or disposed of in accordance with section 02067 - Disposal of Waste Materials - Lead-Based-Paint.

END OF SECTION 02064

SECTION 02065 - REMOVAL OF LOOSE AND FLAKING LEAD-BASED PAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Workplan sections, apply to work of this section.

1.2 SUMMARY OF WORK

Work of this section includes the removal and off-site disposal of lead-based paint from the following substrates.

Not Applicable: components coated with LBP will be chemically stripped and prepared for repainting per section 02066

The Architect/ Engineer or their designated representative, will be responsible for final inspection on completeness of preparation of the work surface

PART 2 - PRODUCTS

2.1 DISPOSAL BAGS/PLASTIC SHEETING: Provide 6 mil polyethylene disposal bags or wrap substrates to be disposed of in 6-mil polyethylene, sealed with duct tape.

2.2 Wet Detergent Wash: Provide detergent with a high phosphate content (at least 5%) trisodium phosphate (TSP). Follow dilution ratio recommended by the manufacturer's instructions.

PART 3 - EXECUTION

3.1 GENERAL

Carefully remove by wet scraping and/or sanding all loose and flaking paint in accordance with the procedures set forth in this section.

3.2 CRITICAL BARRIERS

Remove all removable furniture that has been designated uncontaminated by the Work Procedures or Consultant's Project Manager. Also remove uncontaminated equipment and/or supplies from the work area before commencing work, or completely cover with two (2) layers of polyethylene sheet at least 6 mil in thickness, securely taped in place with duct tape. Such furniture and equipment shall be considered outside the work area unless covering plastic or seal is breached.

Completely separate the work area from other portions of the building and the outside environment by closing all openings with sheet plastic barriers at least 6 mil in thickness or by sealing cracks with spray-foam, poly sheeting, and/or duct tape.

Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convector casings, spandrel panels, and speakers, and other openings into the work area polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all work, including project decontamination, is completed. Take care in sealing off lighting fixtures to avoid melting or burning the sheeting.

Clean all contaminated furniture, equipment, and/or supplies, prior to moving or covering, with a HEPA-filtered vacuum cleaner or by wet cleaning. All equipment or furniture is to be deemed contaminated unless specifically declared uncontaminated in writing by Consultant's Project Manager. Clean all surfaces in the work area with a HEPA-filtered vacuum or by wet wiping prior to installing the primary barrier.

Provide sheet plastic barriers at least 6 mil in thickness as required to completely seal openings from the work area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape or spray cement. Erect the entire assembly so that it hangs vertically without a "shelf" upon which debris could collect.

Provide a pressure differential system per Title 0900, Section 01513 - Temporary Pressure Differential and Air Circulation System.

3.3 PRIMARY BARRIER

Cover floors and other building surfaces not scheduled for removal with a primary barrier, as described below to protect these surfaces from water damage and high humidity and from contamination by lead dust.

Cover the floor of the work area with two individual layers of clear polyethylene sheeting, each at least 6 mil in thickness, lapped up on the walls at least 12 inches. Plastic shall be sized to minimize seams.

Form a sharp right-angle bend at the juncture of floor and wall so that there is no area of the sheeting that, if stepped on, would cause the wall attachment to be pulled loose.

3.4 SECONDARY BARRIER

Install as a drop cloth, a clear 6-mil sheet plastic in all areas where LBP removal work is to be carried out. Completely cover the floor with sheet plastic. Secure the sheet plastic in place with duct tape so that debris cannot filter behind it. Provide cross-strips of duct tape at the floor supports as necessary to support the sheet plastic and prevent its displacement during removal operations.

Install the secondary barrier at the beginning of each work shift. Install only sufficient plastic for work of that shift. Remove the secondary barrier at the end of each work shift or as work in an area is completed. Fold the plastic toward the center of the sheet and pack into disposal bags. Keep the material on the sheet continually wet until bagged.

3.5 REMOVAL OF LOOSE AND FLAKING PAINT

Apply a fine mist surface with wet wash detergent using plant mister or garden sprayer. Score the damaged paint at edges and corners to reduce chipping of paint. Carefully scrape loose and flaking material.

Where identified in the Reference Drawings, wet sanding will be required to prepare the substrate for repainting. Lightly sand with a moist sanding sponge or wet sandpaper to obtain a smooth transition edge between the remaining paint and the substrate.

HEPA vacuum and/or wet wipe to remove all paint chips, debris and dust generated during the work. Do not allow dust or debris to accumulate. Clean up paint chips and flakes by wet sweeping, HEPA vacuuming, or collecting in wet towels. Care shall be taken to avoid damage to adjacent areas during the removal of the loose and flaking paints.

At the end of each work shift, remove any paint chips, dust, and debris that collects on the sheeting and other surfaces by using a HEPA vacuum and by spraying with wet wash solution, collect debris with wet paper towels, place in disposal bags while still wet, and clean surface of sheeting and surfaces with wet cloths.

Empty HEPA vacuum and place contents into disposal bags. Place all rags, wet towels, and other disposable items used during the project into disposal bags. Tape the disposal bags shut with duct tape and wet wipe the exterior surfaces of all disposal bags and place in 55-gallon drums prior to exiting the work areas.

At the completion of work activities in each work area, wet wipe all surfaces, including floor sheeting with a wet detergent wash. Provide detergent with a high phosphate content (at least 5%) trisodium phosphate (TSP). Follow dilution ratio recommended by the manufacturer's instructions.

3.6 PRIMING AND SEALING

After complete drying, prepare the substrate and seal all surfaces where the loose and flaking lead-based paint was removed with a primer or encapsulant that is compatible with the substrate.

3.7 DAMAGES

Protect areas adjacent to substrates that are removed for replacement from damage caused by this work. Damages to non-protected areas or from lack of care shall be repaired or replaced at the Contractor's expense.

END OF SECTION 02065

SECTION 02066 - CHEMICAL STRIPPING OF LEAD-BASED PAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Workplan sections, apply to work of this section.

1.2 GENERAL

The following is a list of prohibited lead hazard removal methods:

- Open flame burning;
- Chemical stripping with methylene chloride-based paint strippers;
- Uncontained abrasive blasting;
- Uncontained power washing;
- Dry sanding or scraping;
- Power sanding;
- Sanding of wood after chemical stripping.

1.3 SUMMARY OF WORK

Work of this section includes the removal and off-site disposal of lead-based paint from the following substrates.

Room/ Location	Substrate	Location	Approx. Quantity
Exterior	Shiplap Ceiling White Wood	East Side Main Entrance	120 SF
Exterior	Door Frames Brown Wood	East Side Main Entrance	3 Door Frames
Interior	Window Frames Multi Colors Wood	Room A, B, D, East Side Restroom and Room C West Wall	29 Windows
Interior	Front of Stage Green Wood	Room C	70 SF

NOTE: LBP Remediation will be conducted in conjunction with asbestos abatement activities. If a conflict between the asbestos and LBP guidance occurs, the more stringent will be followed.

1.4 SUBMITTALS

Before start of work: Submit the following to the Consultant for review. Do not start work until these submittals are returned with Consultant approval indicating that the submittal is returned for unrestricted use.

1.4.1 Chemical Stripping Removers and Neutralizers

Submit product data, use instructions and recommendations from manufacturer for use intended. Include data substantiating that material complies with requirements.

1.4.2 Material Safety Data Sheet

Submit material safety data sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each chemical stripper and neutralizer, include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

PART 2 - PRODUCTS

2.1 Chemical Stripping Removers

Shall contain no methylene chloride products. Chemical removers shall be compatible with, and not harmful to, the substrate to which they are applied. The contractor shall comply with the manufacturer's recommendations for use of the product supplied.

2.2 Chemical Stripping Agent Neutralizer

Provide chemical agent neutralizer in accordance with manufacturer's recommendations. Neutralizers shall be compatible with and not harmful to the substrate. Neutralizers shall also be compatible with the stripping agent used.

2.3 Wet Detergent Wash

Provide detergent with a high phosphate content (at least 5%) trisodium phosphate (TSP). Follow dilution ratio recommended by the manufacturer's instructions.

PART 3 - EXECUTION

3.1 CHEMICAL LEAD-BASED PAINT REMOVAL ON-SITE

Chemical Stripping Agents and neutralizers shall be applied in accordance with the recommendations of the manufacturer.

3.2 Caustic Stripper Neutralization

Caustic strippers shall be neutralized in accordance with manufacturer's recommendations. Provide workers with proper protective equipment, including but not limited to; protective clothing (non-paper), chemically resistant gloves, eye protection and respiratory protection with filters selected for the hazards to be encountered.

3.3 Remove Stripper Sludge

Place lead containing stripper sludge in corrosion-proof containers and place in a secure waste storage area. The surface from which lead-based paint has been removed shall be thoroughly scrubbed, while still damp from the stripper, in accordance with the manufacturer's recommendation. Monitor pH of the neutralizing solution to ensure it has not become neutralized in the process. If the pH exceeds 6.5, or the solution becomes overly soiled, change solution. Solution may be classified as hazardous waste. Place in 55-gallon drums and test in accordance with Section 02067- Disposal of Waste Materials - Lead-Based Paint. The surface shall be tested with litmus paper following this process. If the litmus paper turns pink, the acid has effectively neutralized the alkali. If litmus turns blue continue scrubbing until satisfactory results are achieved.

3.4 Final Cleaning Of Surfaces

Prepare wet detergent wash. Workers must wear eye shields and chemically resistant gloves when working with this solution. Thoroughly scrub stripped surface to remove as much remaining lead residue as possible. The wash solution may also be hazardous waste, treat in accordance with Section 02067- Disposal of Waste Materials - Lead-Based Paint. Following wet detergent wash, perform a final wash with clear water to remove any traces of detergent. Sponges used in the clean-up process may not be reused and must be placed in double 4 mil or single 6 mil plastic bags, which will be sealed, labeled, and placed in the secure waste storage area. Surfaces must be allowed to dry thoroughly before repainting. A grayish film indicates that significant lead residues remain, and the cleaning process must be repeated. If a white powder appears, the surface is Alkaline and requires further neutralization.

3.4 Painting and Sealing

After complete drying, prepare the substrate and seal all surfaces where lead-based paint was removed with a primer or encapsulant that is compatible with the substrate.

END OF SECTION 02066

SECTION 02067 - DISPOSAL OF WASTE MATERIALS - LEAD-BASED PAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Workplan Sections, apply to work of this section.

1.2 DESCRIPTION OF THE WORK

This section describes the disposal of lead-containing or lead contaminated waste materials. Disposal includes packaging of waste materials.

1.3 SUBMITTALS:

Before the start of work, Contractor shall submit the following to the Owner's Consultant for review. Do not start work until these submittals are returned with Owner's Consultant action stamp indicating that the submittal is returned for unrestricted use.

- Contractor must ascertain that the facility owner is registered with the U.S. EPA as a generator of hazardous waste. If there is no generator status established, the contractor shall assist the owner in obtaining generator identification numbers.
- Copy of state or local license for waste hauler.
- U.S. EPA identification number of waste hauler.
- Name and address of waste disposal facility where hazardous waste materials are to be disposed. Include contact person and telephone number. Copy of state license and permit. Provide disposal facility permits.
- Copy of EPA "uniform hazardous waste manifest" form.
- Copy of EPA "notification of hazardous waste activity" form.
- Copy of forms required by state or local agencies.
- Sample disposal bag and labels to be used.

Submit copies of all manifests and disposal site receipts to Owner's Consultant

PART 2 - PRODUCTS

Disposal Bags: Provide 6 mil thick leak tight polyethylene bags or wrap components in 6 mil polyethylene sheeting and seal with duct tape. "Label with specific Hazardous Waste Label:"

For wrapped materials provide stick-on labels.

PART 3 - EXECUTION

3.1 GENERAL

All lead-based paint and lead-contaminated paint shall be treated as hazardous waste unless testing identifies the waste stream otherwise:

It shall be the responsibility of the Contractor to have each waste stream evaluated for determination of hazardous waste. Testing of waste shall be performed by a laboratory accredited by either the American Industrial Hygiene Association (AIHA) or the American Association of Laboratory Accreditation (AALA) retained by the contractor. Contractor shall include the cost of testing in the contract sum and supply all test results to the owner.

Sample analysis of each waste stream generated at the Site be performed by a qualified laboratory for Toxicity Characteristic Leaching Procedure (TCLP). The contractor shall pay for all samples obtained at the site for his use.

Waste steams tested that results in a lead content in the TCLP of greater than or equal to five parts per million (5ppm) is to be considered hazardous and shall be handled and disposed according to local, city, state, and federal regulations.

Place all waste generated during the project in a minimum of a single 6-mil disposal bags (or wrap in 6-mil polyethylene sheeting), place bag in DOT Approved 55-gallon steel drum and store in the designated storage area or in an enclosed dumpster.

Properly store and secure waste at all times. Do not leave debris in uncovered or unlocked trucks or dumpsters. Do not incinerate debris or use an unauthorized dumpster. Do not introduce lead contaminated water into storm or sanitary sewers. Do not permit recycling of building components coated with Lead-Based Paint.

3.2 DISPOSAL OF HAZARDOUS LIQUID OR SOLID WASTES

Comply with RCRA, DOT, STATE, and local regulations. Comply with DOT and STATE regulations for containers. The most stringent regulation shall apply.

Apply for an EPA identification number from the appropriate regional office if more than 100 kg of hazardous waste is generated from the lead hazard reduction process during any calendar month.

All waste is to be hauled by a licensed waste hauler with all required licenses from all state and local authorities with jurisdiction. Load all waste material into properly labeled disposal bags, polyethylene sheeting and leak-tight drums. All materials are to be contained as follows:

- One 6 mil layer of sheet polyethylene (duct tape all seams) or One 6 mil disposal bag; and
- Sealed steel drum

Protect interior of truck or dumpster with two layers of 6 mil polyethylene sheeting with all seams sealed with duct tape.

Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to ensure that no unauthorized persons have access to the material.

Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to the designated storage area, sealed truck, or dumpster,

Retain all documents from the disposal or treatment facility. At completion of hauling and disposal of each load submit copy of Uniform Hazardous Waste Manifest, to Owner's Project Monitor.

3.5 BACKCHARGES

Where Contractor fails to fulfill packaging, handling, or disposal requirements as outlined herein, Owner will charge back to Contractor all costs associated with insuring that hazardous wastes are packaged and segregated in accordance with EPA and DOT regulations.

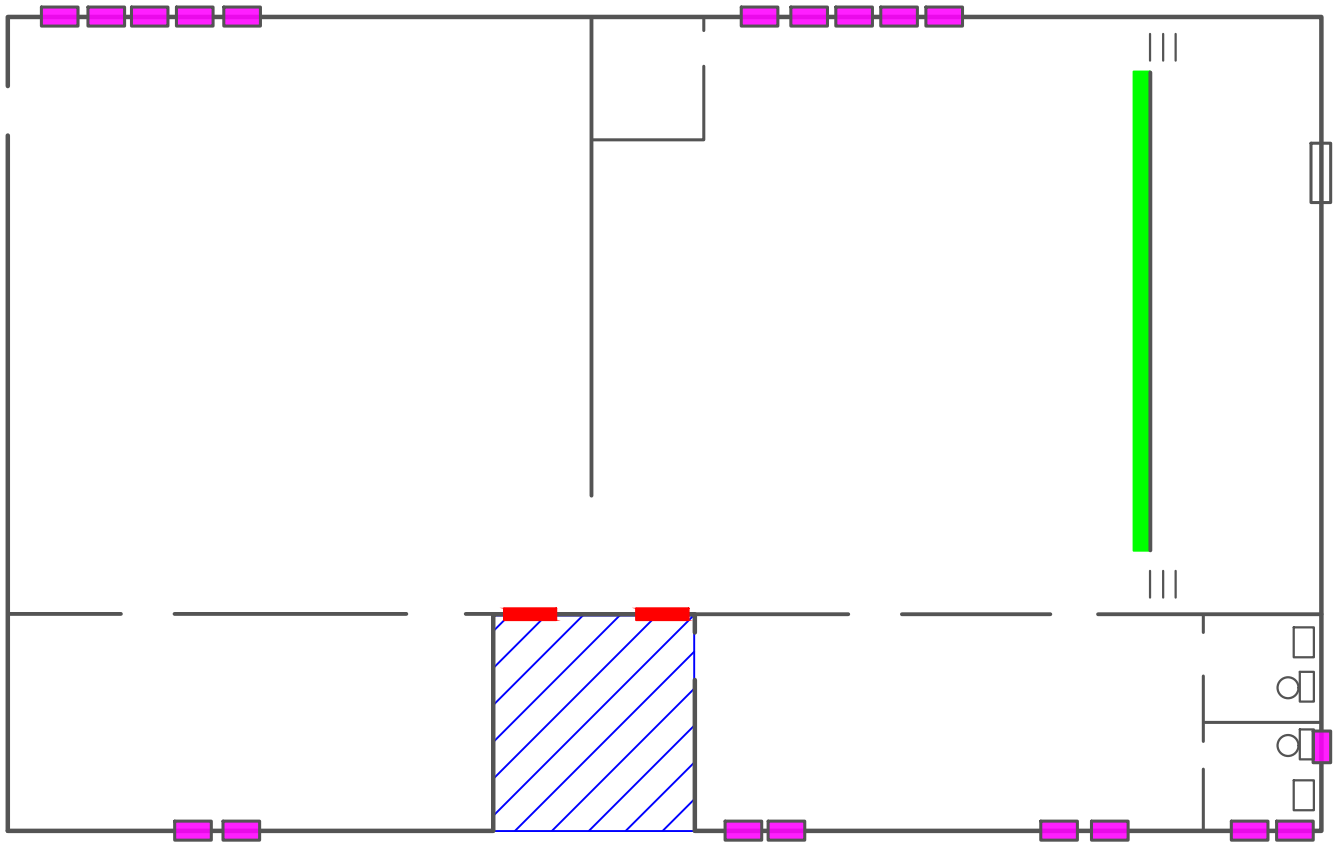
Environmental pollution of Owner's property resulting from Contractor's hazardous waste management activities shall be promptly remediated under Owner direction, to the Owner's sole satisfaction, and at the Contractor's sole expense.

Contractor agrees to either reimburse the Owner or reduce the Contract amount by change order to cover all costs associated with waste repackaging, waste re-segregation, or pollution remediation efforts.

END OF SECTION - 02067

APPENDIX A

REFERENCE DRAWING



Exterior Shiplap Ceiling Wood, White (~120 SQ FT)
Front of Stage Wood Paint, Green (~70 SQ FT)
Interior Wood Window Frames, Multi-colored (~29 Windows)
Exterior Wood Door Frames, Brown (~3 EA)

CHAMPION environmental consultants
109 West 7th Street
Suite 210
Georgetown, Texas 78626

CLIENT:
CITY OF DRIPPING SPRINGS
511 Mercer Street
Cripping Springs, Texas 78620

SITE: STEPHENSON BUILDING
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

C-ECI Project No. 23-1730
By: N Hackney
Approved By: W Champion
Submitted: 4/4/2024
Not To Scale

Lead-Based Paint Location Plan

Figure 1

1105

LEAD PAINT REMOVAL WORKPLAN

Stephenson Building
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

October 18, 2024

Project No. 23-1730

Prepared for:
City of Dripping Springs
511 Mercer Street
Dripping Springs, Texas 78620

And

Architexas
1023 Springdale Rd., Bldg. 11, Suite E
Austin, Texas 78721

Prepared by:



Wade Champion
Project Manager
TDLR Lead Inspector/Risk Assessor 2070357

LEAD BASED PAINT WORKPLAN

DIVISION 1 – GENERAL REQUIREMENTS

01014 Summary of the Work

DIVISION 2 – SITE WORK

Section 02064 - Removal of Lead-Based Paint Substrates

Section 02065 - Removal of Loose and Flaking Lead-Based Paint

Section 02066 - Chemical Stripping of Lead-Based Paint

Section 02067 - Disposal of Lead-Based Paint Waste Material

SECTION 01014 - SUMMARY OF THE WORK

PART 1 - GENERAL

The project name is "**Stephenson Building** Renovation Areas Lead Based Paint Workplan" as shown on the Contract Documents prepared by Owner. The workplan is dated **October 18, 2024**

All phases of the Work shall be executed by skilled craftsmen experienced in their respective trades. This section includes a general scope of work, while Division 2 includes a description of procedures for work procedures in each work area.

1.1 RELATED DOCUMENTS

General provisions of the Contract, including the General and Supplementary Conditions and other Division 1 General Requirements, apply to work of this section. Additional sections include:

Division 2 - Site Work

Section 02064 - Removal of Lead-Based Paint Substrates
Section 02065 - Removal of Loose and Flaking Lead-Based Paint
Section 02066 - Chemical Stripping of Lead-Based Paint
Section 02067 - Disposal of Lead-Based Paint Waste Material

1.2 SUMMARY OF WORK

The Work includes the removal or partial removal of lead-based paint or lead-based paint substrates identified in the designated areas of the Project which include.

Refer to the guidance herein: Work consists of stripping LBP from painted substrates.

Room/ Location	Substrate	Location	Approx. Quantity
Exterior	Shiplap Ceiling White Wood	East Side Main Entrance	120 SF
Exterior	Door Frames Brown Wood	East Side Main Entrance	3 Door Frames
Interior	Window Frames Multi Colors Wood	Room A, B, D, East Side Restroom and Room C West Wall	29 Windows
Interior	Front of Stage Green Wood	Room C	70 SF

The Work at the project shall commence on the date established by the Notice to Proceed and shall be completed within the time specified on the proposal form. The Work shall be performed in accordance with the requirements of all applicable sections of these Workplans. Contractor shall perform the Work in a manner that minimizes disruption to construction operations.

The Work includes the removal and disposal of lead-based paint, lead-based paint contaminated building materials according to the requirements of the following workplan sections in the sequence indicated:

Work:

Contractor will comply with applicable Codes, Regulations, and Standards. governmental agencies before start of work.

Contractor will provide Air Monitoring - Test Laboratory Services to demonstrate to the Owner so that the building areas beyond the work areas will remain uncontaminated. Air monitoring to determine required respiratory protection is the responsibility of Contractor.

Contractor will provide Worker Protection. Contractor will provide the equipment and procedures for protecting workers against lead contamination and other workplace hazards.

Work Procedures:

Section 02064 - Removal of Lead-Based Paint Substrates
Section 02065 - Removal of Loose and Flaking Lead-Based Paint
Section 02066 - Chemical Stripping of Lead-Based Paint
Section 02067 - Disposal of Lead-Based Paint Waste Material

1.3 WORK PLAN

Submit detailed plans of the procedures proposed for use in complying with the requirements of these Workplans. Include in the plans the locations and layouts of decontamination areas; the sequencing of lead work; the interface of trades involved in the performance of work; methods to be used to assure the safety of building occupants and visitors to the site; the disposal plan, including location of approved disposal site; and a detailed description of the methods to be employed to control pollution. Expand upon the use of the portable high-efficiency particulate air (HEPA) ventilation system, closing out of the building's heating, ventilation, and air conditioning (HVAC) system, method of removal to prevent visible emissions in work areas, and bagging of removed lead debris. The plan must be approved by the Consultant prior to commencement of work.

1.4 INSPECTION

Prior to commencement of work, inspect areas in which work will be performed. List damage to structure, surfaces, equipment, or surrounding properties noted during the inspection that could be misconstrued as damage resulting from the Work. Submit to Consultant prior to starting work.

1.5 POTENTIAL LEAD HAZARD

The disturbance or dislocation of lead-based painted materials may cause lead dust to be released into the building's atmosphere, thereby creating a potential health hazard to workers and building occupants. Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the hazard and of proper work procedures, which must be followed.

Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified lead-based paint, take appropriate continuous measures as necessary to protect all building occupants from the potential hazard of exposure to lead dust. Such measures shall

include the procedures and methods described herein, and compliance with regulations and guidelines of applicable federal, state, and local agencies.

1.6 STOP WORK

If Owner or Consultant presents a written Stop Work Order, immediately and automatically stop all work. Do not re-commence work until authorized by Consultant.

1.7 CONTRACTOR USE OF PREMISES

Limit use of the premises to the Work indicated, so as to allow for Owner occupancy and use by other trades required in the buildings. Confine operations at the site to the areas permitted under the Contract.

Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the Work while engaged in project construction.

Keep existing driveways and entrances serving the premises clear and available to Owner and his employees at all times. Do not use these areas for parking or storage of materials.

Do not encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas designated by Owner. If additional storage is necessary, obtain and pay for such storage off-site.

Lock automotive-type vehicles, such as passenger cars and trucks, and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place or accessible to unauthorized persons.

Maintain existing buildings in a safe and weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the buildings and their occupants during the construction period.

Keep public areas such as hallways, stairs, elevator lobbies, and toilet rooms free from accumulation of waste, rubbish, or construction debris.

Smoking or open fires will not be permitted within any of the buildings on the premises.

Except for toilet rooms designated by Owner for use by Contractor's personnel, use of existing toilets within the buildings, by Contractor and his personnel, will not be permitted.

1.8 LOADS AND STRESSES

Contractor shall have full responsibility for preventing overstresses of any structure or any part or member of the structure during the Work. Contractor shall fully check the effect of the operation in this regard and shall provide all support necessary.

1.9 VERIFICATION OF QUANTITIES

It is the responsibility of Contractor to verify all LBP locations and quantities of LBP in each work area. Contractor shall fully inform himself of the conditions relating to construction of the Work and employment of labor thereon. Failure to do so will not relieve a successful Offeror of his

obligation to furnish all material, equipment, and labor necessary to carry out the provisions of the Contract.

1.10 OWNER OCCUPANCY

Separate Contract: Owner has been awarded a separate contract for performance of certain construction operations at the site. Those operations will be conducted simultaneously with work under this Contract and Contractor shall work in cooperation with the other trades performing said operations.

Owner reserves the right to place and install equipment as necessary in areas of the building in which all lead removal and project decontamination procedures have been completed and to occupy such completed areas prior to substantial completion, provided that such occupancy does not substantially interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the Work or any part of the Work.

1.11 SUBMITTALS

Submit all required documents, identified in Section 01301 - Submittals, to Consultant for review prior to the start of work in any given work area. Do not begin work until these submittals are returned, approved by Owner and Consultant.

1.12 PROJECT SCHEDULE

The project is scheduled to begin on the date established in the Notice to Proceed and shall be completed as specified on the Proposal Form and in these Contract Documents. Contractor shall submit his work schedule to the Owner for approval. Work schedule shall be coordinated based on the availability of the work area and whether or not the building is occupied. Work hours will initially be scheduled as outlined in paragraph 1.2 of this Section.

Removal of lead-containing waste material from temporary storage inside containment to waste dumpsters shall be approved by the Owner or shall be conducted as otherwise specifically approved in writing. During transportation of all waste materials, the lead bags, dumpsters, and warning labels will be visually obscured from public view.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01014

SECTION 02064 - REMOVAL OF LEAD-BASED PAINTED SUBSTRATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Workplan sections, apply to work of this section.

1.2 SUMMARY OF WORK

Work of this section includes the removal and off-site disposal of the following lead-based painted substrates

Not Applicable: components coated with LBP will be chemically stripped and prepared for repainting per section 02066

1.3. EXISTING CONDITIONS

Existing conditions are reflected accurately to the best of Owner's knowledge. Should minor conditions be encountered that are not exactly as indicated, modification to the Work shall be made as required at no additional expense to Owner. Contractor is responsible for thoroughly familiarizing himself with all conditions and requirements of the Work, including Lead-Based Paint (LBP) locations and quantities, prior to submittal of a Proposal. Contractor shall refer to the attached tables, hereby listed in Appendix B of the Contract Documents for assistance in identifying LBP locations.

PART 2 - PRODUCTS

2.1 DISPOSAL BAGS/PLASTIC SHEETING

Provide 6 mil polyethylene disposal bags or wrap substrates to be disposed of in 6-mil polyethylene, sealed with duct tape.

2.2 WET DETERGENT WASH

Provide detergent with a high phosphate content (at least 5%) trisodium phosphate (TSP). Follow dilution ratio recommended by the manufacturer's instructions.

Wet Detergent Wash: Provide detergent or cleaning agent formulated to be effective in removing lead dust. Follow dilution ratio recommended by the manufacturer's instructions.

PART 3 - EXECUTION

Prior to initiating Work, Contractor shall ensure compliance with Section 01555 - Worker Protection - Lead Based Paint

3.1 SECURING WORK AREA:

Secure work area from access by occupants, staff or users of the building. Accomplish this where possible, by locking doors, windows, or other means of access to the area.

3.2 DEMARCATION OF REGULATED AREA:

Demarcate each exterior regulated area with a sheet plastic drop sheet and barricade fence. Provide barricade fence with support posts four feet (4') on center. Provide barrier-warning tape at perimeter with the following legend "Caution Lead Hazard - Do Not Enter Work Area Unless Authorized." Barricade fence shall be securely fastened and no closer than twelve feet (12') radius from the work.

3.3 EXTERIOR RENOVATION GENERAL PROCEDURES

The following precautions and procedures have application to the work of this section. Workers must exercise caution to avoid the release of lead dust into the air and to contain lead dust and debris on drop sheet.

Before start of work comply with requirement for worker protection and respiratory requirements as specified in the Contract Documents.

Do not allow eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics in the regulated area.

Provide one layer of 6-mil polyethylene sheeting as close to foundation as possible. Extend the sheeting out from the foundation a distance of 3 feet per story being abated or a minimum of 6 feet and a maximum of 15 feet. Weight the sheeting at the foundation and along edges and seams. Erect vertical shrouds or suspend work if constant wind speed exceeds 20 mph or there is visible movement of debris beyond ground sheeting.

On a daily basis, collect dust and debris by HEPA vacuuming the surface and by wet sweeping. At the end of each workday, remove polyethylene sheeting and place in 6 mil disposal bags. Visually examine the immediate area to ensure that no lead debris has escaped containment. Wet sweep or rake up any debris found and place in 6 mil disposal bags. Securely store with other waste.

Suspend work activities during inclement weather; including but not limited to rain, snow, ice, and hail.

3.4 GENERAL

Score paint at edges, corners etc. to reduce chipping of paint. Carefully remove by wet scraping loose and flaking paint prior to removal of substrate in accordance with the following procedure:

- Fine mist the painted surface with wet wash detergent or water using plant mister or garden sprayer and carefully scrape loose and flaking material.
- Clean up paint chips and flakes by HEPA vacuuming or wet wiping with wet towels. Care shall be taken to avoid damage to adjacent areas during the removal of substrates.
- Using wet-demolition techniques, remove substrate from building framing or structural members by tooling the substrate from the structural members. Substrates coated with LBP

shall be kept wet at all times during the removal, cleanup, and containerizing of the substrates. Under no circumstances shall the contractor let the removed substrate drop more than six feet from its location to the floor or ground.

- Carefully remove the lead based painted substrates to minimize the disturbance of lead-based paint and the generation of lead dust.
- HEPA vacuum and/or wet wipe to remove all paint chips, debris and dust generated during the work. Do not allow dust or debris to accumulate.
- Substrates that are removed shall be wrapped, labeled and disposed of or disposed of in accordance with section 02067 - Disposal of Waste Materials - Lead-Based-Paint.

END OF SECTION 02064

SECTION 02065 - REMOVAL OF LOOSE AND FLAKING LEAD-BASED PAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division-1 Workplan sections, apply to work of this section.

1.2 SUMMARY OF WORK

Work of this section includes the removal and off-site disposal of lead-based paint from the following substrates.

Not Applicable: components coated with LBP will be chemically stripped and prepared for repainting per section 02066

The Architect/ Engineer or their designated representative, will be responsible for final inspection on completeness of preparation of the work surface

PART 2 - PRODUCTS

2.1 DISPOSAL BAGS/PLASTIC SHEETING: Provide 6 mil polyethylene disposal bags or wrap substrates to be disposed of in 6-mil polyethylene, sealed with duct tape.

2.2 Wet Detergent Wash: Provide detergent with a high phosphate content (at least 5%) trisodium phosphate (TSP). Follow dilution ratio recommended by the manufacturer's instructions.

PART 3 - EXECUTION

3.1 GENERAL

Carefully remove by wet scraping and/or sanding all loose and flaking paint in accordance with the procedures set forth in this section.

3.2 CRITICAL BARRIERS

Remove all removable furniture that has been designated uncontaminated by the Work Procedures or Consultant's Project Manager. Also remove uncontaminated equipment and/or supplies from the work area before commencing work, or completely cover with two (2) layers of polyethylene sheet at least 6 mil in thickness, securely taped in place with duct tape. Such furniture and equipment shall be considered outside the work area unless covering plastic or seal is breached.

Completely separate the work area from other portions of the building and the outside environment by closing all openings with sheet plastic barriers at least 6 mil in thickness or by sealing cracks with spray-foam, poly sheeting, and/or duct tape.

Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convector casings, spandrel panels, and speakers, and other openings into the work area polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all work, including project decontamination, is completed. Take care in sealing off lighting fixtures to avoid melting or burning the sheeting.

Clean all contaminated furniture, equipment, and/or supplies, prior to moving or covering, with a HEPA-filtered vacuum cleaner or by wet cleaning. All equipment or furniture is to be deemed contaminated unless specifically declared uncontaminated in writing by Consultant's Project Manager. Clean all surfaces in the work area with a HEPA-filtered vacuum or by wet wiping prior to installing the primary barrier.

Provide sheet plastic barriers at least 6 mil in thickness as required to completely seal openings from the work area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape or spray cement. Erect the entire assembly so that it hangs vertically without a "shelf" upon which debris could collect.

Provide a pressure differential system per Title 0900, Section 01513 - Temporary Pressure Differential and Air Circulation System.

3.3 PRIMARY BARRIER

Cover floors and other building surfaces not scheduled for removal with a primary barrier, as described below to protect these surfaces from water damage and high humidity and from contamination by lead dust.

Cover the floor of the work area with two individual layers of clear polyethylene sheeting, each at least 6 mil in thickness, lapped up on the walls at least 12 inches. Plastic shall be sized to minimize seams.

Form a sharp right-angle bend at the juncture of floor and wall so that there is no area of the sheeting that, if stepped on, would cause the wall attachment to be pulled loose.

3.4 SECONDARY BARRIER

Install as a drop cloth, a clear 6-mil sheet plastic in all areas where LBP removal work is to be carried out. Completely cover the floor with sheet plastic. Secure the sheet plastic in place with duct tape so that debris cannot filter behind it. Provide cross-strips of duct tape at the floor supports as necessary to support the sheet plastic and prevent its displacement during removal operations.

Install the secondary barrier at the beginning of each work shift. Install only sufficient plastic for work of that shift. Remove the secondary barrier at the end of each work shift or as work in an area is completed. Fold the plastic toward the center of the sheet and pack into disposal bags. Keep the material on the sheet continually wet until bagged.

3.5 REMOVAL OF LOOSE AND FLAKING PAINT

Apply a fine mist surface with wet wash detergent using plant mister or garden sprayer. Score the damaged paint at edges and corners to reduce chipping of paint. Carefully scrape loose and flaking material.

Where identified in the Reference Drawings, wet sanding will be required to prepare the substrate for repainting. Lightly sand with a moist sanding sponge or wet sandpaper to obtain a smooth transition edge between the remaining paint and the substrate.

HEPA vacuum and/or wet wipe to remove all paint chips, debris and dust generated during the work. Do not allow dust or debris to accumulate. Clean up paint chips and flakes by wet sweeping, HEPA vacuuming, or collecting in wet towels. Care shall be taken to avoid damage to adjacent areas during the removal of the loose and flaking paints.

At the end of each work shift, remove any paint chips, dust, and debris that collects on the sheeting and other surfaces by using a HEPA vacuum and by spraying with wet wash solution, collect debris with wet paper towels, place in disposal bags while still wet, and clean surface of sheeting and surfaces with wet cloths.

Empty HEPA vacuum and place contents into disposal bags. Place all rags, wet towels, and other disposable items used during the project into disposal bags. Tape the disposal bags shut with duct tape and wet wipe the exterior surfaces of all disposal bags and place in 55-gallon drums prior to exiting the work areas.

At the completion of work activities in each work area, wet wipe all surfaces, including floor sheeting with a wet detergent wash. Provide detergent with a high phosphate content (at least 5%) trisodium phosphate (TSP). Follow dilution ratio recommended by the manufacturer's instructions.

3.6 PRIMING AND SEALING

After complete drying, prepare the substrate and seal all surfaces where the loose and flaking lead-based paint was removed with a primer or encapsulant that is compatible with the substrate.

3.7 DAMAGES

Protect areas adjacent to substrates that are removed for replacement from damage caused by this work. Damages to non-protected areas or from lack of care shall be repaired or replaced at the Contractor's expense.

END OF SECTION 02065

SECTION 02066 - CHEMICAL STRIPPING OF LEAD-BASED PAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Workplan sections, apply to work of this section.

1.2 GENERAL

The following is a list of prohibited lead hazard removal methods:

- Open flame burning;
- Chemical stripping with methylene chloride-based paint strippers;
- Uncontained abrasive blasting;
- Uncontained power washing;
- Dry sanding or scraping;
- Power sanding;
- Sanding of wood after chemical stripping.

1.3 SUMMARY OF WORK

Work of this section includes the removal and off-site disposal of lead-based paint from the following substrates.

Room/ Location	Substrate	Location	Approx. Quantity
Exterior	Shiplap Ceiling White Wood	East Side Main Entrance	120 SF
Exterior	Door Frames Brown Wood	East Side Main Entrance	3 Door Frames
Interior	Window Frames Multi Colors Wood	Room A, B, D, East Side Restroom and Room C West Wall	29 Windows
Interior	Front of Stage Green Wood	Room C	70 SF

NOTE: LBP Remediation will be conducted in conjunction with asbestos abatement activities. If a conflict between the asbestos and LBP guidance occurs, the more stringent will be followed.

1.4 SUBMITTALS

Before start of work: Submit the following to the Consultant for review. Do not start work until these submittals are returned with Consultant approval indicating that the submittal is returned for unrestricted use.

1.4.1 Chemical Stripping Removers and Neutralizers

Submit product data, use instructions and recommendations from manufacturer for use intended. Include data substantiating that material complies with requirements.

1.4.2 Material Safety Data Sheet

Submit material safety data sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each chemical stripper and neutralizer, include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

PART 2 - PRODUCTS

2.1 Chemical Stripping Removers

Shall contain no methylene chloride products. Chemical removers shall be compatible with, and not harmful to, the substrate to which they are applied. The contractor shall comply with the manufacturer's recommendations for use of the product supplied.

2.2 Chemical Stripping Agent Neutralizer

Provide chemical agent neutralizer in accordance with manufacturer's recommendations. Neutralizers shall be compatible with and not harmful to the substrate. Neutralizers shall also be compatible with the stripping agent used.

2.3 Wet Detergent Wash

Provide detergent with a high phosphate content (at least 5%) trisodium phosphate (TSP). Follow dilution ratio recommended by the manufacturer's instructions.

PART 3 - EXECUTION

3.1 CHEMICAL LEAD-BASED PAINT REMOVAL ON-SITE

Chemical Stripping Agents and neutralizers shall be applied in accordance with the recommendations of the manufacturer.

3.2 Caustic Stripper Neutralization

Caustic strippers shall be neutralized in accordance with manufacturer's recommendations. Provide workers with proper protective equipment, including but not limited to; protective clothing (non-paper), chemically resistant gloves, eye protection and respiratory protection with filters selected for the hazards to be encountered.

3.3 Remove Stripper Sludge

Place lead containing stripper sludge in corrosion-proof containers and place in a secure waste storage area. The surface from which lead-based paint has been removed shall be thoroughly scrubbed, while still damp from the stripper, in accordance with the manufacturer's recommendation. Monitor pH of the neutralizing solution to ensure it has not become neutralized in the process. If the pH exceeds 6.5, or the solution becomes overly soiled, change solution. Solution may be classified as hazardous waste. Place in 55-gallon drums and test in accordance with Section 02067- Disposal of Waste Materials - Lead-Based Paint. The surface shall be tested with litmus paper following this process. If the litmus paper turns pink, the acid has effectively neutralized the alkali. If litmus turns blue continue scrubbing until satisfactory results are achieved.

3.4 Final Cleaning Of Surfaces

Prepare wet detergent wash. Workers must wear eye shields and chemically resistant gloves when working with this solution. Thoroughly scrub stripped surface to remove as much remaining lead residue as possible. The wash solution may also be hazardous waste, treat in accordance with Section 02067- Disposal of Waste Materials - Lead-Based Paint. Following wet detergent wash, perform a final wash with clear water to remove any traces of detergent. Sponges used in the clean-up process may not be reused and must be placed in double 4 mil or single 6 mil plastic bags, which will be sealed, labeled, and placed in the secure waste storage area. Surfaces must be allowed to dry thoroughly before repainting. A grayish film indicates that significant lead residues remain, and the cleaning process must be repeated. If a white powder appears, the surface is Alkaline and requires further neutralization.

3.4 Painting and Sealing

After complete drying, prepare the substrate and seal all surfaces where lead-based paint was removed with a primer or encapsulant that is compatible with the substrate.

END OF SECTION 02066

SECTION 02067 - DISPOSAL OF WASTE MATERIALS - LEAD-BASED PAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Workplan Sections, apply to work of this section.

1.2 DESCRIPTION OF THE WORK

This section describes the disposal of lead-containing or lead contaminated waste materials. Disposal includes packaging of waste materials.

1.3 SUBMITTALS:

Before the start of work, Contractor shall submit the following to the Owner's Consultant for review. Do not start work until these submittals are returned with Owner's Consultant action stamp indicating that the submittal is returned for unrestricted use.

- Contractor must ascertain that the facility owner is registered with the U.S. EPA as a generator of hazardous waste. If there is no generator status established, the contractor shall assist the owner in obtaining generator identification numbers.
- Copy of state or local license for waste hauler.
- U.S. EPA identification number of waste hauler.
- Name and address of waste disposal facility where hazardous waste materials are to be disposed. Include contact person and telephone number. Copy of state license and permit. Provide disposal facility permits.
- Copy of EPA "uniform hazardous waste manifest" form.
- Copy of EPA "notification of hazardous waste activity" form.
- Copy of forms required by state or local agencies.
- Sample disposal bag and labels to be used.

Submit copies of all manifests and disposal site receipts to Owner's Consultant

PART 2 - PRODUCTS

Disposal Bags: Provide 6 mil thick leak tight polyethylene bags or wrap components in 6 mil polyethylene sheeting and seal with duct tape. "Label with specific Hazardous Waste Label:"

For wrapped materials provide stick-on labels.

PART 3 - EXECUTION

3.1 GENERAL

All lead-based paint and lead-contaminated paint shall be treated as hazardous waste unless testing identifies the waste stream otherwise:

It shall be the responsibility of the Contractor to have each waste stream evaluated for determination of hazardous waste. Testing of waste shall be performed by a laboratory accredited by either the American Industrial Hygiene Association (AIHA) or the American Association of Laboratory Accreditation (AALA) retained by the contractor. Contractor shall include the cost of testing in the contract sum and supply all test results to the owner.

Sample analysis of each waste stream generated at the Site be performed by a qualified laboratory for Toxicity Characteristic Leaching Procedure (TCLP). The contractor shall pay for all samples obtained at the site for his use.

Waste steams tested that results in a lead content in the TCLP of greater than or equal to five parts per million (5ppm) is to be considered hazardous and shall be handled and disposed according to local, city, state, and federal regulations.

Place all waste generated during the project in a minimum of a single 6-mil disposal bags (or wrap in 6-mil polyethylene sheeting), place bag in DOT Approved 55-gallon steel drum and store in the designated storage area or in an enclosed dumpster.

Properly store and secure waste at all times. Do not leave debris in uncovered or unlocked trucks or dumpsters. Do not incinerate debris or use an unauthorized dumpster. Do not introduce lead contaminated water into storm or sanitary sewers. Do not permit recycling of building components coated with Lead-Based Paint.

3.2 DISPOSAL OF HAZARDOUS LIQUID OR SOLID WASTES

Comply with RCRA, DOT, STATE, and local regulations. Comply with DOT and STATE regulations for containers. The most stringent regulation shall apply.

Apply for an EPA identification number from the appropriate regional office if more than 100 kg of hazardous waste is generated from the lead hazard reduction process during any calendar month.

All waste is to be hauled by a licensed waste hauler with all required licenses from all state and local authorities with jurisdiction. Load all waste material into properly labeled disposal bags, polyethylene sheeting and leak-tight drums. All materials are to be contained as follows:

- One 6 mil layer of sheet polyethylene (duct tape all seams) or One 6 mil disposal bag; and
- Sealed steel drum

Protect interior of truck or dumpster with two layers of 6 mil polyethylene sheeting with all seams sealed with duct tape.

Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to ensure that no unauthorized persons have access to the material.

Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to the designated storage area, sealed truck, or dumpster,

Retain all documents from the disposal or treatment facility. At completion of hauling and disposal of each load submit copy of Uniform Hazardous Waste Manifest, to Owner's Project Monitor.

3.5 BACKCHARGES

Where Contractor fails to fulfill packaging, handling, or disposal requirements as outlined herein, Owner will charge back to Contractor all costs associated with insuring that hazardous wastes are packaged and segregated in accordance with EPA and DOT regulations.

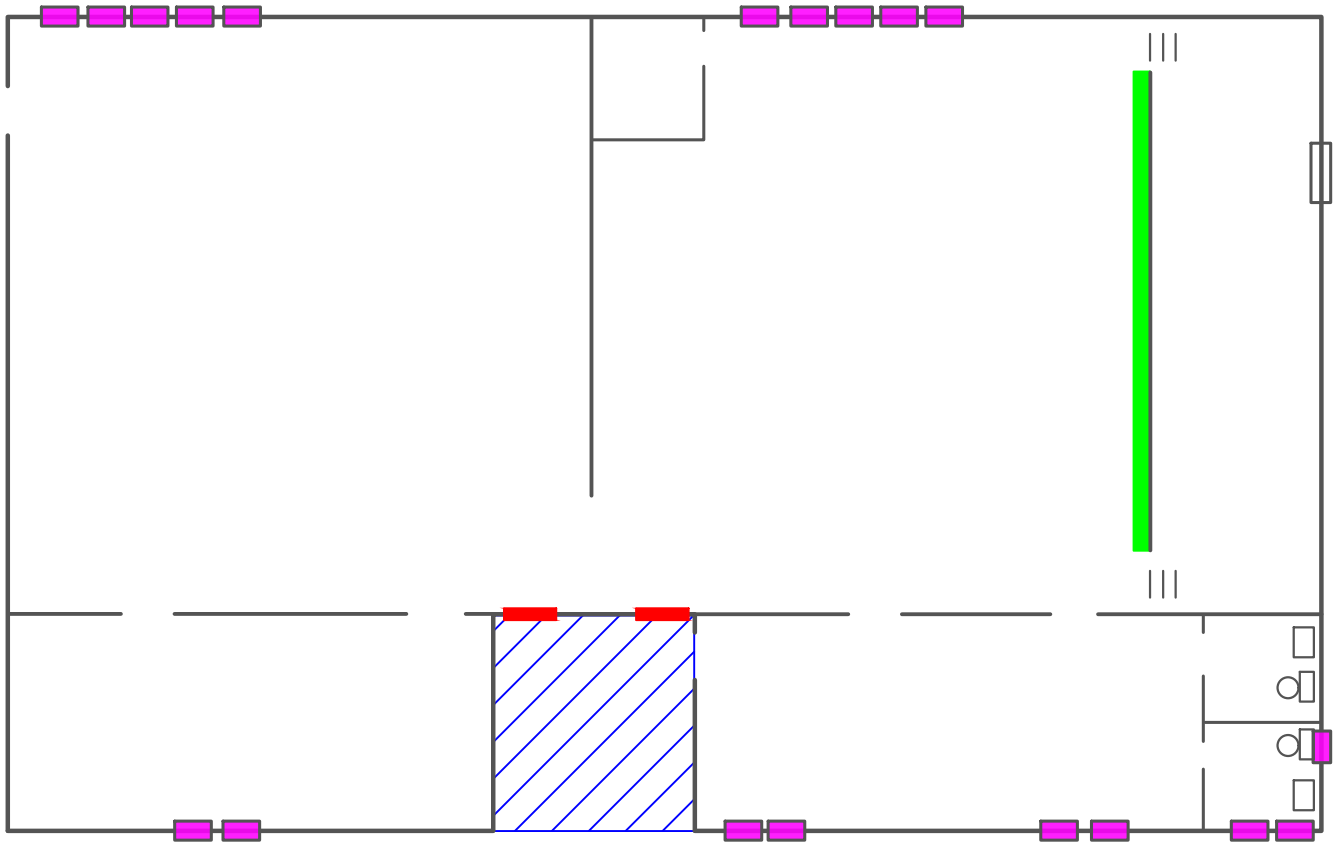
Environmental pollution of Owner's property resulting from Contractor's hazardous waste management activities shall be promptly remediated under Owner direction, to the Owner's sole satisfaction, and at the Contractor's sole expense.

Contractor agrees to either reimburse the Owner or reduce the Contract amount by change order to cover all costs associated with waste repackaging, waste re-segregation, or pollution remediation efforts.

END OF SECTION - 02067

APPENDIX A

REFERENCE DRAWING



Exterior Shiplap Ceiling Wood, White (~120 SQ FT)
Front of Stage Wood Paint, Green (~70 SQ FT)
Interior Wood Window Frames, Multi-colored (~29 Windows)
Exterior Wood Door Frames, Brown (~3 EA)

CHAMPION environmental consultants
109 West 7th Street
Suite 210
Georgetown, Texas 78626

CLIENT:
CITY OF DRIPPING SPRINGS
511 Mercer Street
Cripping Springs, Texas 78620

SITE: STEPHENSON BUILDING
101 Old Fitzhugh Road
Dripping Springs, Texas 78620

C-ECI Project No. 23-1730
By: N Hackney
Approved By: W Champion
Submitted: 4/4/2024
Not To Scale

Lead-Based Paint Location Plan

Figure 1

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. *See* Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of vendor who has a business relationship with local governmental entity.**

QA Construction Services, Inc.

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.** (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 **Name of local government officer about whom the information is being disclosed.**

N/A

Name of Officer

4 **Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.**

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐ Yes ☒ No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐ Yes ☒ No

5 **Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.**

6 ☐ Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7

Shay Traweek

Signature of vendor doing business with the governmental entity

09/25/2025

Date

CONFLICT OF INTEREST QUESTIONNAIRE
For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;

(B) a transaction conducted at a price and subject to terms available to the public; or

(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

***

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds $2,500 during the 12-month period preceding the date that the officer becomes aware that

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than $100 in the 12-month period preceding the date the officer becomes aware that:

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.

(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(2) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or

(C) of a family relationship with a local government officer.

Council Meeting Date: October 7, 2025

AGENDA ITEM COVER SHEET

SUBJECT:

1. Presentation and discussion regarding Plan of Finance for the "City of Dripping Springs, Texas Special Assessment Revenue Bonds, Series 2025 (Heritage Public Improvement District Improvement Area #3A and Improvement Area #3B Project)"
2. Consideration and possible action with respect to a "Resolution of the City Council of the City of Dripping Springs, Texas, Determining Costs of the Proposed Public Improvements in the Heritage Public Improvement District, Approving a Proposed Improvement Area #3A Assessment Roll and Proposed Improvement Area #3B Assessment Roll, Calling a Public Hearing, and Making Related Findings and Determinations, in Accordance With Chapter 372 of the Texas Local Government Code"

ITEM SUMMARY/SPECIAL CONSIDERATIONS:

On November 14, 2017, the Council adopted Resolution No. 2017-74 authorizing the creation of the Heritage Public Improvement District (the "PID") after a public hearing in accordance with Chapter 372, Texas Local Government Code, as amended (the "PID Act"). The PID is expected to be developed in phases. The area designated as "Improvement Area #3" within the District ("Improvement Area #3") is the next phase of development in the PID. The PID consists of approximately 188.943 acres and Improvement Area #3 includes approximately 29.78 total acres. Improvement Area #3 consists of Improvement Area #3A and Improvement Area #3B. Improvement Area #3A is expected to include approximately 97 single-family lots and Improvement Area #3B is expected to include approximately 67 single-family lots. The future improvement areas are expected to include approximately 113 single-family lots and approximately 105 multifamily units. The City is authorized by the PID Act to issue revenue bonds payable from the Assessments levied within Improvement Area #3A and Improvement Area #3B (the "Improvement Area #3A Assessments" and the "Improvement Area #3B Assessments," respectively) for the purpose of paying a portion of the actual costs of the authorized improvements constructed for the benefit of property within Improvement Area #3A and Improvement Area #3B of the PID.

The PID Act requires preparation of a service plan covering a period of at least five years and defining the annual indebtedness and projected cost of the public improvements ("Authorized Improvements") to be funded through the Improvement Area #3A Assessments and the Improvement Area #3B Assessments. The PID Act also requires preparation of an assessment roll stating the amount of special assessment against individual parcels of land in the PID determined by the method chosen by the City consistently with the PID Act.

P3 Works, LLC ("P3") has prepared, on behalf of the City, a Preliminary Service and Assessment Plan (the "PSAP") which includes a description of the proposed Authorized Improvements, determines the cost of those improvements, and includes a proposed Improvement Area #3A Assessment Roll and Improvement Area #3A Assessment Roll.

This item requests that the City Council pass and approve the attached Resolution, which makes certain findings regarding the nature of the Improvement Area #3A Authorized Improvements and the Improvement Area #3B Authorized Improvements, the cost of the Improvement Area #3A Authorized Improvements and the Improvement Area #3B Authorized Improvements, and approving the proposed Improvement Area #3A Assessment Roll the proposed Improvement Area #3B Assessment Roll (all of which information is included in the PSAP attached to the Resolution). On the City Council's approval, the proposed Improvement Area #3A Assessment Roll and the proposed Improvement Area #3B Assessment Roll will be made available for public inspection at the Office of the City Secretary and notice of the public hearing to consider the proposed Improvement Area #3A Assessments and the proposed Improvement Area #3B Assessments will be published in accordance with the PID Act.

In conjunction with the City Council's consideration of an ordinance levying the Improvement Area #3A Assessments and the Improvement Area #3B Assessments on land in the PID, and after notice and a public hearing,

City staff will bring forward a proposed ordinance levying the Improvement Area #3A Assessments and Improvement Ares #3B Assessments on land within Improvement Area #3A and Improvement Area #3B of the PID, respectively, approving the final Service and Assessment Plan (SAP), and approving the final Improvement Area #3A Assessment Roll and Improvement Area #3B Assessment Roll.

COMMENTS

The bond ordinance and related sale, along with the assessment ordinance, are currently planned for the October 21, 2025 Council agenda, after actual interest rates are determined. The PID Bonds are currently anticipated to close on November 18, 2025.

ATTACHMENTS:
Cost Determination Resolution

CITY OF DRIPPING SPRINGS, TEXAS
Special Assessment Revenue Bonds, Series 2025
(Heritage Public Improvement District – IA #3 Project)
Schedule of Events as of September 15, 2025

Sep-25						
S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Holiday

Oct-25						
S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Holiday

Nov-25						
S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Holiday

Dec-25						
S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Holiday

Date	Event
COMPLETED	• **Deadline** to submit responses to Due Diligence Questionnaires (City and Developer) to Underwriter's Counsel
COMPLETED	• **Deadline** to submit initial draft of Trust Indenture
September 18, 2025	• Updated DRAFT of Preliminary Amended and Restated Service and Assessment Plan distributed for review and comments
September 22, 2025	• **Deadline** to submit comments to the updated DRAFT Preliminary Service and Assessment Plan • Updated DRAFT of Trust Indenture distributed for review and comments
September 24, 2025	• **Deadline** to submit agenda language for the October 7, 2025 City Council Meeting (Bond Counsel) • DRAFT of Preliminary Amended and Restated Service and Assessment Plan distributed for final review and comments
September 25, 2025	• **Deadline** to submit comments to the updated DRAFT Trust Indenture
September 26, 2025	• **Deadline** to submit final comments to the update DRAFT Preliminary Service and Assessment Plan • **Deadline** to circulate DRAFT Preliminary Limited Offering Memorandum for review and comments
September 29, 2025	• **Deadline** to submit materials and forms of documents to be discussed and considered at Council meeting on October 7, 2025 (by 3pm) • DRAFT of Trust Indenture distributed for final review and comments
October 1, 2025	• **Deadline** to submit final comments to the Trust Indenture

October 3, 2025	• **Deadline** to submit final draft of the Trust Indenture • Submit public hearing notice to newspaper of general circulation in the City (City Staff and Bond Counsel)
October 7, 2025	**REGULAR CITY COUNCIL MEETING:** • Discuss Plan of Finance • Consider Resolution determining costs of authorized improvements, calling public hearing on assessment levy, approving a Preliminary Service and Assessment Plan and proposed assessment rolls; and directing publication and mailing of notice of October 21, 2025 public hearing
October 8, 2025	• File proposed assessment rolls with City Secretary and make available for public inspection (City Staff and P3Works) • Mail notices to property owners of October 21, 2025 assessment public hearing (City Staff and MWSW) • Publish Notice of October 21, 2025 Public Hearing for Assessment Levy within IA #3 of the Heritage Public Improvement District in newspaper of general circulation in the City • **Deadline** to submit agenda language for the October 21, 2025 City Council Meeting (Bond Counsel) • **Deadline** to submit final comments to the Continuing Disclosure Agreements and Preliminary Limited Offering Memorandum ("PLOM")
October 9, 2025	• **Deadline** to publish PLOM and begin marketing of the Bonds
October 10, 2025	• **Deadline** to submit materials and forms of documents to be discussed and considered at Council meeting on October 21, 2025 (by 3pm)
October 21, 2025	**CITY COUNCIL MEETING:** • Conduct Public Hearing on Levy of Assessments on IA #3 of the Heritage Public Improvement District • Consider ordinance approving the Amended and Restated Service and Assessment Plan and levy of assessments on IA #3 of the Heritage Public Improvement District • Consider ordinance authorizing the issuance of the Series 2025 IA #3 Bonds Project, and approving Trust Indentures, Bond Purchase Agreements, Continuing Disclosure Agreements, the final Limited Offering Memorandum, and other related matters
November 18, 2025	• Bond closing and delivery of funds to Trustee

Weekly Status Update Calls Every Monday at 3pm
City Council Meetings the 1st and 3rd Tuesdays of the month

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City of Dripping Springs, Texas

Heritage Public Improvement District

Improvement Areas #3A and #3B Project

Series 2025 Special Assessment Revenue Bonds

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October 7, 20

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Heritage Public Improvement District Financing Summary

- Amended Public Improvement District Financing Agreement approved on December 20, 2022
  - $27,500,000 Assessments/Bonds for the entire District/Project
  - Assessments to be levied and Bonds to be issued in phases as development progresses
  - Fixed assessments for all phases of the Project regardless of when assessments are levied and bonds issued for any phase/improvement area
  - Assessments/Bonds amortized over a 30-year period (per phase)
  - City prepares and controls the Service and Assessment Plan
  - City structuring of PID Bonds and control of bond issuance process
  - PID Bonds issued after qualified improvements are in place and accepted by the City (reimbursement financing structure)
- Offsite Road and Trail Financing by Developer (no changes from 2017)
- Wastewater Impact Fees pursuant to a Wastewater Agreement with Developer (No changes from 2017)

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Heritage Public Improvement District Development Summary

IMPROVEMENT AREA #1

Category	No. of Units	Finished Lot Unit Value	Finished Home Unit Value	*Expected* Area 1 Finished Lots Value	*Expected* Area 1 Buildout Value
SF 35'	0	$ 97,300	$ 420,000	$ -	$ -
SF 40'	12	111,200	450,399	1,334,400	5,404,788
SF 45'	100	125,100	498,224	12,510,000	49,822,400
SF 50'	46	139,000	558,223	6,394,000	25,678,258
Multifamily	0	30,000	150,000	-	-
	158			$20,238,400	$80,905,446
Weighted Average Value				*$128,091*	*$512,060*

IMPROVEMENT AREA #2

Category	No. of Units	*Expected* Finished Lot Unit Value	*Expected* Finished Home Unit Value	*Expected* Area 2 Finished Lots Value	*Expected* Area 2 Buildout Value
SF 35'	6	$ 97,300	$ 420,000	$ 583,800	$ 2,520,000
SF 40'	68	111,200	450,399	7,561,600	30,627,132
SF 45'	74	125,100	498,224	9,257,400	36,868,576
SF 50'	12	139,000	558,223	1,668,000	6,698,676
Multifamily	0	30,000	150,000	-	-
	160			$19,070,800	$76,714,384
Weighted Average Value				*$119,193*	*$479,465*

IMPROVEMENT AREAS #3A AND #3B

Category	**No. of Units**	***Expected* Finished Lot Unit Value**	***Expected* Finished Home Unit Value**	***Expected* Area 2 Finished Lots Value**	***Expected* Area 2 Buildout Value**
SF 35'	**45**	**$ 97,300**	**$ 420,000**	**$ 4,378,500**	**$18,900,000**
SF 40'	**34**	**111,200**	**450,399**	**3,780,800**	**15,313,566**
SF 45'	**58**	**125,100**	**498,224**	**7,255,800**	**28,896,992**
SF 50'	**27**	**139,000**	**558,223**	**3,753,000**	**15,072,021**
Multifamily	**0**	**30,000**	**150,000**	**-**	**-**
	164			**$19,168,100**	**$78,182,579**
Weighted Average Value				***$116,879***	***$476,723***

FUTURE IMPROVEMENT AREA #4

Category	No. of Units	*Expected* Finished Lot Unit Value	*Expected* Finished Home Unit Value	*Expected* Area 2 Finished Lots Value	*Expected* Area 2 Buildout Value
SF 35'	0	$ 97,300	$ 420,000	$ -	$ -
SF 40'	0	111,200	450,399	-	-
SF 45'	76	125,100	498,224	9,507,600	37,865,024
SF 50'	39	139,000	558,223	5,421,000	21,770,697
Multifamily	103	30,000	150,000	3,090,000	15,450,000
	218			$18,018,600	$75,085,721
Weighted Average Value				*$82,654*	*$344,430*

Notes:

Development Plan and expected finished home values as reported by the Developer on August 28, 2025 and September 30, 2025.

SF 35', 40', 45' and 50' finished lot values as per the most recent Appraisal; Multifamily calculated at 1/5 of the expected finished unit value for illustration and discussion purposes only, subject to change.

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District Assessments/Bonds

	Assessments/ Bonds
Improvement Area #1 Assessments/Bonds (Actual)	$7,043,000
Improvement Area #2 Assessments/Bonds (Actual)	$6,873,000
Improvement Areas #3A and #3B Assessments/Bonds (Proposed)	*$7,021,000*
Future Improvement Area #4 Assessments/Bonds (Expected)	*$6,563,000*
Total Assessments/Bonds for Heritage Project	**$27,500,000**

- $7,043,000 Series 2023 Bonds (issued in June 2023) secured solely by assessment revenue from Improvement Area #1 of the Heritage PID

- $6,873,000 Series 2024 Bonds (issued in September 2024) secured solely by assessment revenue from Improvement Area #2 of the Heritage PID

- **$7,021,000 Series 2025 Bonds (to be issued in October 2025) secured solely by assessment revenue from Improvement Areas #3A and #3B of the Heritage PID**

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District Special Assessment Revenue Bonds

- City's full faith and credit does NOT secure the Bonds
- City's enterprise funds' revenues do NOT secure the Bonds
- Assessment revenues from previous or future improvement areas do NOT secure the Improvement Areas #3A and #3B Bonds

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Improvement Areas #3A and #3B Bonds Preliminary Sources and Uses of Funds

Bond Issuance Date	*10/21/2025*
Bond Delivery/Closing Date	*11/18/2025*

	IMPROVEMENT AREAS #3A AND #3B SERIES 2025 BONDS
SOURCES OF FUNDS	
PID Bonds[1]	$ 7,021,000
Other Sources	2,591,657
Total Sources of Funds	**$ 9,612,657**
USES OF FUNDS	
Project Funds	
Bond Proceeds	$ 5,453,892
Other Sources	2,591,657
Subtotal Total Project Funds[2]	**$ 8,045,549**
Capitalized Interest Fund[3]	$ 331,157
Debt Service Reserve Fund[4]	520,460
Underwriter's Discount	210,630
Costs of Issuance[5]	454,861
Deposit to Admin Account[6]	50,000
Subtotal Non-Construction Funds	**$ 1,567,108**
Total Uses of Funds	**$ 9,612,657**

Notes:

(1) Maximum par amount of IA #3 Bonds is $7,021,000.

(2) $8,045,549 Total Authorized Costs as reported in Preliminary Service and Assessment Plan.

(3) Capitalized interest through September 1, 2026.

(4) Equal to the maximum annual debt service payment on the bonds.

(5) Budgeted, subject to change.

(6) Initial deposit to cover administrative expenses through January 31, 2027.

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Improvement Areas #3A and #3B Bonds Preliminary Statistics

Budgeted Nominal Bond Interest Rate[(1)]	6.00%
Bond Term	30 Years
Final Maturity	9/1/2055
Value to Lien at Bond Financing[(2)]	2.24x
Number of Parcels Assessed	164
Average Assessment/Lien per Unit	$42,811
Average Annual Installment as Tax Rate Equivalent	$0.7586
Average Annual Installment per Parcel	$3,616
Annual Installments begin in Calendar Year	2027
PID Bond Net Proceeds per Lot	$33,255

Notes:

(1) Preliminary, subject to change at any time.

(2) Appraisal for IA #3 bulk sales equals $15,730,000. Retail value per appraisal equals $19,168,100.

Improvement Area #1 Series 2023 Bonds sold at a nominal interest rate of 5.44% in June 2023. Final Maturity of September 1, 2053.

158 units in Improvement Area #1 with an average assessment of $44,576.

Improvement Area #1 PID Rate in 2023 was $0.7559.

Improvement Area #1 PID Bond Net Proceeds per Lot were $36,392.

Improvement Area #2 Series 2024 Bonds sold at a nominal interest rate of 5.15% in September 2024. Final Maturity of September 1, 2054.

160 units in Improvement Area #1 with an average assessment of $42,956.

Improvement Area #1 PID Rate in 2024 was $0.7112.

Improvement Area #2 PID Bond Net Proceeds per Lot were $33,750.

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Schedule of Events

Date	Event
October 7, 2025	**Presentation of Plan of Finance to issue Series 2025 Improvement Areas #3A and #3B Project Special Assessment Revenue Bonds** **Cost Determination Resolution, Preliminary Service and Assessment Plan, Call Public Hearing for Levy of Assessments on Improvement Areas #3A and #3B**
October 21, 2025	**Conduct Public Hearing on Levy of Assessments on Improvement Areas #3A and #3B of the Heritage PID** **Consider Ordinance approving the Service and Assessment Plan and Levy of Assessments on Areas #3A and #3B** **Consider Ordinance authorizing the issuance of the Series 2025 Improvement Areas #3A and #3B Project Special Assessment Revenue Bonds**
Prior to Closing	*Texas Attorney General approves bond issue*
November 18, 2025	**Closing and Delivery of Funds to the Trustee**

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Questions and Discussion

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Appendix A

Improvement Areas #3A and #3B
Preliminary Cash Flows and *Projected* Tax Statement

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Preliminary Bond Cash Flows (Areas #3A and #3B)

Fiscal Year Ending 30-Sep	Areas #3A and #3B Series 2025 PID Bonds Principal	Interest[1]	Less: Capitalized Interest	Additional Interest Levy[2]	PID Administrative Levy[3]	TOTAL LEVY	*Total Levy as Tax Rate Equivalent*
2026	$ -	$ 331,157	$ (331,157)	$ -	$ -	$ -	*$ -*
2027	97,000	421,260	-	35,105	40,000	**593,365**	*0.7589*
2028	102,000	415,440	-	34,620	40,800	**592,860**	*0.7583*
2029	109,000	409,320	-	34,110	41,616	**594,046**	*0.7598*
2030	114,000	402,780	-	33,565	42,448	**592,793**	*0.7582*
2031	121,000	395,940	-	32,995	43,297	**593,232**	*0.7588*
2032	128,000	388,680	-	32,390	44,163	**593,233**	*0.7588*
2033	135,000	381,000	-	31,750	45,046	**592,796**	*0.7582*
2034	143,000	372,900	-	31,075	45,947	**592,922**	*0.7584*
2035	152,000	364,320	-	30,360	46,866	**593,546**	*0.7592*
2036	161,000	355,200	-	29,600	47,804	**593,604**	*0.7593*
2037	170,000	345,540	-	28,795	48,760	**593,095**	*0.7586*
2038	180,000	335,340	-	27,945	49,735	**593,020**	*0.7585*
2039	191,000	324,540	-	27,045	50,730	**593,315**	*0.7589*
2040	202,000	313,080	-	26,090	51,744	**592,914**	*0.7584*
2041	214,000	300,960	-	25,080	52,779	**592,819**	*0.7582*
2042	227,000	288,120	-	24,010	53,835	**592,965**	*0.7584*
2043	241,000	274,500	-	22,875	54,911	**593,286**	*0.7588*
2044	255,000	260,040	-	21,670	56,010	**592,720**	*0.7581*
2045	270,000	244,740	-	20,395	57,130	**592,265**	*0.7575*
2046	287,000	228,540	-	19,045	58,272	**592,857**	*0.7583*
2047	305,000	211,320	-	17,610	59,438	**593,368**	*0.7590*
2048	323,000	193,020	-	16,085	60,627	**592,732**	*0.7581*
2049	343,000	173,640	-	14,470	61,839	**592,949**	*0.7584*
2050	364,000	153,060	-	12,755	63,076	**592,891**	*0.7583*
2051	387,000	131,220	-	10,935	64,337	**593,492**	*0.7591*
2052	410,000	108,000	-	9,000	65,624	**592,624**	*0.7580*
2053	436,000	83,400	-	6,950	66,937	**593,287**	*0.7588*
2054	463,000	57,240	-	4,770	68,275	**593,285**	*0.7588*
2055	491,000	29,460	-	2,455	69,641	**592,556**	*0.7579*
	$ 7,021,000	$ 8,293,757	$ (331,157)	$ 663,550	$ 1,551,689	**$17,198,839**	

Improvement Area #1 Series 2023 Bonds sold at a nominal interest rate of 5.44% in June 2023. Final Maturity of September 1, 2053 and average annual aggregate installments of $561,494.

Improvement Area #2 Series 2024 Bonds sold at a nominal interest rate of 5.15% in September 2024. Final Maturity of September 1, 2054 and average annual aggregate installments of $537,199.

(1) Nominal interest rate of 6.00% for illustration and discussion purposes only, subject to change.
(2) Calculated at 0.5% of outstanding bonds beginning in 2027.
(3) Budgeted, subject to change after input from PID Administrator on an annual basis.

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Preliminary Average PID Annual Installments Per Unit (Areas #3A and #3B)

Fiscal Year Ending 30-Sep	Areas #3A and #3B Annual Installments Per Unit: Principal	Interest[1]	Less: Capitalized Interest	Additional Interest Levy[2]	PID Administrative Levy[3]	TOTAL LEVY	*Total Levy as Tax Rate Equivalent*
2026	$ -	$ 2,019	$ (2,019)	$ -	$ -	**$ -**	*$ -*
2027	591	2,569	-	214	244	**3,618**	*0.7589*
2028	622	2,533	-	211	249	**3,615**	*0.7583*
2029	665	2,496	-	208	254	**3,622**	*0.7598*
2030	695	2,456	-	205	259	**3,615**	*0.7582*
2031	738	2,414	-	201	264	**3,617**	*0.7588*
2032	780	2,370	-	198	269	**3,617**	*0.7588*
2033	823	2,323	-	194	275	**3,615**	*0.7582*
2034	872	2,274	-	189	280	**3,615**	*0.7584*
2035	927	2,221	-	185	286	**3,619**	*0.7592*
2036	982	2,166	-	180	291	**3,620**	*0.7593*
2037	1,037	2,107	-	176	297	**3,616**	*0.7586*
2038	1,098	2,045	-	170	303	**3,616**	*0.7585*
2039	1,165	1,979	-	165	309	**3,618**	*0.7589*
2040	1,232	1,909	-	159	316	**3,615**	*0.7584*
2041	1,305	1,835	-	153	322	**3,615**	*0.7582*
2042	1,384	1,757	-	146	328	**3,616**	*0.7584*
2043	1,470	1,674	-	139	335	**3,618**	*0.7588*
2044	1,555	1,586	-	132	342	**3,614**	*0.7581*
2045	1,646	1,492	-	124	348	**3,611**	*0.7575*
2046	1,750	1,394	-	116	355	**3,615**	*0.7583*
2047	1,860	1,289	-	107	362	**3,618**	*0.7590*
2048	1,970	1,177	-	98	370	**3,614**	*0.7581*
2049	2,091	1,059	-	88	377	**3,616**	*0.7584*
2050	2,220	933	-	78	385	**3,615**	*0.7583*
2051	2,360	800	-	67	392	**3,619**	*0.7591*
2052	2,500	659	-	55	400	**3,614**	*0.7580*
2053	2,659	509	-	42	408	**3,618**	*0.7588*
2054	2,823	349	-	29	416	**3,618**	*0.7588*
2055	2,994	180	-	15	425	**3,613**	*0.7579*
	$ 42,811	$ 50,572	$ (2,019)	$ 4,046	$ 9,462	**$ 104,871**	

PID Rate in Improvement Area #1 is currently an average of $0.6941 based on final average installments per unit of $3,554 and an average actual home value of $512,060.

PID Rate in Improvement Area #2 is currently an average of $0.7002 based on final average installments per unit of $3,357 and an average actual home value of $479,465.

(1) Nominal interest rate of 6.00% for illustration and discussion purposes only, subject to change.
(2) Calculated at 0.5% of outstanding bonds beginning in 2027.
(3) Budgeted, subject to change after input from PID Administrator on an annual basis.

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Projected Tax Statement within Improvement Areas #3A and #3B

Projected Tax Statement within Improvement Areas #3A and #3B

	2025 Tax Rate	Tax Levy on $420,000 SF 35' Home	Tax Levy on $450,399 SF 40' Home	Tax Levy on $498,224 SF 45' Home	Tax Levy on $558,223 SF 50' Home
City of Dripping Springs	$ 0.2267	$ 952.14	$ 1,021.05	$ 1,129.47	$ 1,265.49
Hays County (incl. Special Roads Tax)	0.3999	1,679.58	1,801.15	1,992.40	2,232.33
North Hays County Emergency Services District No. 1	0.0500	210.00	225.20	249.11	279.11
Hays County Emergency Services District No. 6	0.0802	337.01	361.40	399.77	447.92
Dripping Springs Independent School District	1.1052	4,641.84	4,977.81	5,506.37	6,169.48
Total Tax Rate/Levy	**$ 1.8620**	**$ 7,820.57**	**$ 8,386.61**	**$ 9,277.13**	**$ 10,394.34**
PID Avg. Annual Installment as a Tax Rate Equivalent/Levy[(1)]	$ 0.7586	$ 3,185.96	$ 3,416.56	$ 3,779.34	$ 4,234.47
Total Overlapping Tax Rate Equivalent/Levy	**$ 2.6206**	**$ 11,006.53**	**$ 11,803.17**	**$ 13,056.47**	**$ 14,628.80**

(1) Inclusive of principal and interest on the bonds, additional interest for the benefit of the bonds, and estimated annual PID administrative expenses.

PID Rate in Improvement Area #1 is currently an average of $0.6941 based on final average installments per unit of $3,554 and an average actual home value of $512,060.

PID Rate in Improvement Area #2 is currently an average of $0.7002 based on final average installments per unit of $3,357 and an average actual home value of $479,465.

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City of Dripping Springs, Texas

Heritage Public Improvement District

Improvement Areas #3A and #3B Project

Series 2025 Special Assessment Revenue Bonds

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October 7, 20

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Heritage Public Improvement District Development Summary

IMPROVEMENT AREA #1

Category	No. of Units	Finished Lot Unit Value	Finished Home Unit Value	*Expected* Area 1 Finished Lots Value	*Expected* Area 1 Buildout Value
SF 35'	0	$ 97,300	$ 420,000	$ -	$ -
SF 40'	12	111,200	450,399	1,334,400	5,404,788
SF 45'	100	125,100	498,224	12,510,000	49,822,400
SF 50'	46	139,000	558,223	6,394,000	25,678,258
Multifamily	0	30,000	150,000	-	-
	158			$20,238,400	$80,905,446
Weighted Average Value				*$128,091*	*$512,060*

IMPROVEMENT AREA #2

Category	No. of Units	*Expected* Finished Lot Unit Value	*Expected* Finished Home Unit Value	*Expected* Area 2 Finished Lots Value	*Expected* Area 2 Buildout Value
SF 35'	6	$ 97,300	$ 420,000	$ 583,800	$ 2,520,000
SF 40'	68	111,200	450,399	7,561,600	30,627,132
SF 45'	74	125,100	498,224	9,257,400	36,868,576
SF 50'	12	139,000	558,223	1,668,000	6,698,676
Multifamily	0	30,000	150,000	-	-
	160			$19,070,800	$76,714,384
Weighted Average Value				*$119,193*	*$479,465*

IMPROVEMENT AREAS #3A AND #3B

Category	**No. of Units**	***Expected* Finished Lot Unit Value**	***Expected* Finished Home Unit Value**	***Expected* Area 2 Finished Lots Value**	***Expected* Area 2 Buildout Value**
SF 35'	**45**	**$ 97,300**	**$ 420,000**	**$ 4,378,500**	**$18,900,000**
SF 40'	**34**	**111,200**	**450,399**	**3,780,800**	**15,313,566**
SF 45'	**58**	**125,100**	**498,224**	**7,255,800**	**28,896,992**
SF 50'	**27**	**139,000**	**558,223**	**3,753,000**	**15,072,021**
Multifamily	**0**	**30,000**	**150,000**	**-**	**-**
	164			**$19,168,100**	**$78,182,579**
Weighted Average Value				***$116,879***	***$476,723***

FUTURE IMPROVEMENT AREA #4

Category	No. of Units	*Expected* Finished Lot Unit Value	*Expected* Finished Home Unit Value	*Expected* Area 2 Finished Lots Value	*Expected* Area 2 Buildout Value
SF 35'	0	$ 97,300	$ 420,000	$ -	$ -
SF 40'	0	111,200	450,399	-	-
SF 45'	76	125,100	498,224	9,507,600	37,865,024
SF 50'	39	139,000	558,223	5,421,000	21,770,697
Multifamily	103	30,000	150,000	3,090,000	15,450,000
	218			$18,018,600	$75,085,721
Weighted Average Value				*$82,654*	*$344,430*

Notes:

Development Plan and expected finished home values as reported by the Developer on August 28, 2025 and September 30, 2025.

SF 35', 40', 45' and 50' finished lot values as per the most recent Appraisal; Multifamily calculated at 1/5 of the expected finished unit value for illustration and discussion purposes only, subject to change.

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District Assessments/Bonds

	Assessments/ Bonds
Improvement Area #1 Assessments/Bonds (Actual)	$7,043,000
Improvement Area #2 Assessments/Bonds (Actual)	$6,873,000
Improvement Areas #3A and #3B Assessments/Bonds (Proposed)	*$7,021,000*
Future Improvement Area #4 Assessments/Bonds (Expected)	*$6,563,000*
Total Assessments/Bonds for Heritage Project	**$27,500,000**

- $7,043,000 Series 2023 Bonds (issued in June 2023) secured solely by assessment revenue from Improvement Area #1 of the Heritage PID

- $6,873,000 Series 2024 Bonds (issued in September 2024) secured solely by assessment revenue from Improvement Area #2 of the Heritage PID

- **$7,021,000 Series 2025 Bonds (to be issued in October 2025) secured solely by assessment revenue from Improvement Areas #3A and #3B of the Heritage PID**

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District Special Assessment Revenue Bonds

- City's full faith and credit does NOT secure the Bonds
- City's enterprise funds' revenues do NOT secure the Bonds
- Assessment revenues from previous or future improvement areas do NOT secure the Improvement Areas #3A and #3B Bonds

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Improvement Areas #3A and #3B Bonds Preliminary Sources and Uses of Funds

Bond Issuance Date	*10/21/2025*
Bond Delivery/Closing Date	*11/18/2025*

	IMPROVEMENT AREAS #3A AND #3B SERIES 2025 BONDS
SOURCES OF FUNDS	
PID Bonds[1]	$ 7,021,000
Other Sources	2,591,657
Total Sources of Funds	**$ 9,612,657**
USES OF FUNDS	
Project Funds	
Bond Proceeds	$ 5,453,892
Other Sources	2,591,657
Subtotal Total Project Funds[2]	**$ 8,045,549**
Capitalized Interest Fund[3]	$ 331,157
Debt Service Reserve Fund[4]	520,460
Underwriter's Discount	210,630
Costs of Issuance[5]	454,861
Deposit to Admin Account[6]	50,000
Subtotal Non-Construction Funds	**$ 1,567,108**
Total Uses of Funds	**$ 9,612,657**

Notes:

(1) Maximum par amount of IA #3 Bonds is $7,021,000.
(2) $8,045,549 Total Authorized Costs as reported in Preliminary Service and Assessment Plan.
(3) Capitalized interest through September 1, 2026.
(4) Equal to the maximum annual debt service payment on the bonds.
(5) Budgeted, subject to change.
(6) Initial deposit to cover administrative expenses through January 31, 2027.

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Improvement Areas #3A and #3B Bonds Preliminary Statistics

Budgeted Nominal Bond Interest Rate[(1)]	6.00%
Bond Term	30 Years
Final Maturity	9/1/2055
Value to Lien at Bond Financing[(2)]	2.24x
Number of Parcels Assessed	164
Average Assessment/Lien per Unit	$42,811
Average Annual Installment as Tax Rate Equivalent	$0.7586
Average Annual Installment per Parcel	$3,616
Annual Installments begin in Calendar Year	2027
PID Bond Net Proceeds per Lot	$33,255

Improvement Area #1 Series 2023 Bonds sold at a nominal interest rate of 5.44% in June 2023. Final Maturity of September 1, 2053.

158 units in Improvement Area #1 with an average assessment of $44,576.

Improvement Area #1 PID Rate in 2023 was $0.7559.

Improvement Area #1 PID Bond Net Proceeds per Lot were $36,392.

Improvement Area #2 Series 2024 Bonds sold at a nominal interest rate of 5.15% in September 2024. Final Maturity of September 1, 2054.

160 units in Improvement Area #1 with an average assessment of $42,956.

Improvement Area #1 PID Rate in 2024 was $0.7112.

Improvement Area #2 PID Bond Net Proceeds per Lot were $33,750

Notes:

(1) Preliminary, subject to change at any time.

(2) Appraisal for IA #3 bulk sales equals $15,730,000. Retail value per appraisal equals $19,168,100.

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Schedule of Events

Date	Event
October 7, 2025	**Presentation of Plan of Finance to issue Series 2025 Improvement Areas #3A and #3B Project Special Assessment Revenue Bonds** **Cost Determination Resolution, Preliminary Service and Assessment Plan, Call Public Hearing for Levy of Assessments on Improvement Areas #3A and #3B**
October 21, 2025	**Conduct Public Hearing on Levy of Assessments on Improvement Areas #3A and #3B of the Heritage PID** **Consider Ordinance approving the Service and Assessment Plan and Levy of Assessments on Areas #3A and #3B** **Consider Ordinance authorizing the issuance of the Series 2025 Improvement Areas #3A and #3B Project Special Assessment Revenue Bonds**
Prior to Closing	*Texas Attorney General approves bond issue*
November 18, 2025	**Closing and Delivery of Funds to the Trustee**

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Questions and Discussion

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Appendix A

Improvement Areas #3A and #3B
Preliminary Cash Flows and *Projected* Tax Statement

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Preliminary Bond Cash Flows (Areas #3A and #3B)

Fiscal Year Ending 30-Sep	Areas #3A and #3B Series 2025 PID Bonds Principal	Interest[1]	Less: Capitalized Interest	Additional Interest Levy[2]	PID Administrative Levy[3]	TOTAL LEVY	*Total Levy as Tax Rate Equivalent*
2026	$ -	$ 331,157	$ (331,157)	$ -	$ -	$ -	*$ -*
2027	97,000	421,260	-	35,105	40,000	**593,365**	*0.7589*
2028	102,000	415,440	-	34,620	40,800	**592,860**	*0.7583*
2029	109,000	409,320	-	34,110	41,616	**594,046**	*0.7598*
2030	114,000	402,780	-	33,565	42,448	**592,793**	*0.7582*
2031	121,000	395,940	-	32,995	43,297	**593,232**	*0.7588*
2032	128,000	388,680	-	32,390	44,163	**593,233**	*0.7588*
2033	135,000	381,000	-	31,750	45,046	**592,796**	*0.7582*
2034	143,000	372,900	-	31,075	45,947	**592,922**	*0.7584*
2035	152,000	364,320	-	30,360	46,866	**593,546**	*0.7592*
2036	161,000	355,200	-	29,600	47,804	**593,604**	*0.7593*
2037	170,000	345,540	-	28,795	48,760	**593,095**	*0.7586*
2038	180,000	335,340	-	27,945	49,735	**593,020**	*0.7585*
2039	191,000	324,540	-	27,045	50,730	**593,315**	*0.7589*
2040	202,000	313,080	-	26,090	51,744	**592,914**	*0.7584*
2041	214,000	300,960	-	25,080	52,779	**592,819**	*0.7582*
2042	227,000	288,120	-	24,010	53,835	**592,965**	*0.7584*
2043	241,000	274,500	-	22,875	54,911	**593,286**	*0.7588*
2044	255,000	260,040	-	21,670	56,010	**592,720**	*0.7581*
2045	270,000	244,740	-	20,395	57,130	**592,265**	*0.7575*
2046	287,000	228,540	-	19,045	58,272	**592,857**	*0.7583*
2047	305,000	211,320	-	17,610	59,438	**593,368**	*0.7590*
2048	323,000	193,020	-	16,085	60,627	**592,732**	*0.7581*
2049	343,000	173,640	-	14,470	61,839	**592,949**	*0.7584*
2050	364,000	153,060	-	12,755	63,076	**592,891**	*0.7583*
2051	387,000	131,220	-	10,935	64,337	**593,492**	*0.7591*
2052	410,000	108,000	-	9,000	65,624	**592,624**	*0.7580*
2053	436,000	83,400	-	6,950	66,937	**593,287**	*0.7588*
2054	463,000	57,240	-	4,770	68,275	**593,285**	*0.7588*
2055	491,000	29,460	-	2,455	69,641	**592,556**	*0.7579*
	$ 7,021,000	$ 8,293,757	$ (331,157)	$ 663,550	$ 1,551,689	**$17,198,839**	

(1) Nominal interest rate of 6.00% for illustration and discussion purposes only, subject to change.
(2) Calculated at 0.5% of outstanding bonds beginning in 2027.
(3) Budgeted, subject to change after input from PID Administrator on an annual basis.

Improvement Area #1 Series 2023 Bonds sold at a nominal interest rate of 5.44% in June 2023. Final Maturity of September 1, 2053 and average annual aggregate installments of $561,494.

Improvement Area #2 Series 2024 Bonds sold at a nominal interest rate of 5.15% in September 2024. Final Maturity of September 1, 2054 and average annual aggregate installments of $537,199.

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Preliminary Average PID Annual Installments Per Unit (Areas #3A and #3B)

Fiscal Year Ending 30-Sep	Areas #3A and #3B Annual Installments Per Unit: Principal	Interest[1]	Less: Capitalized Interest	Additional Interest Levy[2]	PID Administrative Levy[3]	TOTAL LEVY	*Total Levy as Tax Rate Equivalent*
2026	$ -	$ 2,019	$ (2,019)	$ -	$ -	$ -	*$ -*
2027	591	2,569	-	214	244	**3,618**	*0.7589*
2028	622	2,533	-	211	249	**3,615**	*0.7583*
2029	665	2,496	-	208	254	**3,622**	*0.7598*
2030	695	2,456	-	205	259	**3,615**	*0.7582*
2031	738	2,414	-	201	264	**3,617**	*0.7588*
2032	780	2,370	-	198	269	**3,617**	*0.7588*
2033	823	2,323	-	194	275	**3,615**	*0.7582*
2034	872	2,274	-	189	280	**3,615**	*0.7584*
2035	927	2,221	-	185	286	**3,619**	*0.7592*
2036	982	2,166	-	180	291	**3,620**	*0.7593*
2037	1,037	2,107	-	176	297	**3,616**	*0.7586*
2038	1,098	2,045	-	170	303	**3,616**	*0.7585*
2039	1,165	1,979	-	165	309	**3,618**	*0.7589*
2040	1,232	1,909	-	159	316	**3,615**	*0.7584*
2041	1,305	1,835	-	153	322	**3,615**	*0.7582*
2042	1,384	1,757	-	146	328	**3,616**	*0.7584*
2043	1,470	1,674	-	139	335	**3,618**	*0.7588*
2044	1,555	1,586	-	132	342	**3,614**	*0.7581*
2045	1,646	1,492	-	124	348	**3,611**	*0.7575*
2046	1,750	1,394	-	116	355	**3,615**	*0.7583*
2047	1,860	1,289	-	107	362	**3,618**	*0.7590*
2048	1,970	1,177	-	98	370	**3,614**	*0.7581*
2049	2,091	1,059	-	88	377	**3,616**	*0.7584*
2050	2,220	933	-	78	385	**3,615**	*0.7583*
2051	2,360	800	-	67	392	**3,619**	*0.7591*
2052	2,500	659	-	55	400	**3,614**	*0.7580*
2053	2,659	509	-	42	408	**3,618**	*0.7588*
2054	2,823	349	-	29	416	**3,618**	*0.7588*
2055	2,994	180	-	15	425	**3,613**	*0.7579*
	$ 42,811	$ 50,572	$ (2,019)	$ 4,046	$ 9,462	**$ 104,871**	

(1) Nominal interest rate of 6.00% for illustration and discussion purposes only, subject to change.
(2) Calculated at 0.5% of outstanding bonds beginning in 2027.
(3) Budgeted, subject to change after input from PID Administrator on an annual basis.

PID Rate in Improvement Area #1 is currently an average of $0.6941 based on final average installments per unit of $3,554 and an average actual home value of $512,060.

PID Rate in Improvement Area #2 is currently an average of $0.7002 based on final average installments per unit of $3,357 and an average actual home value of $479,465.

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Projected Tax Statement within Improvement Areas #3A and #3B

Projected Tax Statement within Improvement Areas #3A and #3B

	2025 Tax Rate	Tax Levy on $420,000 SF 35' Home	Tax Levy on $450,399 SF 40' Home	Tax Levy on $498,224 SF 45' Home	Tax Levy on $558,223 SF 50' Home
City of Dripping Springs	$ 0.2267	$ 952.14	$ 1,021.05	$ 1,129.47	$ 1,265.49
Hays County (incl. Special Roads Tax)	0.3999	1,679.58	1,801.15	1,992.40	2,232.33
North Hays County Emergency Services District No. 1	0.0500	210.00	225.20	249.11	279.11
Hays County Emergency Services District No. 6	0.0802	337.01	361.40	399.77	447.92
Dripping Springs Independent School District	1.1052	4,641.84	4,977.81	5,506.37	6,169.48
Total Tax Rate/Levy	**$ 1.8620**	**$ 7,820.57**	**$ 8,386.61**	**$ 9,277.13**	**$ 10,394.34**
PID Avg. Annual Installment as a Tax Rate Equivalent/Levy[(1)]	$ 0.7586	$ 3,185.96	$ 3,416.56	$ 3,779.34	$ 4,234.47
Total Overlapping Tax Rate Equivalent/Levy	**$ 2.6206**	**$ 11,006.53**	**$ 11,803.17**	**$ 13,056.47**	**$ 14,628.80**

(1) Inclusive of principal and interest on the bonds, additional interest for the benefit of the bonds, and estimated annual PID administrative expenses.

PID Rate in Improvement Area #1 is currently an average of $0.6941 based on final average installments per unit of $3,554 and an average actual home value of $512,060.

PID Rate in Improvement Area #2 is currently an average of $0.7002 based on final average installments per unit of $3,357 and an average actual home value of $479,465.

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CITY OF DRIPPING SPRINGS, TEXAS
NOTICE OF PUBLIC HEARING

TO CONSIDER PROPOSED ASSESSMENTS
TO BE LEVIED AGAINST PROPERTY IN IMPROVEMENT AREA #3A AND
IMPROVEMENT AREA #3B OF
THE HERITAGE PUBLIC IMPROVEMENT DISTRICT

Notice is given that the City Council of Dripping Springs, Texas will conduct a public hearing on Tuesday, October 21, 2025, during the regular City Council meeting beginning at 6:00 P.M. Information about how to participate in the public hearing is provided below. The purpose of the public hearing is to hear and pass on any objections to the assessments proposed to be levied against assessable property located within Improvement Area #3A ("Improvement Area #3A") and Improvement Area #3B (Improvement Area #3B") of the Heritage Public Improvement District (the "District") pursuant to Chapter 372 of the Texas Local Government Code. Written and oral objections will be considered at the hearing.

1. General Nature of Improvements – The public improvements for the District (the "Authorized Improvements") may consist of one or more of the public improvements included in Section 372.003(b) of the Act. The general nature of the Authorized Improvements are: (i) the establishment of parks and open space, and the design and construction of ancillary structures, features, or amenities such as trails, pavilions, irrigation, walkways, lighting, benches, trash receptacles and other similar items; (ii) landscaping; (iii) acquisition, construction, and improvement of water (if any of the water infrastructure serving the property becomes eligible to be a public improvement because the water service provider becomes a governmental entity), wastewater and drainage, detention and water quality facilities; (iv) acquisition, construction, and improvement of streets, roadways, rights-of-way, signalization and related facilities; (v) entry monumentation and features; (vi) signage; (vii) projects similar to those listed in subsections (i)-(vi) above; and (viii) payment of costs associated with constructing and financing the public improvements listed in subparagraphs (i)-(vii) above, including costs of establishing, administering, and operating the District.

The property within the District is expected to be developed in multiple phases, with certain improvements that will benefit and serve all of the property within the District, and certain improvements that will benefit and serve only the property within each phase (an "Improvement Area"). Improvement Area #3A is anticipated to include (i) acquisition, construction, and/or improvement of streets, roadways, rights-of-way and related facilities; (ii) acquisition, construction, and/or improvement of wastewater and drainage facilities; (iii) landscaping improvements, including plantings, parks and open space, fencing and signage; and (iv) the payment of costs associated with the public improvements described herein (collectively, the "Improvement Area #3A Improvements"). Improvement Area #3B is anticipated to include (i) acquisition, construction, and/or improvement of streets, roadways, rights-of-way and related facilities; (ii) acquisition, construction, and/or improvement of wastewater and drainage facilities; (iii) landscaping improvements, including plantings, parks and open space, fencing and signage; and (iv) the payment of costs associated with the public improvements described herein (collectively, the "Improvement Area #3B Improvements" and together with the Improvement Area #3A Improvements, the "Improvement Area #3 Improvements"). Assessments are only

presently proposed for Improvement Area #3A and Improvement Area #3B, and no assessments will be considered at the public hearing for future Improvements Areas.

2. Estimated Costs of the Improvement Area #3A Improvements – The estimated costs of the proposed Improvement Area #3A Improvements are approximately $5,491,000 (including issuance and other financing costs). The exact amount will be provided in the approved Service and Assessment Plan.

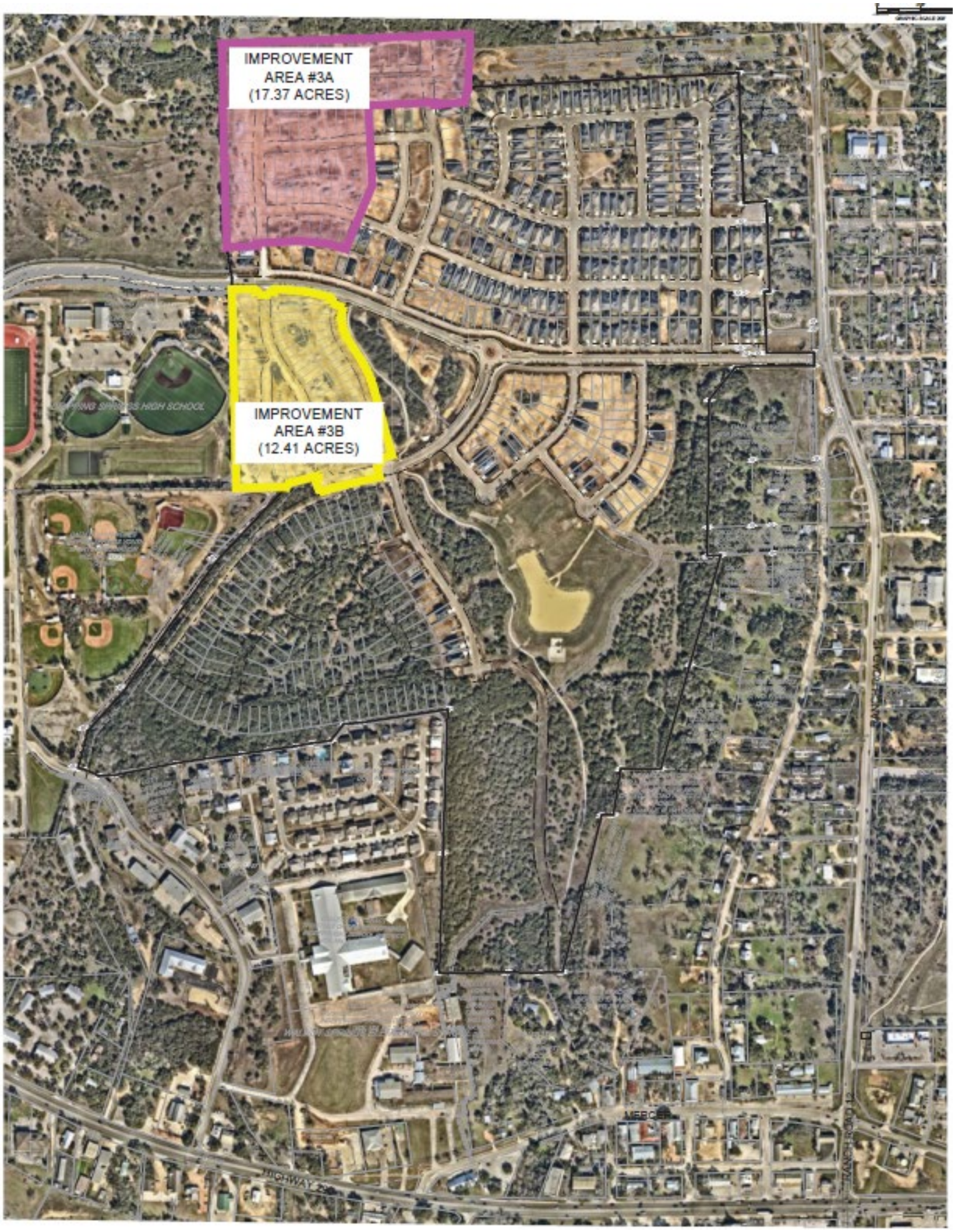
3. Estimated Costs of the Improvement Area #3B Improvements – The estimated costs of the proposed Improvement Area #3B Improvements are approximately $4,137,000 (including issuance and other financing costs). The exact amount will be provided in the approved Service and Assessment Plan.

4. Proposed Estimated Improvement Area #3A Assessments – The proposed estimated assessments on property within Improvement Area #3A of the District is approximately the amount of $4,262,000.

5. Proposed Estimated Improvement Area #3B Assessments The proposed estimated assessments on property within Improvement Area #3B of the District is approximately the amount of $2,759,000.

6. Boundaries of the District. The District includes approximately 188.943 acres of land generally located west of Ranch Road 12, northeast of Sportsplex Drive and approximately one mile north of Highway 290. Improvement Area #3A is comprised of approximately 17.37 acres and is located within the boundaries of the District as shown below. Improvement Area #3B is comprised of approximately 12.41 areas and is located within the boundaries of the District as shown below.

7. How to Participate in the Public Hearing – The public hearing will be held during the regular City Council meeting on the date and commencing at the time stated above, at the City Council Chambers, 511 Mercer Street, Dripping Springs, Texas 78620. The agenda for the City Council meeting and information regarding how to participate in the public hearing is available at https://www.cityofdrippingsprings.com/site-home/pages/minutes-and-agendas or by calling the City Secretary's Office at 512-858-4725. The proposed Service and Assessment Plan and Assessment Roll are available for public inspection at the Office of the City Secretary, 511 Mercer Street, Dripping Springs, Texas 78620, and online by selecting the agenda item for this matter from the link provided above. During the public hearing, any interested person may raise objections to the assessments proposed to be levied against assessable property located in the District.


IMPROVEMENT
AREA #3A
(17.37 ACRES)
IMPROVEMENT
AREA #3B
(12.41 ACRES)

Council Meeting Date: October 7, 2025

AGENDA ITEM COVER SHEET

SUBJECT:

1. Presentation and discussion regarding Plan of Finance for the "City of Dripping Springs, Texas Special Assessment Revenue Bonds, Series 2025 (Heritage Public Improvement District Improvement Area #3A and Improvement Area #3B Project)"
2. Consideration and possible action with respect to a "Resolution of the City Council of the City of Dripping Springs, Texas, Determining Costs of the Proposed Public Improvements in the Heritage Public Improvement District, Approving a Proposed Improvement Area #3A Assessment Roll and Proposed Improvement Area #3B Assessment Roll, Calling a Public Hearing, and Making Related Findings and Determinations, in Accordance With Chapter 372 of the Texas Local Government Code"

ITEM SUMMARY/SPECIAL CONSIDERATIONS:

On November 14, 2017, the Council adopted Resolution No. 2017-74 authorizing the creation of the Heritage Public Improvement District (the "PID") after a public hearing in accordance with Chapter 372, Texas Local Government Code, as amended (the "PID Act"). The PID is expected to be developed in phases. The area designated as "Improvement Area #3" within the District ("Improvement Area #3") is the next phase of development in the PID. The PID consists of approximately 188.943 acres and Improvement Area #3 includes approximately 29.78 total acres. Improvement Area #3 consists of Improvement Area #3A and Improvement Area #3B. Improvement Area #3A is expected to include approximately 97 single-family lots and Improvement Area #3B is expected to include approximately 67 single-family lots. The future improvement areas are expected to include approximately 113 single-family lots and approximately 105 multifamily units. The City is authorized by the PID Act to issue revenue bonds payable from the Assessments levied within Improvement Area #3A and Improvement Area #3B (the "Improvement Area #3A Assessments" and the "Improvement Area #3B Assessments," respectively) for the purpose of paying a portion of the actual costs of the authorized improvements constructed for the benefit of property within Improvement Area #3A and Improvement Area #3B of the PID.

The PID Act requires preparation of a service plan covering a period of at least five years and defining the annual indebtedness and projected cost of the public improvements ("Authorized Improvements") to be funded through the Improvement Area #3A Assessments and the Improvement Area #3B Assessments. The PID Act also requires preparation of an assessment roll stating the amount of special assessment against individual parcels of land in the PID determined by the method chosen by the City consistently with the PID Act.

P3 Works, LLC ("P3") has prepared, on behalf of the City, a Preliminary Service and Assessment Plan (the "PSAP") which includes a description of the proposed Authorized Improvements, determines the cost of those improvements, and includes a proposed Improvement Area #3A Assessment Roll and Improvement Area #3A Assessment Roll.

This item requests that the City Council pass and approve the attached Resolution, which makes certain findings regarding the nature of the Improvement Area #3A Authorized Improvements and the Improvement Area #3B Authorized Improvements, the cost of the Improvement Area #3A Authorized Improvements and the Improvement Area #3B Authorized Improvements, and approving the proposed Improvement Area #3A Assessment Roll the proposed Improvement Area #3B Assessment Roll (all of which information is included in the PSAP attached to the Resolution). On the City Council's approval, the proposed Improvement Area #3A Assessment Roll and the proposed Improvement Area #3B Assessment Roll will be made available for public inspection at the Office of the City Secretary and notice of the public hearing to consider the proposed Improvement Area #3A Assessments and the proposed Improvement Area #3B Assessments will be published in accordance with the PID Act.

In conjunction with the City Council's consideration of an ordinance levying the Improvement Area #3A Assessments and the Improvement Area #3B Assessments on land in the PID, and after notice and a public hearing,

City staff will bring forward a proposed ordinance levying the Improvement Area #3A Assessments and Improvement Ares #3B Assessments on land within Improvement Area #3A and Improvement Area #3B of the PID, respectively, approving the final Service and Assessment Plan (SAP), and approving the final Improvement Area #3A Assessment Roll and Improvement Area #3B Assessment Roll.

COMMENTS

The bond ordinance and related sale, along with the assessment ordinance, are currently planned for the October 21, 2025 Council agenda, after actual interest rates are determined. The PID Bonds are currently anticipated to close on November 18, 2025.

ATTACHMENTS:
Cost Determination Resolution

RESOLUTION NO. 2025-__

A RESOLUTION OF THE CITY OF DRIPPING SPRINGS, TEXAS, DETERMINING COSTS OF THE PROPOSED PUBLIC IMPROVEMENTS IN THE HERITAGE PUBLIC IMPROVEMENT DISTRICT, APPROVING A PROPOSED IMPROVEMENT AREA #3A ASSESSMENT ROLL, A PROPOSED IMPROVEMENT AREA #3B ASSESSMENT ROLL, CALLING A PUBLIC HEARING, AND MAKING RELATED FINDINGS AND DETERMINATIONS, IN ACCORDANCE WITH CHAPTER 372 OF THE TEXAS LOCAL GOVERNMENT CODE.

WHEREAS, a petition was submitted and filed with the City Secretary (the "City Secretary") of the City of Dripping Springs, Texas (the "City") on February 9, 2016 (the "Original Petition") pursuant to the Public Improvement District Assessment Act, Chapter 372, Texas Local Government Code, as amended (the "PID Act"), requesting the creation of a public improvement district located within the extraterritorial jurisdiction of the City to be known as Heritage Public Improvement District (the "District" or "PID") to provide public improvements within the District to include the design, acquisition, and construction of public improvement projects authorized by Section 372.003(b) of the PID Act that are necessary for development of the District, which public improvements will include, but not be limited to, roadway, wastewater, and drainage facilities and improvements, trail improvements and other improvement projects; and

WHEREAS, an amended and restated petition was submitted and filed with the City Secretary of the City on June 29, 2017 (the "Amended and Restated Petition") pursuant to the PID Act which amended, restated and replaced the Original Petition in its entirety, and requested the creation of the District to provide public improvements within the District to include the design, acquisition, and construction of public improvement projects authorized by Section 372.003(b) of the PID Act that are necessary for development of the District, which public improvements will include, but not be limited to, roadway, wastewater, and drainage facilities and improvements, trail improvements and other improvement projects; and

WHEREAS, the Amended and Restated Petition contained the signatures of the record owners of taxable real property representing more than 50% of the appraised value of the real property liable for assessments within the District, as determined by the then current ad valorem tax rolls of the Hays Central Appraisal District, and the signatures of record property owners who own taxable real property that constitutes more than 50% of the area of all taxable property that is liable for assessment within the District; and

WHEREAS, on November 14, 2017, after due notice, the City Council of the City (the "City Council") held the public hearing in the manner required by law on the advisability of the improvement projects described in the Amended and Restated Petition as required by Section 372.009 of the PID Act and on November 14, 2017 the City Council made the findings required by Section 372.009(b) of the PID Act and, by Resolution No. 2017-74 (the "Creation Resolution"), adopted by a majority of the members of the City Council, authorized the creation of the District in accordance with its finding as to the advisability of the improvement projects; and

WHEREAS, following the adoption of the Creation Resolution, on November 30, 2017, the City published the Creation Resolution in *The Dripping Springs Century News*, a newspaper of general circulation in the City; and

WHEREAS, no written protests regarding the creation of the District from any owners of record of property within the District were filed with the City Secretary within 20 days after the date of publication of the Creation Resolution; and

WHEREAS, the City has reviewed the Preliminary Service and Assessment Plan attached to this Resolution as **"Exhibit A"** and the Proposed Improvement Area #3A Assessment Roll and the Proposed Improvement Area #3B attached to this Resolution as **"Exhibit B"** pertaining to the District; and

WHEREAS, in accordance with Section 372.016 of the Act, the City Council desires to make certain determinations and findings with regard to the total cost of the "Authorized Improvements" set forth in the Preliminary Service and Assessment Plan attached to this Resolution as "**Exhibit A**";

WHEREAS, in accordance with Section 372.016 of the Act, the City Council also desires to approve the Proposed Improvement Area #3A Assessment Roll and the Proposed Improvement Area #3B Assessment Roll, which are included in the Preliminary Service and Assessment Plan attached to this Resolution as "**Exhibit A,**" cause the Proposed Improvement Area #3A Assessment Roll and the Proposed Improvement Area #3B Assessment Roll to be filed with the City Secretary, and to direct the City Secretary to make the Proposed Improvement Area #3A Assessment Roll and the Proposed Improvement Area #3B Assessment Roll available for public inspection and publish notice of the City Council's intention to consider the proposed assessments at a public hearing, all in accordance with the requirements of the Act.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DRIPPING SPRINGS, TEXAS, THAT:

Section 1. The findings set forth in the recitals of this Resolution are found to be true and correct and are incorporated into this Resolution for all purposes by this reference.

Section 2. The City Council hereby finds, declares, and directs:

(a) Determination of Cost. The cost determinations for the proposed Authorized Improvements set forth in the Preliminary Service and Assessment Plan attached to this Resolution as "**Exhibit A**" are hereby approved.

(b) Proposed Improvement Area #3A Assessment Roll. The Proposed Improvement Area #3A Assessment Roll included in the Preliminary Service and Assessment Plan attached to this Resolution as "**Exhibit A,**" stating the assessment against each parcel of assessable land in Improvement Area #3A of the District as determined by the method of assessment set forth in said Preliminary Service and Assessment Plan is hereby approved, and the City Council declares that the Proposed Improvement Area #3A Assessment Roll

is hereby filed with the City Secretary. The City Council hereby directs the City Secretary to make the Proposed Improvement Area #3A Assessment Roll available for public inspection and publish notice (in substantially the form attached hereto as "**Exhibit B**") of the City Council's intention to consider the proposed assessments at a public hearing, all in accordance with the requirements of the Act.

(c) Proposed Improvement Area #3B Assessment Roll. The Proposed Improvement Area #3B Assessment Roll included in the Preliminary Service and Assessment Plan attached to this Resolution as "**Exhibit A,**" stating the assessment against each parcel of assessable land in Improvement Area #3B of the District as determined by the method of assessment set forth in said Preliminary Service and Assessment Plan is hereby approved, and the City Council declares that the Proposed Improvement Area #3B Assessment Roll is hereby filed with the City Secretary. The City Council hereby directs the City Secretary to make the Proposed Improvement Area #3B Assessment Roll available for public inspection and publish notice (in substantially the form attached hereto as "**Exhibit B**") of the City Council's intention to consider the proposed assessments at a public hearing, all in accordance with the requirements of the Act.

Section 3. City Council hereby authorizes and directs City Secretary to take the actions described in Section 2 of this Resolution and authorizes and directs staff to prepare the required resolutions, ordinances, agreements, service and assessment plan, assessment roll and other documents necessary for the City Council to effectuate the PID Creation Resolution and this Resolution.

Section 4. The City Council hereby declares that written notice of the date, hour and place of the meeting at which this Resolution was adopted, was posted and that such meeting was open to the public as required by law at all times when this Resolution and the subject matter hereof were discussed, considered, and formally acted upon, all as required by the Open Meetings Act, Chapter 551, Texas Government Code, as amended.

Section 5. This Resolution shall take effect immediately from and after its passage.

EXHIBIT LIST:

Exhibit A – Preliminary Service and Assessment Plan (including the Proposed Improvement Area #3A Assessment Roll and the Proposed Improvement Area #3B Assessment Roll)

Exhibit B – Notice of Public Hearing

PASSED AND APPROVED on this 7th day of October, 2025.

THE CITY OF DRIPPING SPRINGS, TEXAS

By:_____
Bill Foulds, Jr., Mayor

ATTEST:

By:_____
Diana Boone, City Secretary

EXHIBIT A

(Preliminary Service and Assessment Plan – including the Proposed Improvement Area #3A Assessment Roll and the Proposed Improvement Area #3B Assessment Roll)

Heritage Public Improvement District

2025 PRELIMINARY AMENDED AND RESTATED SERVICE AND ASSESSMENT PLAN

OCTOBER 7, 2025

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INTRODUCTION

Capitalized terms used in this 2025 Amended and Restated Service and Assessment Plan shall have the meanings given to them in Section I unless otherwise defined in this 2025 Amended and Restated Service and Assessment Plan or unless the context in which a term is used clearly requires a different meaning. Unless otherwise defined, a reference to a "Section" or an "Exhibit" shall be a reference to a Section of this 2025 Amended and Restated Service and Assessment Plan, or an Exhibit attached to and made a part of this 2025 Amended and Restated Service and Assessment Plan for all purposes.

On November 14, 2017, the City passed and approved Resolution No. 2017-74 authorizing the creation of the District. The purpose of the District is to finance the Actual Costs of Authorized Improvements that confer a special benefit on approximately 188.943 acres located within the City, as described by metes and bounds on **Exhibit A-1** and depicted on **Exhibit B-1**.

On June 6, 2023, the City Council approved the 2023 Service and Assessment Plan and levied Assessments to finance the Authorized Improvements to be constructed for the benefit of the Assessed Property within Improvement Area #1 of the District by approving the 2023 Assessment Ordinance. The 2023 Service and Assessment Plan identifies the Authorized Improvements to be provided by the District, the costs of the Authorized Improvements, the indebtedness to be incurred for the Authorized Improvements, and the manner of assessing the property in the District for the costs of the Authorized Improvements. The City also adopted an Assessment Roll for Improvement Area #1 of the District identifying the Assessment on each Lot within Improvement Area #1 of the District, based on the method of assessment identified in the 2023 Service and Assessment Plan.

On July 2, 2024, the City approved Ordinance No. 2024-25 approving the 2024 Annual Service Plan Update which updated the Improvement Area #1 Assessment Roll for 2024.

On September 17, 2024, the City approved the 2024 Amended and Restated Service and Assessment Plan for the District by adopting Ordinance No. 2024-29. The 2024 Amended and Restated Service and Assessment Plan served to amend and restate the 2023 Service and Assessment Plan in its entirety for the purposes of (1) identifying the Improvement Area #2 Authorized Improvements and the estimated costs thereof; (2) levying the Improvement Area #2 Assessments; (3) issuing the Improvement Area #2 Bonds; and (4) approving the Improvement Area #2 Assessment Roll.

On August 19, 2025, the City approved Ordinance No. 2025-23 approving the 2025 Annual Service Plan Update which updated the Improvement Area #1 Assessment Roll and Improvement Area #2 Assessment Roll for 2025.

This 2025 Amended and Restated Service and Assessment Plan serves to amend and restate the 2024 Amended and Restated Service and Assessment Plan in its entirety for the purposes of (1) identifying the Improvement Area #3A Authorized Improvements and the estimated costs thereof; (2) levying the Improvement Area #3A Assessments; (3) issuing the Improvement Area #3A- Improvement Area #3B Bonds; (4) approving the Improvement Area #3A Assessment Roll; (5) identifying the Improvement Area #3B Authorized Improvements and the estimated costs thereof; (6) levying the Improvement Area #3B Assessments; and (7) approving the Improvement Area #3B Assessment Roll.

The PID Act requires a Service Plan that covers a period of at least five years, defines the annual indebtedness and projected cost of the Authorized Improvements and includes a copy of the notice form required by Section 5.014 of the Texas Property Code, as amended. The Service Plan is contained in **Section IV**.

The PID Act requires that the Service Plan include an Assessment Plan that assesses the Actual Costs of the Authorized Improvements against Assessed Property within the District based on the special benefits conferred on such property by the Authorized Improvements. The Assessment Plan is contained in **Section V**.

The PID Act requires an Assessment Roll that states the Assessment against each Parcel determined by the method chosen by the City. The Assessment against each Assessed Property must be sufficient to pay its share of the Actual Costs apportioned to the Assessed Property and cannot exceed the special benefit conferred on the Assessed Property by the Authorized Improvements. The Improvement Area #1 Assessment Roll is included as **Exhibit F.** The Improvement Area #2 Assessment Roll is included as **Exhibit H.** The Improvement Area #3A Assessment Roll is included as **Exhibit K-1.** The Improvement Area #3B Assessment Roll is included as **Exhibit M-1.**

SECTION I: DEFINITIONS

"2023 Assessment Ordinance" means Ordinance No. 2023-17, which was passed and adopted by the City Council on June 6, 2023, which approved the levy of the Improvement Area #1 Assessments for Improvement Area #1 Assessed Property and the Improvement Area #1 Assessment Roll.

"2023 Service and Assessment Plan" means the 2023 Service and Assessment Plan adopted by the City pursuant to the 2023 Assessment Ordinance which identified the Improvement Area #1 Authorized Improvements and the estimated costs thereof, approved the levy of the Improvement Area #1 Assessments for Improvement Area #1 Assessed Property, and the Improvement Area #1 Assessment Roll.

"2024 Amended and Restated Service and Assessment Plan" means the 2024 Amended and Restated Service and Assessment Plan adopted by the City pursuant to the 2024 Assessment Ordinance which identified the Improvement Area #2 Authorized Improvements and the estimated costs thereof, approved the levy of the Improvement Area #2 Assessments for Improvement Area #2 Assessed Property, and the Improvement Area #2 Assessment Roll.

"2024 Annual Service Plan Update" means the Annual Service Plan Update adopted by the City by Ordinance No. 2024-25 on July 2, 2024, which updated the Improvement Area #1 Assessment Roll for 2024.

"2024 Assessment Ordinance" means Ordinance No. 2024-29 which was passed and adopted by the City Council on September 17, 2024, which approved the levy of the Improvement Area #2 Assessments for Improvement Area #2 Assessed Property and the Improvement Area #2 Assessment Roll.

"2025 Amended and Restated Service and Assessment Plan" means this 2025 Amended and Restated Service and Assessment Plan.

"2025 Annual Service Plan Update" means the Annual Service Plan Update adopted by the City by Ordinance No. 2025-23 on August 19, 2025, which updated the Improvement Area #1 Assessment Roll and Improvement Area #2 Assessment Roll for 2025.

"2025 Assessment Ordinance" means Ordinance No. _____ which was passed and adopted by the City Council on October 21, 2025, which approved the levy of the Improvement Area #3A Assessments for Improvement Area #3A Assessed Property, the Improvement Area #3A Assessment Roll, the levy of the Improvement Area #3B Assessments for Improvement Area #3B Assessed Property, and the Improvement Area #3B Assessment Roll.

"Actual Costs" mean, with respect to the Authorized Improvements, the actual costs paid or incurred by or on behalf of the Owner: (1) to plan, design, acquire, construct, install, and dedicate such improvements to the City; (2) to prepare plans, specifications (including bid packages), contracts, and as-built drawings; (3) to obtain zoning, licenses, plan approvals, permits, inspections, and other governmental approvals; (4) for third-party professional consulting services including but not limited to, engineering, surveying, geotechnical, land planning, architectural, landscaping, legal, accounting, and appraisals; (5) of labor, materials, equipment, fixtures, payment and performance bonds and other construction security, and insurance premiums; and (6) to implement, administer, and manage the above-described activities. Actual Costs shall not include general contractor's fees in an amount that exceeds a percentage equal to the percentage of work completed or construction management fees in an amount that exceeds an amount equal to the construction management fee amortized in approximately equal monthly installments over the term of the applicable construction management contract. Amounts expended for costs described in subsection (3), (4), and (6) above shall be excluded from the amount upon which the general contractor and construction management fees are calculated.

"Additional Interest" means the amount collected by application of the Additional Interest Rate.

"Additional Interest Rate" means an additional interest rate not to exceed 0.50% that may be charged on Assessments securing PID Bonds, pursuant to Section 372.018 of the PID Act.

"**Administrative Reserves**" means the estimated first year Annual Collection Costs.

"Administrator" means the City or the person or independent firm designated by the City who shall have the responsibility provided in this 2025 Amended and Restated Service and Assessment Plan, an Indenture, or any other agreement or document approved by the City related to the duties and responsibility of the administration of the District.

"Annual Collection Costs" mean the actual or budgeted costs and expenses relating to collecting the Annual Installments, including, but not limited to, costs and expenses for: (1) the Administrator and City staff; (2) legal counsel, engineers, accountants, financial advisors, and other consultants engaged by the City; (3) calculating, collecting, and maintaining records with respect to Assessments and Annual Installments; (4) preparing and maintaining records with respect to Assessment Rolls and Annual Service Plan Updates; (5) issuing, paying, and redeeming PID Bonds; (6) investing or depositing Assessments and Annual Installments; (7) complying with this 2025 Amended and Restated Service and Assessment Plan and the Act with respect to the issuance and sale of PID Bonds, including continuing disclosure requirements; and (8) the paying agent/registrar and Trustee in connection with PID Bonds, including their respective legal

counsel. Annual Collection Costs collected but not expended in any year shall be carried forward and applied to reduce Annual Collection Costs for subsequent years.

"Annual Installment" means the annual installment payment of an Assessment as calculated by the Administrator and approved by the City Council, that includes: (1) principal; (2) interest; (3) Annual Collection Costs; and (4) Additional Interest related to PID Bonds, if applicable.

"Annual Service Plan Update" means an update to this 2025 Amended and Restated Service and Assessment Plan prepared no less frequently than annually by the Administrator and approved by the City Council.

"Appraisal District" means Hays Central Appraisal District.

"Assessed Property" means any Parcel within the District that benefits from an Authorized Improvement and on which an Assessment is levied.

"Assessment" means an assessment levied against a Parcel within the District and imposed pursuant to an Assessment Ordinance and the provisions herein, as shown on an Assessment Roll, subject to reallocation upon the subdivision of such Parcel or reduction according to the provisions herein and the PID Act.

"Assessment Ordinance" means an ordinance adopted by the City Council in accordance with the PID Act that levies an Assessment on the Assessed Property, as shown on the applicable Assessment Roll.

"Assessment Plan" means the methodology employed to assess the Actual Costs of the Authorized Improvements against Assessed Property within the District based on the special benefits conferred on such property by the Authorized Improvements, more specifically described in **Section V.**

"Assessment Roll" means one or more assessment rolls for the Assessed Property within the District, as updated, modified or amended from time to time in accordance with the procedures set forth herein, and in the PID Act, including any Annual Service Plan Updates. The Improvement Area #1 Assessment Roll is included as **Exhibit F.** The Improvement Area #2 Assessment Roll is included as **Exhibit H.** The Improvement Area #3A Assessment Roll is included as **Exhibit K-1**. The Improvement Area #3B Assessment Roll is included as **Exhibit M-1**.

"Authorized Improvements" means improvements authorized by Section 372.003 of the PID Act as described in **Section III** and depicted on **Exhibit C**, **Exhibit S**, **Exhibit T, Exhibit U and Exhibit V**.

"**Bobwhite**" means BobWhite Investments, L.P., a Texas limited partnership.

"Bond Issuance Costs" means the costs associated with issuing PID Bonds, if issued, including but not limited to attorney fees, financial advisory fees, consultant fees, initial trustee fee, appraisal

fees, printing costs, publication costs, City costs, reserve fund requirements, underwriter's discount, fees charged by the Texas Attorney General, and any other cost or expense directly associated with the issuance of PID Bonds.

"City" means the City of Dripping Springs, Texas.

"City Council" means the governing body of the City.

"County" means Hays County, Texas.

"Delinquent Collection Costs" mean, for a Parcel, interest, penalties, and other costs and expenses authorized by the PID Act that directly or indirectly relate to the collection of delinquent Assessments, delinquent Annual Installments, or any other delinquent amounts due under this 2025 Amended and Restated Service and Assessment Plan, including costs and expenses to foreclose liens.

"Developer" means M/I Homes of Austin, LLC, an Ohio limited liability company**,** and its successors and assigns.

"District" means the Heritage Public Improvement District containing approximately 188.943 acres located within the City and shown on **Exhibit B-1** and more specifically described in **Exhibit A-1.**

"Estimated Buildout Value" means the estimated buildout value of an Assessed Property, assuming fully constructed horizontal and vertical improvements thereon, at the time Assessments are levied, and shall be determined by the Administrator and confirmed by the City Council by considering such factors as density, lot size, proximity to amenities, view premiums, location, market conditions, historical sales, builder contracts, discussions with homebuilders, reports from third party consultants, or any other information that may impact value. For the purpose of determining the allocation of Assessments between Lot Types in the Future Improvement Area, the Estimated Buildout Values shown on **Exhibit P** will not change.

"Financing and Reimbursement Agreement" means that certain Amended and Restated Heritage Public Improvement District Financing and Reimbursement Agreement by and between the Developer and the City, dated December 20, 2022.

"Future Improvement Area" means approximately 46.52 acres located within the District, as shown on **Exhibit B-2** and more specifically described in **Exhibit A-6**.

"Improvement Area #1" means approximately 37.073 acres located within the District, as shown on **Exhibit B-2** and more specifically described in **Exhibit A-2**.

"Improvement Area #1 Annual Installment" means the annual installment payment of the Improvement Area #1 Assessment as calculated by the Administrator and approved by the City Council that includes: (1) principal, (2) interest, (3) Annual Collection Costs, and (4) Additional Interest.

"Improvement Area #1 Assessed Property" means any Parcel within Improvement Area #1 against which an Improvement Area #1 Assessment is levied.

"Improvement Area #1 Assessment" means an Assessment levied against Improvement Area #1 Assessed Property and imposed pursuant to the 2023 Assessment Ordinance and the provisions herein, as shown on the Improvement Area #1 Assessment Roll included in this 2025 Amended and Restated Service and Assessment Plan as **Exhibit F**, subject to reallocation upon the subdivision of such Parcel or reduction according to the provisions herein and in the PID Act.

"Improvement Area #1 Assessment Roll" means the Assessment Roll for the Improvement Area #1 Assessed Property and included in this 2025 Amended and Restated Service and Assessment Plan as **Exhibit F,** as updated, modified, or amended from time to time in accordance with the procedures set forth herein and in the PID Act, including updates prepared in connection with any Annual Service Plan Update.

"Improvement Area #1 Authorized Improvements" means the Improvement Area #1 Projects, the Administrative Reserves and Bond Issuance Costs related to the Improvement Area #1 Bonds.

"Improvement Area #1 Bonds" means those certain "City of Dripping Springs, Texas, Special Assessment Revenue Bonds, Series 2023 (Heritage Public Improvement District Improvement Area #1 Project)" that are secured by Improvement Area #1 Assessments.

"Improvement Area #1 Improvements" means those Authorized Improvements that only benefit Improvement Area #1, more specifically described in **Section III.B**.

"**Improvement Area #1 Major Improvements**" means Improvement Area #1's allocable share of the Major Improvements.

"Improvement Area #1 Projects" means the Improvement Area #1 Improvements and the Improvement Area #1 Major Improvements.

"Improvement Area #2" means approximately 75.57 acres located within the District, as shown on **Exhibit B-2** and more specifically described in **Exhibit A-3**.

"Improvement Area #2 Annual Installment" means the annual installment payment of the Improvement Area #2 Assessment as calculated by the Administrator and approved by the City Council that includes: (1) principal, (2) interest, (3) Annual Collection Costs, and (4) Additional Interest.

"Improvement Area #2 Assessed Property" means any Parcel within Improvement Area #2 against which an Improvement Area #2 Assessment is levied.

"Improvement Area #2 Assessment" means an Assessment levied against Improvement Area #2 Assessed Property and imposed pursuant to the 2024 Assessment Ordinance and the provisions herein, as shown on the Improvement Area #2 Assessment Roll included in this 2025 Amended and Restated Service and Assessment Plan as **Exhibit H**, subject to reallocation upon the subdivision of such Parcel or reduction according to the provisions herein and in the PID Act.

"Improvement Area #2 Assessment Roll" means the Assessment Roll for the Improvement Area #2 Assessed Property and included in this 2025 Amended and Restated Service and Assessment Plan as **Exhibit H,** as updated, modified, or amended from time to time in accordance with the procedures set forth herein and in the PID Act, including updates prepared in connection with any Annual Service Plan Update.

"Improvement Area #2 Authorized Improvements" mean the Improvement Area #2 Projects, and the Administrative Reserves and Bond Issuance Costs related to the Improvement Area #2 Bonds.

"Improvement Area #2 Bonds" mean those certain "City of Dripping Springs, Texas, Special Assessment Revenue Bonds, Series 2024 (Heritage Public Improvement District Improvement Area #2 Project)" that are secured by Improvement Area #2 Assessments.

"Improvement Area #2 Improvements" mean those Authorized Improvements that only benefit Improvement Area #2, more specifically described in **Section III.C**.

"**Improvement Area #2 Major Improvements**" means Improvement Area #2's allocable share of the Major Improvements.

"Improvement Area #2 Projects" mean the Improvement Area #2 Improvements and the Improvement Area #2 Major Improvements.

"Improvement Area #3A" means approximately 17.37 acres located within the District, as shown on **Exhibit B-2** and more specifically described in **Exhibit A-4**.

"Improvement Area #3A Annual Installment" means the annual installment payment of the Improvement Area #3A Assessment as calculated by the Administrator and approved by the City Council that includes: (1) principal, (2) interest, (3) Annual Collection Costs, and (4) Additional Interest.

"Improvement Area #3A Assessed Property" means any Parcel within Improvement Area #3A against which an Improvement Area #3A Assessment is levied.

"Improvement Area #3A Assessment" means an Assessment levied against Improvement Area #3A Assessed Property and imposed pursuant to the 2025 Assessment Ordinance and the provisions herein, as shown on the Improvement Area #3A Assessment Roll included in this 2025 Amended and Restated Service and Assessment Plan as **Exhibit K-1**, subject to reallocation upon the subdivision of such Parcel or reduction according to the provisions herein and in the PID Act.

"Improvement Area #3A Assessment Roll" means the Assessment Roll for the Improvement Area #3A Assessed Property and included in this 2025 Amended and Restated Service and Assessment Plan as **Exhibit K-1,** as updated, modified, or amended from time to time in accordance with the procedures set forth herein and in the PID Act, including updates prepared in connection with any Annual Service Plan Update.

"Improvement Area #3A Authorized Improvements" mean the Improvement Area #3A Projects, and the Administrative Reserves and Bond Issuance Costs related to the Improvement Area #3A and Improvement Area #3B Project Bonds .

"Improvement Area #3A and Improvement Area #3B Project Bonds" mean those certain "City of Dripping Springs, Texas, Special Assessment Revenue Bonds, Series 2025 (Heritage Public Improvement District Improvement Area #3A and Improvement Area #3B Project)" that are secured by Improvement Area #3A Assessments and Improvement Area #3B Assessments.

"Improvement Area #3A Improvements" mean those Authorized Improvements that only benefit Improvement Area #3A, more specifically described in **Section III.C**.

"Improvement Area #3A Initial Parcel" means all of the Improvement Area #3A Assessed Property against which the entire Improvement Area #3A Assessment is levied, as shown on the Improvement Area #3A Assessment Roll.

"**Improvement Area #3A Major Improvements**" means Improvement Area #3A's allocable share of the Major Improvements.

"Improvement Area #3A Projects" mean the Improvement Area #3A Improvements and the Improvement Area #3A Major Improvements.

"Improvement Area #3B" means approximately 12.41 acres located within the District, as shown on **Exhibit B-2** and more specifically described in **Exhibit A-5**.

"Improvement Area #3B Annual Installment" means the annual installment payment of the Improvement Area #3B Assessment as calculated by the Administrator and approved by the City Council that includes: (1) principal, (2) interest, (3) Annual Collection Costs, and (4) Additional Interest.

"Improvement Area #3B Assessed Property" means any Parcel within Improvement Area #3B against which an Improvement Area #3B Assessment is levied.

"Improvement Area #3B Assessment" means an Assessment levied against Improvement Area #3B Assessed Property and imposed pursuant to the 2025 Assessment Ordinance and the provisions herein, as shown on the Improvement Area #3B Assessment Roll included in this 2025 Amended and Restated Service and Assessment Plan as **Exhibit M-1**, subject to reallocation upon the subdivision of such Parcel or reduction according to the provisions herein and in the PID Act.

"Improvement Area #3B Assessment Roll" means the Assessment Roll for the Improvement Area #3B Assessed Property and included in this 2025 Amended and Restated Service and Assessment Plan as **Exhibit M-1,** as updated, modified, or amended from time to time in accordance with the procedures set forth herein and in the PID Act, including updates prepared in connection with any Annual Service Plan Update.

"Improvement Area #3B Authorized Improvements" mean the Improvement Area #3B Projects, and the Administrative Reserves and Bond Issuance Costs related to the Improvement Area #3A and Improvement Area #3B Project Bonds .

"Improvement Area #3B Improvements" mean those Authorized Improvements that only benefit Improvement Area #3B, more specifically described in **Section III.C**.

"Improvement Area #3B Initial Parcel" means all of the Improvement Area #3B Assessed Property against which the entire Improvement Area #3B Assessment is levied, as shown on the Improvement Area #3B Assessment Roll.

"**Improvement Area #3B Major Improvements**" means Improvement Area #3B's allocable share of the Major Improvements.

"Improvement Area #3B Projects" mean the Improvement Area #3B Improvements and the Improvement Area #3B Major Improvements.

"Indenture" means an Indenture of Trust entered into in connection with the issuance of PID Bonds, as amended or supplemented from time to time, between the City and a Trustee setting forth terms and conditions related to PID Bonds, if issued.

"Lot" means (1) for any portion of the District for which a subdivision plat has been recorded in the official public records of the County, a tract of land described as a "lot" in such subdivision plat, and (2) for any portion of the District for which a subdivision plat has not been recorded in the official public records of the County, a tract of land anticipated to be described as a "lot" in a final recorded subdivision plat.

"Lot Type" means a classification of final building Lots with similar characteristics (e.g. commercial, light industrial, multi-family, single-family residential, etc.), as determined by the Administrator and confirmed and approved by the City Council. In the case of single-family residential Lots, the Lot Type shall be further defined by classifying the residential Lots by the Estimated Buildout Value of the Lot as determined by the Administrator and confirmed and approved by the City Council.

"Lot Type 1" means a Lot within Improvement Area #1 designated as a 40' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 2" means a Lot within Improvement Area #1 designated as a 45' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 3" means a Lot within Improvement Area #1 designated as a 50' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 4" means a Lot within Improvement Area #2 designated as a 35' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 5" means a Lot within Improvement Area #2 designated as a 40' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 6" means a Lot within Improvement Area #2 designated as a 45' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 7" means a Lot within Improvement Area #2 designated as a 50' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 8" means a Lot within Improvement Area #3A designated as a 40' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 9" means a Lot within Improvement Area #3A designated as a 45' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 10" means a Lot within Improvement Area #3A designated as a 50' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 11" means a Lot within Improvement Area #3B designated as a 35' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 12" means a Lot within Improvement Area #3B designated as a 45' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Lot Type 13" means a Lot within Improvement Area #3B designated as a 50' single-family residential lot by the Developer, as shown on the map attached as **Exhibit R**.

"Major Improvements" mean the Authorized Improvements that benefit the entire District, as are more specifically described in **Section III.A**.

"Maximum Assessment" means, for each Lot within Improvement Area #1, Improvement Area #2, Improvement Area #3A, and Improvement Area #3B, an Assessment equal to the lesser of (1) the amount calculated pursuant to **Section VI.A**, or (2) the amount shown for each Lot Type on **Exhibit O**. The Maximum Assessment for each Assessed Parcel shall be reduced annually by the principal portion of the Annual Installment allocable to each Assessed Parcel.

"Non-Benefited Property" means Parcels within the boundaries of the District that accrue no special benefit from the Authorized Improvements. Property is identified as Non-Benefited Property at the time the Assessments (1) are levied or (2) are reallocated pursuant to a subdivision of a Parcel that receives no benefit.

"Owner" means collectively the Developer, Tri Pointe Homes Texas, Inc., a Texas corporation formerly known as Trendmaker Homes, and any of their respective successor and assigns.

"Parcel(s)" means a property within the District, identified by either a tax map identification number assigned by the Appraisal District for real property tax purposes, by metes and bounds description, or by lot and block number in a final subdivision plat recorded in the official public records of the County, or by any other means determined by the City.

"PID Act" means Chapter 372, Texas Local Government Code, as amended.

"PID Bonds" mean bonds issued by the City, that are secured by Assessments, to finance the Actual Costs of the Authorized Improvements, inclusive of the Improvement Area #1 Bonds.

"Prepayment" means the payment of all or a portion of an Assessment before the due date of the final installment thereof. Amounts received at the time of a Prepayment which represent a

payment of principal, interest or penalties on a delinquent installment of an Assessment are not to be considered a Prepayment, but rather are to be treated as the payment of the regularly scheduled Annual Installment of the Assessment.

"Prepayment Costs" mean interest and Annual Collection Costs incurred up to the date of Prepayment.

"Property ID" mean a unique number assigned to each Parcel by the Appraisal District.

"Service Plan" means the plan more specifically described in **Section IV** that covers a period of at least five years and defines the annual indebtedness and projected costs of the Authorized Improvements.

"Trustee" means a trustee (or successor trustee) under the applicable Indenture.

SECTION II: THE DISTRICT

The District includes approximately 188.943 contiguous acres located within the corporate limits of the City, as more particularly described by metes and bounds on **Exhibit A-1** and depicted on **Exhibit B-1.** Development of the District is anticipated to include approximately 595 single-family units and 105 multi-family units.

Improvement Area #1 includes approximately 37.073 acres located within the District, as more particularly described by metes and bounds on **Exhibit A-2** and depicted on **Exhibit B-2.** Development of Improvement Area #1 includes 158 single-family units.

Improvement Area #2 includes approximately 75.57 acres located within the District, as more particularly described by metes and bounds on **Exhibit A-3** and depicted on **Exhibit B-2.** Development of Improvement Area #2 includes 160 single-family units.

Improvement Area #3A includes approximately 17.37 acres located within the District, as more particularly described by metes and bounds on **Exhibit A-4** and depicted on **Exhibit B-2.** Development of Improvement Area #3A is anticipated to include 97 single-family units.

Improvement Area #3B includes approximately 12.41 acres located within the District, as more particularly described by metes and bounds on **Exhibit A-5** and depicted on **Exhibit B-2.** Development of Improvement Area #3B is anticipated to include 67 single-family units.

The Future Improvement Area includes approximately 46.52 acres located within the District, as more particularly described by metes and bounds on **Exhibit A-6** and depicted on **Exhibit B-2.** Development of the Future Improvement Area is anticipated to include approximately 115 single-family units and 103 multi-family units.

SECTION III: AUTHORIZED IMPROVEMENTS

The City Council, based on information provided by the Developer and their engineer and reviewed by the City staff and by third-party consultants retained by the City, has determined that the Major Improvements, the Improvement Area #1 Improvements, the Improvement Area #2 Improvements, the Improvement Area #3A Improvements, the Improvement Area #3B Improvements, the Bond Issuance Costs and the Administrative Reserves are Authorized Improvements and confer a special benefit on the respective Assessed Property. The budget for the Authorized Improvements is shown on **Exhibit C**, and maps depicting the Authorized Improvements are shown on **Exhibit S**, **Exhibit T, Exhibit U**, **Exhibit V** and **Exhibit W**.

A. Major Improvements

- *Roadway*

  Improvements including subgrade stabilization (including lime treatment and compaction), curb and gutter, road base construction, hot mix asphalt, curb ramps, sidewalk, roundabout improvements, street lights, striping, concrete, signalization at the intersection of Ranch Road 12 and Roger Hanks Parkway, and reinforcing steel for collector roadways and slip streets. The grading associated with collector and slip street construction is included. The erosion control associated with collector and slip street construction and wet pond construction is included. Mobilization costs are included. The signalization of RM 12 and Roger Hanks Parkway/Brookside Street and the channelized southbound right-turn movement on RM 12 at Roger Hanks Parkway/Brookside Street will be dedicated to TxDOT.

- *Drainage*

  Improvements including storm pipe, storm manholes, junction boxes, headwalls, area inlets, curb inlets, manhole casting adjustments, wet pond improvements, and trench safety program associated with drainage improvements.

- *Trails and Landscaping*

  Improvements necessary to construct the 10' hike and bike trail that runs East to West along North Roger Hanks Parkway, the 8' hike and bike trail that runs from the Northern overall property boundary to the Southern overall property boundary and Entry Monumentation improvements at the intersection of Ranch Road 12 and North Roger Hanks Parkway.

- *Soft Costs*

  Estimated to be 16% of hard costs, inclusive of a 4% construction management fee.

B. Improvement Area #1 Improvements

- *Roadway*

  Subgrade stabilization (including lime treatment and compaction), curb and gutter, road base construction, hot mix asphalt, curb ramps, sidewalk, roundabout improvements, street lights, striping, concrete, and reinforcing steel for internal roadways. Grading and erosion control that are not associated with the wet pond or North Roger Hanks Parkway and mobilization are included.

- *Drainage*

  Trench excavation and embedment, trench safety, reinforced concrete pipe, manholes, storm outfalls, storm drain inlets, testing, related earthwork, excavation, erosion control and all other necessary appurtenances required to ensure proper drainage of the public roadways within Improvement Area #1.

- *Wastewater*

  Trench excavation and embedment, trench safety, PVC piping, manholes, service connections, testing, related earthwork, excavation, erosion control and all other necessary appurtenances required to provide wastewater service to each Parcel within Improvement Area #1.

- *Landscaping*

  Landscaping improvements including plantings, Improvement Area #1 Pocket Park, fencing, and secondary entry signage.

- *Soft Costs*

  Estimated to be 16% of hard costs, inclusive of a 4% construction management fee.

C. Improvement Area #2 Improvements

- *Roadway*

  Subgrade stabilization (including lime treatment and compaction), curb and gutter, road base construction, hot mix asphalt, curb ramps, sidewalk, roundabout improvements, street lights, striping, concrete, mobilization, erosion control, and reinforcing steel for internal roadways.

- *Drainage*

  Trench excavation and embedment, trench safety, reinforced concrete pipe, manholes, storm outfalls, storm drain inlets, testing, related earthwork, excavation, erosion control and all other necessary appurtenances required to ensure proper drainage of the public roadways within Improvement Area #2.

- *Wastewater*

  Trench excavation and embedment, trench safety, PVC piping, manholes, service connections, testing, related earthwork, excavation, erosion control and all other necessary appurtenances required to provide wastewater service to each Parcel within Improvement Area #2.

- *Landscaping*

  Landscaping improvements including plantings, and Improvement Area #2 pocket park.

- *Soft Costs*

  Estimated to be 16% of hard costs, inclusive of a 4% construction management fee.

D. Improvement Area #3A Improvements

- *Roadway*

  Improvements including mobilization, erosion control, grading, subgrade stabilization (including lime treatment and compaction), curb and gutter, road base construction, hot mix asphalt, curb ramps, sidewalk, roundabout improvements, street lights, striping, concrete, and reinforcing steel for internal roadways. The internal roadways are located within Improvement Area #3A, and direct frontage is provided to the single family lots in Improvement Area #3A to these internal roadways.

- *Drainage*

  Improvements including trench excavation and embedment, trench safety, reinforced concrete pipe, manholes, storm outfalls, storm drain inlets, testing, trenching and all other necessary appurtenances required to ensure proper drainage of the internal public roadways within Improvement Area #3A.

- *Wastewater*

  Improvements including trench excavation and embedment, trench safety, PVC piping, manholes, service connections, testing, and all other necessary appurtenances required to provide wastewater service to each parcel within Improvement Area #3A.

- *Landscaping*

  Landscaping improvements including plantings.

- *Soft Costs*

  Estimated to be 12% of hard costs, plus an additional 4% for construction management fee.

E. Improvement Area #3B Improvements

- *Roadway*

  Improvements including mobilization, erosion control, grading, subgrade stabilization (including lime treatment and compaction), curb and gutter, road base construction, hot mix asphalt, curb ramps, sidewalk, roundabout improvements, street lights, striping,

concrete, and reinforcing steel for internal roadways. The internal roadways are located within Improvement Area #3B, and direct frontage is provided to the single family lots in Improvement Area #3B to these internal roadways.

- *Drainage*

  Improvements including trench excavation and embedment, trench safety, reinforced concrete pipe, manholes, storm outfalls, storm drain inlets, testing, trenching and all other necessary appurtenances required to ensure proper drainage of the internal public roadways within Improvement Area #3B.

- *Wastewater*

  Improvements including trench excavation and embedment, trench safety, PVC piping, manholes, service connections, testing, and all other necessary appurtenances required to provide wastewater service to each parcel within Improvement Area #3B.

- *Landscaping*

  Landscaping improvements including plantings.

- *Soft Costs*

  Estimated to be 12% of hard costs, plus an additional 4% for construction management fee.

F. Bond Issuance Costs

- *Debt Service Reserve Fund*

  Equals the amount required under an applicable Indenture in connection with the issuance of PID Bonds.

- *Underwriter's Discount*

  Equals a percentage of the par amount of a particular series of PID Bonds, and includes a fee for underwriter's counsel.

- *Cost of Issuance*

  Costs associated with issuing PID Bonds, including but not limited to attorney fees, financial advisory fees, consultant fees, appraisal fees, printing costs, publication costs, City costs, fees charged by the Texas Attorney General, and any other cost or expense directly associated with the issuance of PID Bonds.

G. Administrative Reserves

Estimated first year Annual Collection Costs.

SECTION IV: SERVICE PLAN

The PID Act requires the Service Plan to cover a period of at least five years. The Service Plan is required to define the annual projected costs and indebtedness for the Authorized Improvements undertaken within the District during the five-year period. The Service Plan must be reviewed and updated, at least annually, and approved by the City Council. **Exhibit D** summarizes the Service Plan for the District. The Service Plan is also required to include a copy of the buyer disclosure notice form required by Section 5.014 of the Texas Property Code, as amended. The buyer disclosures are attached hereto as **Exhibit X**.

Exhibit E summarizes the sources and uses of funds required to construct the Authorized Improvements and pay the Administrative Reserves and Bond Issuance Costs. The sources and uses of funds shown on **Exhibit E** shall be updated each year in the Annual Service Plan Update to reflect any budget revisions and Actual Costs.

SECTION V: ASSESSMENT PLAN

The PID Act allows the City Council to apportion the costs of the Authorized Improvements to the Assessed Property based on the special benefit received from the Authorized Improvements. The PID Act provides that such costs may be apportioned: (1) equally per front foot or square foot; (2) according to the value of property as determined by the City Council, with or without regard to improvements constructed on the property; or (3) in any other manner approved by the City Council that results in imposing equal shares of such costs on property similarly benefited. The PID Act further provides that the governing body may establish by ordinance reasonable classifications and formulas for the apportionment of the cost between the City and the area to be assessed and the methods of assessing the special benefits for various classes of improvements.

The determination by the City Council of the assessment methodologies set forth below is the result of the discretionary exercise by the City Council of its legislative authority and governmental powers and is conclusive and binding on the Owner and all future owners and developers of the Assessed Property.

A. Assessment Methodology

The City Council, acting in its legislative capacity based on information provided by the Developer and its engineer and reviewed by the City staff and by third-party consultants retained by the City, has determined that the Authorized Improvements shall be allocated as follows:

- Major Improvements were allocated pro rata between the Improvement Area #1

Assessed Property, Improvement Area #2 Assessed Property, and the Future Improvement Area based on Estimated Buildout Value, as shown on **Exhibit P**. Major Improvements shall be allocated pro rata between the Improvement Area #3A Assessed Property, Improvement Area #3B Assessed Property, and the Future Improvement Area based on Estimated Buildout Value, as shown on **Exhibit P**.

- The Improvement Area #1 Improvements are allocated entirely to the Improvement Area #1 Assessed Property.
- The Improvement Area #2 Improvements are allocated entirely to the Improvement Area #2 Assessed Property.
- The Improvement Area #3A Improvements are allocated entirely to the Improvement Area #3A Assessed Property.
- The Improvement Area #3B Improvements are allocated entirely to the Improvement Area #3B Assessed Property.
- Bond Issuance Costs and Administrative Reserves for the Improvement Area #1 Bonds and Improvement Area #2 Bonds were allocated entirely to the Assessed Property relating to the applicable PID Bonds.
- Bond Issuance Costs and Administrative Reserves related to the Improvement Area #3A and Improvement Area #3B Project Bonds are allocated 60.70% to Improvement Area #3A and 39.30% to Improvement Area #3B based on Estimated Buildout Value.

B. Assessments

Improvement Area #1 Assessments were levied on the Improvement Area #1 Assessed Property as shown on the Improvement Area #1 Assessment Roll, attached hereto as **Exhibit F**, based on Estimated Buildout Value. The projected Improvement Area #1 Annual Installments are shown on **Exhibit G**, subject to revisions made during any Annual Service Plan Update.

Improvement Area #2 Assessments were levied on the Improvement Area #2 Assessed Property as shown on the Improvement Area #2 Assessment Roll, attached hereto as **Exhibit H,** based on Estimated Buildout Value. The projected Improvement Area #2 Annual Installments are shown on **Exhibit I**, subject to revisions made during any Annual Service Plan Update.

Improvement Area #3A Assessments will be levied on the Improvement Area #3A Assessed Property as shown on the Improvement Area #3A Assessment Roll, attached hereto as **Exhibit K-1,** based on Estimated Buildout Value. The projected Improvement Area #3A Annual Installments are shown on **Exhibit L**, subject to revisions made during any Annual Service Plan Update.

Improvement Area #3B Assessments will be levied on the Improvement Area #3B Assessed Property as shown on the Improvement Area #3B Assessment Roll, attached hereto as **Exhibit M-1,** based on Estimated Buildout Value. The projected Improvement Area #3B Annual Installments are shown on **Exhibit N**, subject to revisions made during any Annual Service Plan Update.

C. Findings of Special Benefit

The City Council, acting in its legislative capacity based on information provided by the Developer and its engineer and reviewed by the City staff and by third-party consultants retained by the City, has found and determined:

- *Improvement Area #1*

  1. The costs of Improvement Area #1 Authorized Improvements equal $9,245,031 as shown on **Exhibit C**; and

  2. The Improvement Area #1 Assessed Property receives special benefit from Improvement Area #1 Authorized Improvements equal to or greater than the Actual Costs of the Improvement Area #1 Authorized Improvements; and

  3. The Improvement Area #1 Assessed Property was allocated 100% of the Improvement Area #1 Assessments levied on the Improvement Area #1 Assessed Property for Improvement Area #1 Authorized Improvements, which equalled $7,043,000 at the time Improvement Area #1 Assessments were levied, and $6,843,357 remains outstanding as shown on the Improvement Area #1 Assessment Roll attached hereto as **Exhibit F**; and

  4. The special benefit (≥ $9,245,031) received by the Improvement Area #1 Assessed Property from Improvement Area #1 Authorized Improvements is greater than the amount of the Improvement Area #1 Assessments ($7,043,000) levied on the Improvement Area #1 Assessed Property; and

  5. At the time the City Council approved the 2023 Assessment Ordinance levying the Improvement Area #1 Assessments, the Owner and BobWhite together owned 100% of the Improvement Area #1 Assessed Property. The Owner and BobWhite acknowledged that the Improvement Area #1 Authorized Improvements confer a special benefit on the Improvement Area #1 Assessed Property and consented to the imposition of the Improvement Area #1 Assessments to pay for Improvement Area #1 Authorized Improvements associated therewith. The Owner and BobWhite ratified, confirmed, accepted, agreed to, and approved (1) the determinations and findings by the City Council as to the special benefits described herein and in the 2023

Assessment Ordinance, (2) the 2023 Service and Assessment Plan and the 2023 Assessment Ordinance, and (3) the levying of the Improvement Area #1 Assessments on the Improvement Area #1 Assessed Property.

- *Improvement Area #2*

  1. The costs of Improvement Area #2 Authorized Improvements equal $10,630,797 as shown on **Exhibit C**; and

  2. The Improvement Area #2 Assessed Property receives special benefit from Improvement Area #2 Authorized Improvements equal to or greater than the Actual Costs of the Improvement Area #2 Authorized Improvements; and

  3. The Improvement Area #2 Assessed Property was allocated 100% of the Improvement Area #2 Assessments levied on the Improvement Area #2 Assessed Property for Improvement Area #2 Authorized Improvements, which equalled $6,873,000 at the time Improvement Area #2 Assessments were levied, and $6,873,000 remains outstanding as shown on the Improvement Area #2 Assessment Roll attached hereto as **Exhibit H**; and

  4. The special benefit ($\geq$ $10,630,797) received by the Improvement Area #2 Assessed Property from Improvement Area #2 Authorized Improvements is greater than the amount of the Improvement Area #2 Assessments ($6,873,000) levied on the Improvement Area #2 Assessed Property; and

  5. At the time the City Council approved the 2024 Assessment Ordinance levying the Improvement Area #2 Assessments, the Owner owned 100% of the Improvement Area #2 Assessed Property. The Owner acknowledged that the Improvement Area #2 Authorized Improvements confer a special benefit on the Improvement Area #2 Assessed Property and consented to the imposition of the Improvement Area #2 Assessments to pay for the Improvement Area #2 Authorized Improvements associated therewith. The Owner ratified, confirmed, accepted, agreed to, and approved (1) the determinations and findings by the City Council as to the special benefits described herein and in the 2024 Assessment Ordinance, (2) the 2024 Amended and Restated Service and Assessment Plan and the 2024 Assessment Ordinance, and (3) the levying of the Improvement Area #2 Assessments on the Improvement Area #2 Assessed Property.

- *Improvement Area #3A*

  1. The costs of Improvement Area #3A Authorized Improvements equal $5,481,492 as shown on **Exhibit C**; and

2. The Improvement Area #3A Assessed Property receives special benefit from Improvement Area #3A Authorized Improvements equal to or greater than the Actual Costs of the Improvement Area #3A Authorized Improvements; and

3. The Improvement Area #3A Assessed Property will be allocated 100% of the Improvement Area #3A Assessments levied on the Improvement Area #3A Assessed Property for Improvement Area #3A Authorized Improvements, which equal $4,262,000, as shown on the Improvement Area #3A Assessment Roll attached hereto as **Exhibit K**; and

4. The special benefit (≥ $5,481,492) received by the Improvement Area #3A Assessed Property from Improvement Area #3A Authorized Improvements is greater than the amount of the Improvement Area #3A Assessments ($4,262,000) levied on the Improvement Area #3A Assessed Property; and

5. At the time the City Council approved the 2025 Assessment Ordinance levying the Improvement Area #3A Assessments, the Owner owned 100% of the Improvement Area #3A Assessed Property. The Owner acknowledged that the Improvement Area #3A Authorized Improvements confer a special benefit on the Improvement Area #3A Assessed Property and consented to the imposition of the Improvement Area #3A Assessments to pay for the Improvement Area #3A Authorized Improvements associated therewith. The Owner ratified, confirmed, accepted, agreed to, and approved (1) the determinations and findings by the City Council as to the special benefits described herein and in the 2025 Assessment Ordinance, (2) this 2025 Amended and Restated Service and Assessment Plan and the 2025 Assessment Ordinance, and (3) the levying of the Improvement Area #3A Assessments on the Improvement Area #3A Assessed Property.

- *Improvement Area #3B*

6. The costs of Improvement Area #3B Authorized Improvements equal $4,131,165 as shown on **Exhibit C**; and

7. The Improvement Area #3B Assessed Property receives special benefit from Improvement Area #3B Authorized Improvements equal to or greater than the Actual Costs of the Improvement Area #3B Authorized Improvements; and

8. The Improvement Area #3B Assessed Property will be allocated 100% of the Improvement Area #3B Assessments levied on the Improvement Area #3B Assessed Property for Improvement Area #3B Authorized Improvements, which equal

$2,759,000, as shown on the Improvement Area #3B Assessment Roll attached hereto as **Exhibit M**; and

9. The special benefit (≥ $4,131,165) received by the Improvement Area #3B Assessed Property from Improvement Area #3B Authorized Improvements is greater than the amount of the Improvement Area #3B Assessments ($2,759,000) levied on the Improvement Area #3B Assessed Property; and

10. At the time the City Council approved the 2025 Assessment Ordinance levying the Improvement Area #3B Assessments, the Owner owned 100% of the Improvement Area #3B Assessed Property. The Owner acknowledged that the Improvement Area #3B Authorized Improvements confer a special benefit on the Improvement Area #3B Assessed Property and consented to the imposition of the Improvement Area #3B Assessments to pay for the Improvement Area #3B Authorized Improvements associated therewith. The Owner ratified, confirmed, accepted, agreed to, and approved (1) the determinations and findings by the City Council as to the special benefits described herein and in the 2025 Assessment Ordinance, (2) this 2025 Amended and Restated Service and Assessment Plan and the 2025 Assessment Ordinance, and (3) the levying of the Improvement Area #3B Assessments on the Improvement Area #3B Assessed Property.

D. Annual Collection Costs

The Annual Collection Costs shall be paid for on a pro rata basis by each Parcel of Assessed Property based on the amount of outstanding Assessment remaining on the Assessed Property. The Annual Collection Costs shall be collected as part of and in the same manner as Annual Installments in the amounts shown on the Assessment Roll, which may be revised based on Actual Costs incurred in Annual Service Plan Updates.

E. Additional Interest

The interest rate on Assessments levied on the Assessed Property to pay the PID Bonds may exceed the interest rate on the PID Bonds by the Additional Interest Rate. Interest at the rate of the PID Bonds and the Additional Interest shall be collected as part of each Annual Installment and shall be deposited pursuant to the applicable Indenture

SECTION VI: TERMS OF THE ASSESSMENTS

A. Reallocation of Assessments

1. Upon Division Prior to Recording of Subdivision Plat

Upon the division of any Assessed Property (without the recording of subdivision plat), the Administrator shall reallocate the Assessment for the Assessed Property prior to the division among the newly divided Assessed Properties according to the following formula:

$A = B \times (C \div D)$

Where the terms have the following meanings:

A = the Assessment for the newly divided Assessed Property

B = the Assessment for the Assessed Property prior to division

C = the Estimated Buildout Value of the newly divided Assessed Property

D = the sum of the Estimated Buildout Value for all of the newly divided Assessed Properties

The sum of the Assessments for all newly divided Assessed Properties shall equal the Assessment for the Assessed Property prior to subdivision. The calculation shall be made separately for each newly divided Assessed Property. The reallocation of an Assessment for an Assessed Property that is a homestead under Texas law may not exceed the Assessment prior to the reallocation. Any reallocation pursuant to this section shall be reflected in an update to this 2025 Amended and Restated Service and Assessment Plan approved by the City Council.

2. Upon Subdivision by a Recorded Subdivision Plat

Upon the subdivision of any Assessed Property based on a recorded subdivision plat and a Property ID has been assigned by the Appraisal District, the Administrator shall reallocate the Assessment for the Assessed Property prior to the subdivision among the newly subdivided Lots based on Estimated Buildout Value according to the following formula:

$A = [B \times (C \div D)]/E$

Where the terms have the following meanings:

A = the Assessment for the newly subdivided Lot

B = the Assessment for the Parcel prior to subdivision

C = the sum of the Estimated Buildout Value of all newly subdivided Lots with same Lot Type

D = the sum of the Estimated Buildout Value for all of the newly subdivided Lots excluding Non-Benefited Property

E= the number of Lots with same Lot Type

Prior to the recording of a subdivision plat, the Owner shall provide the City an Estimated Buildout Value as of the date of the recorded subdivision plat for each Lot created by the recorded subdivision plat. The calculation of the Estimated Buildout Value for a Lot shall be performed by the Administrator and confirmed by the City Council.

The sum of the Assessments for all newly subdivided Lots shall not exceed the Assessment for the portion of the Assessed Property subdivided prior to subdivision. The calculation shall be made separately for each newly subdivided Assessed Property. The reallocation of an Assessment for an Assessed Property that is a homestead under Texas law may not exceed the Assessment prior to the reallocation. Any reallocation pursuant to this section shall be reflected in an update to this 2025 Amended and Restated Service and Assessment Plan approved by the City Council. A subdivision plat has already been recorded for the Improvement Area #1 Assessed Property as shown on **Exhibit Q-1** and for the Improvement Area #2 Assessed Property as shown on **Exhibit Q-2** and Improvement Area #3A Assessed Property and Improvement Area #3B Assessed Property as shown on **Exhibit Q-3.**

3. Upon Consolidation

If two or more Lots or Parcels are consolidated, the Administrator shall allocate the Assessments against the Lots or Parcels before the consolidation to the consolidated Lot or Parcel, which allocation shall be approved by the City Council in the next Annual Service Plan Update. The Assessment for any resulting Lot or Parcel may not exceed the Maximum Assessment for the applicable Lot Type and compliance may require a mandatory Prepayment of Assessments pursuant to Section VI.C.

B. True-Up of Assessments if Maximum Assessment Exceeded

Prior to the approval of a final subdivision plat, the Administrator shall certify that the final plat will not cause the Assessment for any Lot Type to exceed the Maximum Assessment. If the subdivision of any Assessed Property by a final subdivision plat causes the Assessment per Lot for any Lot Type to exceed the applicable Maximum Assessment for such Lot Type, the Owner must partially prepay the Assessment for each Assessed Property that exceeds the applicable Maximum Assessment for such Lot Type in an amount sufficient to reduce the Assessment to the applicable Maximum Assessment for such Lot Type. The City's approval of a final subdivision plat without payment of such amounts does not eliminate the obligation of the person or entity filing the plat to pay such Assessments.

C. Mandatory Prepayment of Assessments

If Assessed Property is transferred to a person or entity that is exempt from payment of the Assessment, the owner transferring the Assessed Property shall pay to the Administrator the full amount of the Assessment, plus Prepayment Costs and Delinquent Collection Costs, prior to the transfer. If the owner of the Assessed Property causes the Assessed Property to become Non-Benefited Property, the owner causing the change in status shall pay the full amount of the Assessment, plus Prepayment Costs and Delinquent Collection Costs, prior to the change in status.

D. Reduction of Assessments

If as a result of cost savings or Authorized Improvements not being constructed, the Actual Costs of Authorized Improvements are less than the Assessments, (i) in the event PID Bonds are not issued, the City Council shall reduce each Assessment on a pro-rata basis such that the sum of the resulting reduced Assessments for all Assessed Property equals the reduced Actual Costs, or (ii) in the event PID Bonds are issued, the Trustee shall apply amounts on deposit in the applicable account of the project fund, relating to the PID Bonds, that are not expected to be used for purposes of the project fund to redeem outstanding PID Bonds, in accordance with the applicable Indenture. The Assessments shall not, however, be reduced to an amount less than the outstanding PID Bonds.

The Administrator shall update (and submit to the City Council for review and approval as part of the next Annual Service Plan Update) the Assessment Roll and corresponding Annual Installments to reflect the reduced Assessments.

E. Prepayment of Assessments

The owner of the Assessed Property may pay, at any time, all or any part of an Assessment in accordance with the PID Act. If PID Bonds are issued, interest costs from the date of Prepayment to the date of redemption of the applicable PID Bonds, if any, may be paid from a reserve established under the applicable Indenture. If an Annual Installment has been billed prior to the Prepayment, the Annual Installment shall be due and payable and shall be credited against the Prepayment.

If an Assessment is paid in full, with Prepayment Costs: (1) the Administrator shall cause the Assessment to be reduced to zero and the Assessment Roll to be revised accordingly; (2) the Administrator shall cause the revised Assessment Roll to be approved by the City Council as part of the next Annual Service Plan Update; (3) the obligation to pay the Assessment and

corresponding Annual Installments shall terminate; and (4) the City shall provide the owner with a recordable "Notice of PID Assessment Termination," a form of which is attached hereto as **Exhibit W**.

If an Assessment is paid in part, with Prepayment Costs: (1) the Administrator shall cause the Assessment to be reduced and the Assessment Roll revised, accordingly by allocating the amount of the Prepayment pro rata to each remaining Annual Installment, or of PID Bonds were issued secured by such Assessment, in accordance with the applicable Indenture; (2) the Administrator shall cause the revised Assessment Roll to be approved by the City Council as part of the next Annual Service Plan Update; and (3) the obligation to pay the Assessment and corresponding Annual Installments shall be reduced to the extent of the prepayment made.

F. Prepayment as a Result of Eminent Domain Proceeding or Taking

Subject to applicable law, if any portion of any Parcel of Assessed Property is taken from an owner as a result of eminent domain proceedings or if a transfer of any portion of any Parcel of Assessed Property is made to an entity with the authority to condemn all or a portion of the Assessed Property in lieu of or as a part of an eminent domain proceeding (a **"Taking"**), the portion of the Assessed Property that was taken or transferred (the **"Taken Property"**) shall be reclassified as Non-Benefited Property.

For the Assessed Property that is subject to the Taking as described in the preceding paragraph, the Assessment that was levied against the Assessed Property (when it was included in the Taken Property) prior to the Taking shall remain in force against the remaining Assessed Property (the Assessed Property less the Taken Property) (the **"Remaining Property"**), following the reclassification of the Taken Property as Non-Benefited Property, subject to an adjustment of the Assessment applicable to the Remaining Property after any required Prepayment as set forth below. The owner of the Remaining Property will remain liable to pay in Annual Installments, or payable as otherwise provided by this 2025 Amended and Restated Service and Assessment Plan, as updated, or the PID Act, the Assessment that remains due on the Remaining Property, subject to an adjustment in the Assessment applicable to the Remaining Property after any required Prepayment as set forth below. Notwithstanding the foregoing, if the Assessment that remains due on the Remaining Property exceeds the Maximum Assessment, the owner of the Remaining Property will be required to make a Prepayment in an amount necessary to ensure that the Assessment against the Remaining Property does not exceed the Maximum Assessment, in which case the Assessment applicable to the Remaining Property will be reduced by the amount of the partial Prepayment. If the City receives all or a portion of the eminent domain proceeds (or payment made in an agreed sale in lieu of condemnation), such amount shall be credited against

the amount of prepayment, with any remainder credited against the assessment on the Remainder Property.

In all instances the Assessment remaining on the Remaining Property shall not exceed the Maximum Assessment.

By way of illustration, if an owner owns 100 acres of Assessed Property subject to a $100 Assessment and 10 acres is taken through a Taking, the 10 acres of Taken Property shall be reclassified as Non-Benefited Property and the remaining 90 acres of Remaining Property shall be subject to the $100 Assessment (provided that this $100 Assessment does not exceed the Maximum Assessment on the Remaining Property). If the Administrator determines that the $100 Assessment reallocated to the Remaining Property would exceed the Maximum Assessment on the Remaining Property by $10, then the owner shall be required to pay $10 as a Prepayment of the Assessment against the Remaining Property and the Assessment on the Remaining Property shall be adjusted to be $90.

Notwithstanding the previous paragraphs in this subsection, if the owner of the Taken Property notifies the City and the Administrator that the Taking prevents the Remaining Property from being developed for any use which could support the Estimated Buildout Value requirement, the owner shall, upon receipt of the compensation for the Taken Property, be required to prepay the amount of the Assessment required to buy down the outstanding Assessment to the Maximum Assessment on the Remaining Property to support the Estimated Buildout Value requirement. Said owner will remain liable to pay the Annual Installments on both the Taken Property and the Remaining Property until such time that such Assessment has been prepaid in full.

Notwithstanding the previous paragraphs in this subsection, the Assessments shall never be reduced to an amount less than the amount required to pay all outstanding debt service requirement on all outstanding PID Bonds, if applicable.

G. Payment of Assessment in Annual Installments

Exhibit G shows the projected Improvement Area #1 Annual Installments. Assessments that are not paid in full shall be due and payable in Annual Installments. Annual Installments are subject to adjustment in each Annual Service Plan Update.

Exhibit I shows the projected Improvement Area #2 Annual Installments. Assessments that are not paid in full shall be due and payable in Annual Installments. Annual Installments are subject to adjustment in each Annual Service Plan Update.

Exhibit L shows the projected Improvement Area #3A Annual Installments. Assessments that are not paid in full shall be due and payable in Annual Installments. Annual Installments are subject to adjustment in each Annual Service Plan Update.

Exhibit N shows the projected Improvement Area #3B Annual Installments. Assessments that are not paid in full shall be due and payable in Annual Installments. Annual Installments are subject to adjustment in each Annual Service Plan Update.

The Administrator shall prepare and submit to the City Council for its review and approval, with a copy provided to the Developer contemporaneously therewith, an Annual Service Plan Update to allow for the billing and collection of Annual Installments. Each Annual Service Plan Update shall include an updated Assessment Roll and updated calculations of Annual Installments. Annual Collection Costs shall be allocated equally among Parcels for which the Assessments remain unpaid. Annual Installments shall be collected in the same manner and at the same time as ad valorem taxes. Annual Installments shall be subject to the penalties, procedures, and foreclosure sale in case of delinquencies as set forth in the PID Act and in the same manner as ad valorem taxes for the City. The City Council may provide for other means of collecting Annual Installments. Assessments shall have the lien priority specified in the PID Act.

Sales of the Assessed Property for nonpayment of Annual Installments shall be subject to the lien for the remaining unpaid Annual Installments against the Assessed Property, and the Assessed Property may again be sold at a judicial foreclosure sale if the purchaser fails to timely pay the non-delinquent Annual Installments as they become due and payable.

The City reserves the right to refund PID Bonds in accordance with the PID Act and the applicable Indenture, if such bonds are issued. In the event of a refunding, the Administrator shall recalculate the Annual Installments so that total Annual Installments will be sufficient to pay the refunding bonds, and the refunding bonds shall constitute "PID Bonds."

Each Annual Installment of an Assessment, including interest on the unpaid principal of the Assessment, shall be updated annually. Each Annual Installment shall be due when billed and shall be delinquent if not paid prior to February 1 of the following year.

SECTION VII: ASSESSMENT ROLL

The Improvement Area #1 Assessment Roll is attached as **Exhibit F**. The Administrator shall prepare and submit to the City Council for review and approval, proposed revisions to the Improvement Area #1 Assessment Roll and Improvement Area #1 Annual Installments for each Parcel within the Improvement Area #1 Assessed Property as part of each Annual Service Plan Update.

The Improvement Area #2 Assessment Roll is attached as **Exhibit H**. The Administrator shall prepare and submit to the City Council for review and approval, proposed revisions to the

Improvement Area #2 Assessment Roll and Improvement Area #2 Annual Installments for each Parcel within the Improvement Area #2 Assessed Property as part of each Annual Service Plan Update.

The Improvement Area #3A Assessment Roll is attached as **Exhibit K-1**. The Improvement Area #3A Assessment Roll by block and lot is included as **Exhibit K-2** for illustrative purposes only. The Administrator shall prepare and submit to the City Council for review and approval, proposed revisions to the Improvement Area #3A Assessment Roll and Improvement Area #3A Annual Installments for each Parcel within the Improvement Area #3A Assessed Property as part of each Annual Service Plan Update.

The Improvement Area #3B Assessment Roll is attached as **Exhibit M-1**. The Improvement Area #3B Assessment Roll by block and lot is included as **Exhibit M-2** for illustrative purposes only. The Administrator shall prepare and submit to the City Council for review and approval, proposed revisions to the Improvement Area #3B Assessment Roll and Improvement Area #3B Annual Installments for each Parcel within the Improvement Area #3B Assessed Property as part of each Annual Service Plan Update.

SECTION VIII: ADDITIONAL PROVISIONS

A. Calculation Errors

If the owner of a Parcel claims that an error has been made in any calculation required by this 2025 Amended and Restated Service and Assessment Plan, including, but not limited to, any calculation made as part of any Annual Service Plan Update, the owner's sole and exclusive remedy shall be to submit a written notice of error to the Administrator by December 1st of each year following City Council approval of the calculation; otherwise, the owner shall be deemed to have unconditionally approved and accepted the calculation. Upon receipt of a written notice of error from an owner the Administrator shall provide a written response to the City Council and the owner within 30 days of such referral. The City Council shall consider the owner's notice of error and the Administrator's response at a City Council meeting, and within 30 days after closing such meeting, the City Council shall make a final determination as to whether or not an error has been made. If the City Council determines that an error has been made, the City Council shall take such corrective action as is authorized by the PID Act, this 2025 Amended and Restated Service and Assessment Plan, the 2025 Assessment Ordinance, or the Indenture, or is otherwise authorized by the discretionary power of the City Council. The determination by the City Council as to whether an error has been made, and any corrective action taken by the City Council, shall be final and binding on the owner and the Administrator.

B. Amendments

Amendments to this 2025 Amended and Restated Service and Assessment Plan must be made by the City Council in accordance with the PID Act. To the extent permitted by the PID Act, this 2025 Amended and Restated Service and Assessment Plan may be amended without notice to owners of the Assessed Property: (1) to correct mistakes and clerical errors; (2) to clarify ambiguities; and (3) to provide procedures to collect Assessments, Annual Installments, and other charges imposed by this 2025 Amended and Restated Service and Assessment Plan.

C. Administration and Interpretation

The Administrator shall: (1) perform the obligations of the Administrator as set forth in this 2025 Amended and Restated Service and Assessment Plan; (2) administer the District for and on behalf of and at the direction of the City Council; and (3) interpret the provisions of this 2025 Amended and Restated Service and Assessment Plan. Interpretations of this 2025 Amended and Restated Service and Assessment Plan by the Administrator shall be in writing and shall be appealable to the City Council by owners or developers adversely affected by the interpretation. Appeals shall be decided at a meeting of the City Council during which all interested parties have an opportunity to be heard. Decisions by the City Council shall be final and binding on the owners and developers and their successors and assigns.

D. Form of Buyer Disclosure

Per Section 5.014 of the Texas Property Code, as amended, this 2025 Amended and Restated Service and Assessment Plan, and any future Annual Service Plan Updates, shall include a form of the buyer disclosures for the District. The buyer disclosures are attached hereto on **Exhibit X**. Within seven days of approval by the City Council, the City shall file and record in the real property records of the County the executed ordinance of this 2025 Amended and Restated Service and Assessment Plan, or any future Annual Service Plan Updates. The executed ordinance, including any attachments, approving this 2025 Amended and Restated Service and Assessment Plan or any future Annual Service Plan Updates shall be filed and recorded in their entirety.

E. Severability

If any provision of this 2025 Amended and Restated Service and Assessment Plan is determined by a governmental agency or court to be unenforceable, the unenforceable provision shall be deleted and, to the maximum extent possible, shall be rewritten to be enforceable. Every effort shall be made to enforce the remaining provisions.

LIST OF EXHIBITS

Exhibit A-1 District Legal Description

Exhibit A-2 Improvement Area #1 Legal Description

Exhibit A-3 Improvement Area #2 Legal Description

Exhibit A-4 Improvement Area #3A Legal Description

Exhibit A-5 Improvement Area #3B Legal Description

Exhibit A-6 Future Improvement Area Legal Description

Exhibit B-1 District Boundary Map

Exhibit B-2 Improvement Area #1, Improvement Area #2, Improvement Area #3A, Improvement Area #3B, and Future Improvement Area Boundary Map

Exhibit C Authorized Improvements

Exhibit D Service Plan

Exhibit E Sources and Uses

Exhibit F Improvement Area #1 Assessment Roll

Exhibit G Improvement Area #1 Annual Installments

Exhibit H Improvement Area #2 Assessment Roll

Exhibit I Improvement Area #2 Annual Installments

Exhibit J Improvement Area #3A- Improvement Area #3B Annual Installments

Exhibit K-1 Improvement Area #3A Assessment Roll

Exhibit K-2 Improvement Area #3A Assessment Roll by Block and Lot

Exhibit L Improvement Area #3A Annual Installments

Exhibit M-1 Improvement Area #3B Assessment Roll

Exhibit M-2 Improvement Area #3B Assessment Roll by Block and Lot

Exhibit N Improvement Area #3B Annual Installments

Exhibit O Maximum Assessment Per Lot Type

Exhibit P Estimated Buildout Value and Allocation of Major Improvements

Exhibit Q-1 Improvement Area #1 Final Plat

Exhibit Q-2 Improvement Area #2 Final Plat

Exhibit Q-3 Improvement Area #3 Final Plat

Exhibit R Lot Type Classification Map

Exhibit S Map of Major Improvements

Exhibit T Map of Improvement Area #1 Improvements

Exhibit U Map of Improvement Area #2 Improvements

Exhibit V Map of Improvement Area #3A Improvements and Improvement Area #3B Improvements

Exhibit W Notice of PID Assessment Termination

Exhibit X Homebuyer Disclosures

EXHIBIT A-1 – DISTRICT LEGAL DESCRIPTION

EXHIBIT A
"Property"

TRACT 1:

A DESCRIPTION OF 34.247 ACRES IN THE PHILIP SMITH SURVEY, ABSTRACT 415, HAYS COUNTY, TEXAS, BEING A PORTION OF A 34.29 ACRE TRACT CONVEYED TO JOHN MARCUS BAIRD BY DEED DATED JANUARY 13, 1993 AND RECORDED IN VOLUME 971, PAGE 116 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS; SAID 34.247 ACRES BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS

BEGINNING at a 1/2" rebar found for the southeast corner of the said 34.29 acre tract, being also the northeast corner of a 10.11 acre tract described in Volume 3444, Page 347 of the Official Public Records of Hays County, Texas, and being in the west line of Tract 1 of the P.L. Turner Subdivision, a subdivision of Record in Volume 133, Page 444 of the Deed Records of Hays County, Texas.

THENCE with the south line of the 34.29 acre tract, being also the north line of the 10.11 acre tract, the following four (4) courses and distances:

1. South 81°14'08" West, a distance of 397.32 feet to a 1/2" rebar with Chapparral cap set;
2. South 84°24'01" West, a distance of 7.97 feet to a 1/2" rebar found;
3. South 85°19'17" West, a distance of 78.51 feet to a fence post found;
4. South 37°56'47" West, a distance of 97.35 feet to a 1/2" rebar found for the northwest corner of the 10.11 acre tract, being also the northeast corner of Lot 3 of Burrows Subdivision, a subdivision of record in Book 15, Page 69 of the Plat Records of Hays County, Texas;

THENCE with the south line of the 34.29 acre tract, being also the north line of Burrows Subdivision, the following four (4) courses and distances:

1. South 82°29'22" West, a distance of 88.75 feet to a nail found;
2. South 79°25'37" West, a distance of 76.64 feet to a nail found in a live oak for the northwest corner of Lot 3, being also the northeast corner of Lot 2;
3. South 81°55'21" West, a distance of 126.68 feet to a 1/2" rebar with a 3984 cap found for the northwest corner of Lot 2, being also the northeast corner of Lot 1;

4. South 81°56'23" West, a distance of 126.62 feet to a 1/2" rebar found for the northwest corner of Lot 1, being also the northeast corner of a 2.107 acre tract described in Volume 2840, Page 300 of the Official Public Records of Hays County, Texas;

THENCE continuing with the south line of the 34.29 acre tract, being also the north line of the 2.107 acre tract, the following two (2) courses and distances:

1. South 82°31'24" West, a distance of 142.51 feet to a nail found in a live oak;
2. South 81°27'49" West, a distance of 160.55 feet to a 1/2" rebar found for the northwest corner of the 2.107 acre tract, being also the northeast corner of Lot 1 of Sportsplex Subdivision No. 1, a subdivision of record in Book 7, Page 157 of the Plat Records of Hays County, Texas.

THENCE continuing with the south line of the 34.29 acre tract, being also the north line of Lot 1, the following two (2) courses and distances:

1. South 78°46'14" West, a distance of 283.22 feet to a 5/8" rebar found;
2. South 87°33'15" West, a distance of 75.24 feet a 1/2" rebar found for the northwest corner of Lot 1, being in the east line of Sportsplex Drive, described in Volume 784, Page 217 of the Deed Records of Hays County, Texas;

THENCE with the east line of Sportsplex Drive, crossing the 34.29 acre tract the following two (2) courses and distances:

1. With a curve to the left, having a radius of 309.60 feet, a delta angle of 14°55'01", an arc length of 80.60 feet, and a chord which bears North 67°03'32" West, a distance of 80.38 feet to a calculated point;
2. North 74°27'23" West, a distance of 19.74 feet to a calculated point in the center of a road, being in the west line of the 34.29 acre tract;

THENCE with the west line of the 34.29 acre tract, 25' from and parallel to the east line of a 20.518 acre tract described in Volume 784, Page 210 of the Deed Records of Hays County, Texas, the following six (6) courses and distances:

1. North 15°32'13" East, a distance of 7.31 feet to a calculated point;
2. North 14°52'44" East, a distance of 170.09 feet to a calculated point;
3. North 42°12'50" East, a distance of 247.76 feet to a calculated point;
4. North 34°57'13" East, a distance of 299.47 feet to a calculated point;
5. North 35°47'18" East, a distance of 429.51 feet to a calculated point;

6. North 43°12'18" East, a distance of 469.74 feet to a 1/2" rebar with Chaparral cap set for the northwest corner of the 34.29 acre tract, from which a 1/2" rebar with Zamorra Warrick Associates cap found for the northeast corner of the 20.518 acre tract, bears South 89°12'58" West, a distance of 34.79 feet;

THENCE North 89°12'58" East, with the north line of the 34.29 acre tract, a distance of 764.65 feet to a 1/2" rebar found for the northeast corner of the 34.29 acre tract, being also in the west line of said Tract 1;

THENCE with the east line of the 34.29 acre tract, being also the west line of Tract 1, the following two (2) courses and distances:

1. South 01°00'24" West, a distance of 791.82 feet to a nail in a fence post found;
2. South 01°57'23" West, a distance of 240.27 feet to the **POINT OF BEGINNING**, containing 34.247 acres of land, more or less.

TRACT 2:

A DESCRIPTION OF 50.206 ACRES IN THE PHILIP SMITH SURVEY, ABSTRACT 415, HAYS COUNTY, TEXAS, BEING A PORTION OF A TRACT CALLED THE EAST PART OF 152.47 ACRES CONVEYED TO JOHN MARCUS BAIRD BY GENERAL WARRANTY DEED DATED MAY 9, 1978 AND RECORDED IN VOLUME 310, PAGE 718 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS, SAME BEING A PORTION OF A 152.47 ACRE TRACT CONVEYED TO EDNA EARL BAIRD BY DEED DATED FEBRUARY 19, 1937 AND RECORDED IN VOLUME 154, PAGE 59 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS; SAID 50.206 ACRES BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING at an axle found for the northeast corner of the said 152.47 acre tract, being an angle point in the south line of Tract 76 A-1, Replat of the Remainder of Tract 76A, Springlake and Subdivision of Reed Acreage, a subdivision of record in Book 9, Page 47 of the Plat Records of Hays County, Texas;

THENCE South 00°16'33" West, with the east line of the 152.47 acre tract, being a south line of said Tract 76 A-1, a distance of 70.71 feet to a fence post found for an angle point in the south line of Tract 76 A-1, for the northwest corner of a tract of land described in Volume 130, Page 231 of the Deed Records of Hays County, Texas;

THENCE South 02°57'28" West, with the east line of the 152.47 acre tract, and with the west line of a 2 acre tract described in Volume 130, Page 231, and Volume 1658, Page 147 of the Official Public Records of Hays County, Texas, a distance of 174.43 feet to fence post found for the southwest corner of the 2 acre tract, being also the northwest corner of Tract 1 of the P.L. Turner Subdivision, a subdivision of Record in Volume 133, Page 444 of the Deed Records of Hays County, Texas;

THENCE with the east line of the 152.47 acre tract, being the west line of Tract 1, with the fence, the following five (5) courses and distances:

1. South 02°48'03" West, a distance of 431.51 feet to a calculated point;
2. South 02°54'13" West, a distance of 484.14 feet to a calculated point;
3. South 02°03'04" West, a distance of 259.80 feet to a calculated point;
4. South 01°35'37" West, a distance of 300.57 feet to a calculated point;
5. South 01°07'29" West, a distance of 353.19 feet to a 1/2" rebar found for the northwest corner of a 34.29 acre tract described in Volume 971, Page 116 of the Deed Records of Hays County, Texas;

THENCE South 89°12'58" West, with the north line of the 34.29 acre tract, over and across the 152.47 acre tract, a distance of 764.65 feet to a 1/2" rebar with Chaparral cap set for the northwest corner of the 34.29 acre tract, being in the division line of the 152.47 acre tract described in Volume 310, Page 718 and Volume 310, Page 721 of the Deed Records of Hays County, Texas;

THENCE South 89°12'58" West, continuing across the 152.47 acre tract, with the said division line, a distance of 34.79 feet to a 1/2" rebar with Zamorra Warrick Associates cap found for the northwest corner of a 20.518 acre tract described in Volume 784, Page 210 of the Deed Records of Hays County, Texas;

THENCE South 89°12'49" West, with the north line of the 20.518 acre tract, with the said division line, a distance of 196.26 feet to a fence post found for the southeast corner of a 45.53 acre tract described in Volume 2953, Page 181 of the Official Public Records of Hays County, Texas;

THENCE with the east line of the 45.53 acre tract, with the said division line, crossing the 152.57 acre tract, the following four (4) courses and distances:

1. North 01°23'38" West, a distance of 440.21 feet to a 1/2" rebar with Carson Bush cap found;
2. North 00°57'16" West, a distance of 525.11 feet to a nail found at the base of a 13" and 14" live oak;
3. North 09°31'45" West, a distance of 154.92 feet to a 1/2" rebar with Chaparral cap set;
4. North 01°24'08" West, a distance of 484.34 feet to a 1/2" rebar found for the northeast corner of the 45.53 acre tract, being also the southeast corner of Lot 18 of Hidden Springs

Ranch Section II, a subdivision of record in Book 14, Page 69 of the Plat Records of Hays County, Texas;

THENCE with the east line of Hidden Springs Ranch Section II, continuing with the said division line, crossing the 152.57 acre tract, the following five (5) courses and distances:

1. North 01°22'12" West, a distance of 155.30 feet to a nail found in concrete;
2. North 15°23'51" East, a distance of 18.43 feet to a 1/2" rebar found;
3. North 03°04'23" West, a distance of 27.45 feet to a 1/2" rebar with 4404 cap found for the northeast corner of Lot 18, being also the southeast corner of Lot 17;
4. North 02°18'43" West, a distance of 190.70 feet to a 1/2" rebar with 4542 cap found for the northeast corner of Lot 17, being also the southeast corner of Lot 14;
5. North 01°02'42" West, a distance of 50.06 feet to an axle found for an angle point in the north line of the 152.47 acre tract, being also the southwest corner of Tract 76 A-1;

THENCE North 87°50'05" East, with the north line of the 152.47 acre tract, being also the south line of Tract 76 A-1, a distance of 1141.82 feet to the **POINT OF BEGINNING**, containing 50.206 acres of land, more or less.

TRACT 3:

A DESCRIPTION OF 94.695 ACRES (APPROX. 4,124,910 SQ. FT.) IN THE PHILIP SMITH SURVEY, ABSTRACT 415, HAYS COUNTY, TEXAS, BEING A PORTION OF A 119.7 ACRE TRACT CONVEYED TO NELSON M. DAVIDSON AND DORIS BREED DAVIDSON BY DEED DATED JUNE 23, 1952 AND RECORDED IN VOLUME 154, PAGE 290 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS, AND BEING A PORTION OF TRACT 1, P.L. TURNER SUBDIVISION, A SUBDIVISION OF RECORD IN VOLUME 133, PAGE 444 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS; SAID 94.695 ACRES BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 1/2" rebar with 3984 cap found in the west line of Old Fredericksburg Road (right-of-way width varies), for the northeast corner of the Doris Breed Davidson Subdivision, a subdivision of record in Book 10, Page 395 of the Plat Records of Hays County, Texas;

THENCE North 01°30'02" West, with the west line of Old Fredericksburg Road, across Tract 1, a distance of 425.26 feet to a 1/2" rebar with Chaparral cap set for the **POINT OF BEGINNING**;

THENCE over and across Tract 1, the following four (4) courses and distances:

1. South 89°48'55" West, a distance of 259.27 feet to a 1/2" rebar with Chaparral cap set;

2. With a curve to the left, having a radius of 970.00 feet, a delta angle of 06°06'33", an arc length of 103.43 feet, and a chord which bears South 86°45'39" West, a distance of 103.38 feet to a 1/2" rebar with Chaparral cap set
3. South 38°42'22" West, a distance of 192.59 feet to a 1/2" rebar with Chaparral cap set;
4. South 00°43'30" West, a distance of 587.78 feet to a 1/2" rebar with Chaparral cap set in the north line of a 9.008 acre tract described in Volume 2102, Page 453 of the Official Public Records of Hays County, Texas, from which a 1/2" rebar with 3984 cap found in the north line of the 9.008 acre tract, for the southwest corner of the Doris Breed Davidson Subdivision, bears North 87°06'31" East, a distance of 205.48 feet;

THENCE South 87°06'31" West, with the north line of the 9.008 acre tract, continuing across Tract 1, a distance of 304.58 feet to a 1/2" rebar found for the northwest corner of the 9.008 acre tract;

THENCE South 07°58'13" West, with the west line of the 9.008 acre tract, continuing across Tract 1, a distance of 1318.37 feet to a nail in concrete found for the southwest corner of the 9.008 acre tract, being also in the north line of a 6.38 acre tract described in Volume 1489, Page 391 of the Official Public Records of Hays County, Texas, for an angle point in the east line of Tract 1;

THENCE South 13°58'09" West, with the east line of Tract 1, being also the west line of the 6.38 acre tract, a distance of 743.78 feet to a 1/2" rebar with 3984 cap found for the southeast corner of Tract 1, being also the southwest corner of the 6.38 acre tract, and being in the north line of a 3.91 acre tract described in Volume 269, Page 226 of the Deed Records of Hays County, Texas;

THENCE South 88°04'18" West, with the south line of Tract 1, being also the north line of the 3.91 acre tract, a distance of 101.94 feet to a nail found in a 6" post for the northwest corner of the 3.91 acre tract, being also the apparent northeast corner of a 6 acre tract described in Volume 110, Page 563 of the Deed Records of Hays County, Texas;

THENCE North 89°32'58" West, with the south line of Tract 1, being also the apparent north line of the 6 acre tract, a distance of 152.30 feet to a fence post found for the apparent northwest corner of the 6 acre tract, and being a northeast corner of the 76.73 acre tract described in Volume 124, Page 515 of the Deed Records of Hays County, Texas;

THENCE South 89°52'25" West, with the south line of Tract 1, being also the north line of the 76.73 acre tract, distance of 311.97 feet to a fence post found for the southwest corner of Tract 1, being an angle point in the east line of the 76.73 acre tract;

THENCE North 01°40'35" East, with the west line of Tract 1, being also the east line of the 76.73 acre tract, a distance of 550.52 feet to a 1/2" rebar found for the northeast corner of the

76.73 acre tract, being also the southenst corner of a 10.11 acre tract described in Volume 3444, Page 347 of the Official Public Records of Hays County, Texas,

THENCE North 01°55'45" East, with the west line of Tract 1, being also the east line of the 10.11 acre tract, a distance of 660.61 feet to a 1/2" rebar found for the northeast corner of the 10.11 acre tract, being also the southeast corner of a 34.29 acre tract described in Volume 971, Page 116 of the Deed Records of Hays County, Texas;

THENCE with the west line of Tract 1, being also the east line of the 34.29 acre tract, the following two (2) courses and distances:

1. North 01°57'23" East, a distance of 240.27 feet to a nail in fence post found;
2. North 01°00'24" East, a distance of 791.82 feet to a 1/2" rebar found for the northeast corner of the 34.29 acre tract, being in the enst line of a 152.47 acre tract described in Volume 310, Page 718 of the Deed Records of Hays County, Texas;

THENCE with the west line of Tract 1, being the enst line of the 152.47 acre tract, with the fence, the following five (5) courses and distances:

1. North 01°07'29" East, a distance of 353.19 feet to a calculated point;
2. North 01°35'37" East, a distance of 300.57 feet to a calculated point;
3. North 02°03'04" East, a distance of 259.80 feet to a calculated point;
4. North 02°54'13" East, a distance of 484.14 feet to a calculated point;
5. North 02°48'03" East, a distance of 431.51 feet to a fence post found for the northwest corner of Tract 1, being the southwest corner of a 2 acre tract described in Volume 130, Page 231 of the Deed Records of Hays County, Texas;

THENCE North 86°52'58" East, with the north line of Tract 1, being also the south line of the 2 acre tract, a distance of 1245.48 feet to a fence post found for the northwest corner of a 7.749 acre tract described in Volume 374, Page 743 of the Deed Records of Hays County, Texas;

THENCE South 02°29'58" East, with the west line of the 7.749 acre tract, over and across Tract 1, a distance of 390.22 feet to a 1/2" iron pipe found for the southwest corner of the 7.749 acre tract, being also the northwest corner of a 1.50 acre tract described in Volume 207, Page 49 of the Deed Records of Hays County, Texas;

THENCE South 02°17'26" East, with the west line of the 1.50 acre tract, continuing across Tract 1, a distance of 208.99 feet to a 1/2" iron pipe found for the southwest corner of the 1.50 acre tract;

THENCE North 85°08'49" East, with the south line of the 1.50 acre tract, continuing across Tract 1, a distance of 104.25 feet to a 3/4" rebar found for an angle point in the east line of Tract 1, being also the northwest corner of a 1.00 acre tract described in Volume 1924, Page 385 of the Deed Records of Hays County, Texas, and being the northwest corner of the Turner Tract as shown on the plat of said P.L. Turner Subdivision;

THENCE South 02°05'28" East, with the east line of Tract 1, being also the west line of the 1.00 acre tract, the Turner Tract, a 1.00 acre tract described in Volume 275, Page 499 of the Deed Records of Hays County, Texas, and the west line of Tract 4 of said P.L. Turner Subdivision, a distance of 86.45 feet to a 1/2" rebar with Chaparral cap set, from which a fence corner at a 13" live oak for the southwest corner of the 1.00 acre tract, being also the southwest corner of Tract 4, and being in the north line of a 0.938 acre tract described in Volume 391, Page 223 of the Deed Records of Hays County, Texas, bears South 02°05'28" East, a distance of 329.42 feet;

THENCE over and across Tract 1, the following eight (8) courses and distances:

1. South 87°52'26" West, a distance of 119.99 feet to a 1/2" rebar with Chaparral cap set;
2. South 02°07'34" East, a distance of 330.24 feet to a 1/2" rebar with Chaparral cap set;
3. South 87°52'26" West, a distance of 25.11 feet to a 1/2" rebar with Chaparral cap set;
4. South 02°07'34" East, a distance of 254.30 feet to a 1/2" rebar with Chaparral cap set;
5. With a curve to the left, having a radius of 25.00 feet, a delta angle of 91°03'12", an arc length of 39.73 feet, and a chord which bears South 47°39'11" East, a distance of 35.68 feet to a 1/2" rebar with Chaparral cap set;
6. With a curve to the right, having a radius of 1030.00 feet, a delta angle of 02°59'42", an arc length of 53.84 feet, and a chord which bears North 88°19'04" East, a distance of 53.84 feet to a 1/2" rebar with Chaparral cap set;
7. North 89°48'55" East, a distance of 40.73 feet to a 1/2" rebar with Chaparral cap set;
8. North 89°48'55" East, a distance of 217.16 feet to a 1/2" rebar with Chaparral cap set in the west right-of-way line of Old Fredericksburg Road, from which a 1/2" rebar found in the west right-of-way line of Old Fredericksburg Road, for the southeast corner of a 0.938 acre tract described in Volume 391, Page 223 of the Deed Records of Hays County, Texas, bears North 01°30'02" West, a distance of 108.46 feet;

THENCE South 01°30'02" East, with the west right-of-way line of Old Fredericksburg Road, crossing Tract 1, a distance of 60.02 feet to the **POINT OF BEGINNING**, containing 94.695 acres of land, more or less.

TRACT 4:

A DESCRIPTION OF 8.119 ACRES (APPROX. 353,664 SQ. FT.) IN THE PHILIP SMITH SURVEY, ABSTRACT 415, HAYS COUNTY, TEXAS, BEING A PORTION OF A 9.008 ACRE TRACT CONVEYED TO MICKEY DAVIDSON KROLL, NELSON M. DAVIDSON, JR., AND WIFE, BARBARA WATKINS DAVIDSON BY WARRANTY DEED WITH VENDOR'S LIEN DATED NOVEMBER 7, 2002 AND RECORDED IN VOLUME 2102, PAGE 453 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS, AND BEING A PORTION OF TRACT 1, P.L. TURNER SUBDIVISION, A SUBDIVISION OF RECORD IN VOLUME 133, PAGE 444 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS; SAID 8.119 ACRES BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 1/2" rebar, being an angle point in the east line of the said 9.008 acre tract, being also the northeast corner of Tract 3 of the said P.L. Turner Subdivision, and being also the southwest corner of a 0.754 acre tract described in Volume 4258, Page 404 of the Official Public Records of Hays County, Texas, and being also the northwest corner of a 1 acre tract described in Volume 144, Page 563 of the Deed Records of Hays County, Texas, from which a 3/4" iron pipe found for the southeast corner of the 0.754 acre tract, being in the north line of the 1 acre tract, and being in the west line of Old Fredericksburg Road (right-of-way width varies), bears North 87°52'37" East, a distance of 216.79 feet;

THENCE South 87°35'26" West, with the common line of the 9.008 acre tract and Tract 3, a distance of 236.90 feet to a 1/2" rebar found for an angle point in the east line of the 9.008 acre tract, being also the northwest corner of Tract 3, for the **POINT OF BEGINNING;**

THENCE with the common line of the 9.008 acre tract and Tract 3, the following two (2) courses and distances:

1. South 15°43'23" West, a distance of 521.70 feet to a 1/2" rebar found at the northwest corner of a 3.59 acre tract out of Tract 3, described in Volume 4073, Page 818 of the Official Public Records of Hays County, Texas;

2. South 15°32'41" West, with the west line of the 3.59 acre tract, a distance of 499.23 feet to a 2" iron pipe found for an angle point in the east line of the 9.008 acre tract, being also the southwest corner of the 3.59 acre tract, being also the southwest corner of Tract 3, and being in the north line of a 2.07 acre tract described in Volume 178, Page 571 of the Deed Records of Hays County, Texas;

THENCE with the common line of the 9.008 acre tract and the 2.07 acre tract, the following two (2) courses and distances:

1. North 89°33'06" West, a distance of 183.84 feet to a 1/2" rebar found for an angle point in the east line of the 9.008 acre tract, for the northwest corner of the 2.07 acre tract;

2. South 09°15'30" West, a distance of 216.46 feet to a nail found in an 18" live oak for the southwest corner of the 2.07 acre tract, being also the southeast corner of the 9.008 acre tract, and being in the north line of a 6.39 acre tract described in Volume 1489, Page 391 of the Official Public Records of Hays County, Texas;

THENCE North 89°25'09" West, with the south line of the 9.008 acre tract, being also the north line of the 6.38 acre tract, a distance of 53.15 feet to a nail in concrete found for the southwest corner of the 9.008 acre tract;

THENCE North 07°58'13" East, with the west line of the 9.008 acre tract, crossing said Tract 1, a distance of 1318.37 feet to a 1/2" rebar found for the northwest corner of the 9.008 acre tract;

THENCE North 87°06'31" East, with the north line of the 9.008 acre tract, crossing said Tract 1, a distance of 304.58 feet to a 1/2" rebar with Chaparral cap set, from which a 1/2" rebar with 3984 cap found for the southwest corner of the Doris Breed Subdivision, a subdivision of record in Book 10, Page 395 of the Plat Records of Hays County, Texas, bears North 87°06'31" East, a distance of 205.48 feet;

THENCE over and across the 9.008 acre tract, the following two (2) courses and distances:

1. South 00°43'30" West, a distance of 129.06 feet to a 1/2" rebar with Chaparral cap set;

2. North 87°20'25" East, a distance of 61.68 feet to the **POINT OF BEGINNING**, containing 8.119 acres of land, more or less.

TRACT 5:

A DESCRIPTION OF 1.676 ACRES (APPROX. 73,006 SQ. FT.) IN THE PHILIP SMITH SURVEY, ABSTRACT 415, HAYS COUNTY, TEXAS, BEING A PORTION OF A 119.7 ACRE TRACT CONVEYED TO NELSON M. DAVIDSON AND DORIS BREED DAVIDSON BY DEED DATED JUNE 23, 1952 AND RECORDED IN VOLUME 154, PAGE 290 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS, AND BEING A PORTION OF TRACT 1, P.L. TURNER SUBDIVISION, A SUBDIVISION OF RECORD IN VOLUME 133, PAGE 444 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS; SAID 1.676 ACRES BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENCING at a 1/2" rebar found in the west right-of-way line of Old Fredericksburg Road, for the southeast corner of a 0.938 acre tract described in Volume 391, Page 223 of the Deed Records of Hays County, Texas;

THENCE South 86°32'57" West, with the south line of the said 0.938 acre tract, a distance of 218.28 feet to a 1/2" rebar found at the southwest corner of the 0.938 acre tract for the **POINT OF BEGINNING;**

THENCE crossing Tract 1, the following eight (8) courses and distances:

1. South 02°07'34" East, a distance of 96.05 feet to a 1/2" rebar with Chaparral cap set;
2. South 89°48'55" West, a distance of 40.73 feet to a 1/2" rebar with Chaparral cap set;
3. With a curve to the left, having a radius of 1030.00 feet, a delta angle of 02°59'42", an arc length of 53.84 feet, and a chord which bears South 88°19'04" West, a distance of 53.84 feet to a 1/2" rebar with Chaparral cap set;
4. With a curve to the right, having a radius of 25.00 feet, a delta angle of 91°03'12", an arc length of 39.73 feet, and a chord which bears North 47°39'11" West, a distance of 35.68 feet to a 1/2" rebar with Chaparral cap set;
5. North 02°07'34" West, a distance of 254.30 feet to a 1/2" rebar with Chaparral cap set;
6. North 87°52'26" East, a distance of 25.11 feet to a 1/2" rebar with Chaparral cap set;
7. North 02°07'34" West, a distance of 330.24 feet to a 1/2" rebar with Chaparral cap set;
8. North 87°52'26" East, a distance of 119.99 feet to a 1/2" rebar with Chaparral cap set in the east line of Tract 1, being also the west line of a 1.00 acre tract described in Volume 1924, Page 385 of the Deed Records of Hays County, Texas, and being the northwest corner of the Turner Tract as shown on the plat of said P.L. Turner Subdivision, from which a 3/4" rebar found for an angle point in the east line of Tract 1, being also the northwest corner of a 1.00 acre tract, bears North 02°05'28" West, a distance of 86.45 feet;

THENCE South 02°05'28" East, with the east line of Tract 1, being also the west line of the 1.00 acre tract, the Turner Tract, a 1.00 acre tract described in Volume 275, Page 499 of the Deed Records of Hays County, Texas, and the west line of Tract 4 of said P.L. Turner Subdivision, a distance of 329.42 feet to a fence corner at a 13" live oak for the southwest corner of the 1.00 acre tract, being also the southwest corner of Tract 4, and being in the north line of a 0.938 acre tract described in Volume 391, Page 223 of the Deed Records of Hays County, Texas;

THENCE South 85°58'06" West, with the north line of the 0.938 acre tract, crossing Tract 1, a distance of 24.91 feet to a 1/2" rebar found for the northwest corner of the 0.938 acre tract;

THENCE South 02°07'34" East, with the west line of the 0.938 acre tract, continuing across Tract 1, a distance of 185.05 feet to the **POINT OF BEGINNING**, containing 1.676 acres of land, more or less.

EXHIBIT A-2 – IMPROVEMENT AREA #1 LEGAL DESCRIPTION

IMPROVEMENT AREA #1 (37.07 ACRES)

BEING A 33.84 ACRE TRACT OF LAND AND BEING A PORTION OF A TRACT CALLED 94.695 ACRE TRACT DESCRIBED TO SLF IV- DRIPPING SPRINGS JV, LP. RECORDED IN DOCUMENT NO. 14037231 AND DOCUMENT NO. 14037230 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY

BEING A 0.05 ACRE PORTION OF TRACT 2 A CALLED 50.206 ACRE TRACT DESCRIBED TO SLF IV-DRIPPING SPRINGS JV, LP IN DOCUMENT NO 14037229 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

BEING A 0.04 ACRE PORTION OF TRACT 2 A CALLED 50.206 ACRE TRACT DESCRIBED TO SLF IV-DRIPPING SPRINGS JV, LP IN DOCUMENT NO 14037229 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

BEING A 1.47 ACRE PORTION OF TRACT 2 A CALLED 50.206 ACRE TRACT DESCRIBED TO SLF IV-DRIPPING SPRINGS JV, LP IN DOCUMENT NO 14037229 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

BEING A 1.67 ACRE PORTION OF A TRACT CALLED 2.187 ACRE TRACT DESCRIBED TO BOB WHITE INVESTMETNS, LP IN DOCUMENT NO 15003085 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

EXHIBIT A-3 – IMPROVEMENT AREA #2 LEGAL DESCRIPTION

IMPROVEMENT AREA #2 (75.57 ACRES)

BEING A 18.65 ACRE TRACT OF LAND AND BEING A PORTION OF TRACT 2 A CALLED 50.206 ACRE TRACT DESCRIBED TO SLF IV- DRIPPING SPRINGS JV, LP IN DOCUMENT NO 14037229 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

BEING A 45.22 ACRE TRACT OF LAND AND BEING A PORTION OF A CALLED 94.695 ACRE TRACT DESCRIBED TO SLF IV- DRIPPING SPRINGS JV, LP. RECORDED IN DOCUMENT NO. 14037231 AND DOCUMENT NO. 14037230 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY

BEING A 3.58 ACRE TRACT OF LAND AND BEING A PORTION OF A CALLED 34.25 ACRE TRACT DESCRIBED TO SLF IV- DRIPPING SPRINGS JV, LP. RECORDED IN DOCUMENT NO. 14037229 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

BEING 8.12 ACRES OF LAND OUT OF THE PHILIP SMITH SURVEY, ABSTRACT NO. 415, IN HAYS COUNTY, TEXAS, BEING THE SAME PROPERTY DESCRIBED AS "TRACT 2" IN DEEDS RECORDED IN VOLUME 5095, PAGE 643 AND VOLUME 5095, PAGE 659, OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS,

EXHIBIT A-4 – IMPROVEMENT AREA #3A LEGAL DESCRIPTION

A METES & BOUNDS
DESCRIPTION OF A
17.374 ACRE TRACT OF LAND

BEING a 17.374 acre (756,384 square feet) tract of land situated in the Philip Smith Survey, Abstract No. 415, City of Dripping Springs, Hays County, Texas; being all of Lots 49-54, Block C, Lots 1-8, Block K, Lots 1-12 and 21-31, Block M, Lots 1-14 and 21-31, Block N, Lots 4-38, Block O of Heritage Dripping Springs Phase 3, an addition to the City of Dripping Springs according to the plat thereof recorded in Document No. 25015703 of the Official Public Records of Hays County, Texas; also being portions of Bishop Wood Road, Darley Oak Drive, Grayson Elm Pass, and Big Banyan Drive (52' wide rights-of-way) as shown on said Heritage Dripping Springs Phase 3; and being more particularly described as follows:

BEGINNING at a 1/2-inch iron rod with a plastic cap stamped "KHA" found on the westerly right-of-way line of said Bishop Woods marking the northeast corner of Lot 3, Block O of Heritage Dripping Springs Phase 2, an addition to the City of Dripping Springs according to the plat thereof recorded in Document No. 24012412 of the Official Public Records of Hays County, Texas;

THENCE South 87°01'23" West, 139.99 feet, departing the westerly right-of-way line of said Bishop Woods Road and along the north line of said Lot 3, Block O to a 1/2-inch iron rod with a plastic cap stamped "KHA" found marking the northwest corner of said Lot 3, Block O, being on the east line of a called 45.53 acre tract of land described in instrument to Dripping Springs Independent School District recorded in Document No. 6018836 of the Official Public Records of Hays County, Texas;

THENCE North 9°31'11" West, 12.50 feet along the east line of said 45.53 acre tract to a 1/2-inch iron rod found;

THENCE North 1°24'57" West, 639.56 feet continuing along the east line of said 45.53 acre tract and along the east line of Hidden Springs Ranch Section II, an addition to the City of Dripping Springs according to the plat thereof recorded in Volume 14, Pages 69-72 of the Plat Records of Hays County, Texas to a 1/2-inch iron rod found on the east line of Lot 18 of said Hidden Springs Ranch Section II;

THENCE continuing along the east line of said Hidden Springs Ranch Section II the following four (4) courses and distances:

1. North 15°23'30" East, 18.43 feet to a 1/2-inch iron rod found;
2. North 2°25'20" West, 27.32 feet to a 1/2-inch iron rod with a plastic cap stamped "4404" found;
3. North 2°20'11" West, 190.82 to a 1/2-inch iron rod with a plastic cap stamped "4542" found;
4. North 1°02'00" West, 49.80 feet to a 1-inch axle found marking the westernmost southwest corner of Tract 76A-1 of the Replat of the Remainder of Tract 76A, Springlake and Subdivision of Reed Acres, an addition to Hays County according to the plat thereof recorded in Volume 9, Pages 46-47 of the Plat Records of Hays County, Texas;

THENCE departing the east line of said Hidden Springs Ranch Section II and along the south and west lines of said Tract 76A-1 the following two (2) courses and distances:

1. North 87°49'26" East, 1,141.43 feet to a 1-inch axle found,
2. South 0°30'35" West, 71.04 feet to a 10-inch fence post found;

THENCE South 2°39'01" West, 174.09 feet continuing along the west line of said Tract 76A-1, along the west line of a called 2 acre tract of land described in instrument to S.M Garza recorded in Volume 130,

Page 231 of the Deed Records of Hays County, Texas, and along the west line of a called 2 acre tract of land described in instrument to Richard R. Garza recorded in Document No. 14023160 of the Official Public Records of Hays County, Texas, to an 8-inch fence post found marking the southwest corner of said Richard R. Garza tract, same being the northwest corner of Lot 33-Open Space Drainage Lot, Block C of Heritage Dripping Springs Phase 1, an addition to the City of Dripping Springs according to the plat thereof recorded in Document No. 22033539 of the Official Public Records of Hays County, Texas;

THENCE South 11°14'50" West, 68.86 feet along the west line of said Heritage Dripping Springs Phase 1 to a 1/2-inch iron rod with a plastic cap stamped "KHA" found marking the northeast corner of Lot 48, Block C of aforesaid Heritage Dripping Springs Phase 2;

THENCE along the north and west lines of said Heritage Dripping Springs Phase 2 the following twelve (12) courses and distances:

1. South 84°36'10 West, 138.87 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a nontangent curve to the right;
2. in a northerly direction, with said curve to the right, having a radius of 374.00 feet, a central angle of 1°55'50", and a chord bearing and distance of North 4°25'55" West, 12.60 feet, an arc distance of 12.60 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
3. South 87°02'49" West, 304.67 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
4. South 2°58'37" East, 126.34 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
5. South 1°29'51" East, 52.02 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
6. South 2°58'37" East, 187.41 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
7. South 22°50'47" West, 141.21 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
8. South 22°21'45" West, 177.64 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
9. North 73°16'57" West, 86.15 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
10. North 84°23'14" West, 129.64 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
11. South 87°01'23" West, 197.00 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
12. South 2°58'37" East, 12.11 feet to the **POINT OF BEGINNING** and containing 17.374 acre of land in Hays County, Texas;

EXHIBIT A-5 – IMPROVEMENT AREA #3B LEGAL DESCRIPTION

A METES & BOUNDS
DESCRIPTION OF A
12.404 ACRE TRACT OF LAND

BEING a 12.404 acre (540,303 square feet) tract of land situated in the Philip Smith Survey, Abstract No. 415, City of Dripping Springs, Hays County, Texas; being all of Lots 1-46, Block T, Lots 2-24, Block U, Lot 25, Block V of Heritage Dripping Springs Phase 3, an addition to the City of Dripping Springs according to the plat thereof recorded in Document No. 25015703 of the Official Public Records of Hays County, Texas; also being portions of Bishop Wood Road, Heritage Forest Parkway, Norway Spruce Street (52' wide rights-of-way) and Great Sequoia Lane (variable width right-of-way) as shown on said Heritage Dripping Springs Phase 3; and being more particularly described as follows:

BEGINNING at a 1/2-inch iron rod with a plastic cap stamped "KHA" found on marking the south end of the west terminus of N. Roger Hanks Parkway (variable width right-of-way – Document No. 22033539 of the Official Public Records of Hays County, Texas), being on the east line of a called 45.53 acre tract of land described in instrument to Dripping Springs Independent School District recorded in Document No. 6018836 of the Official Public Records of Hays County, Texas;

THENCE departing the east line of said 45.53 acre tract and along the southerly right-of-way line of said N. Roger Hanks Parkway, the following seven (7) courses and distances:

1. North 89°48'55" East, 97.42 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a tangent curve to the right;
2. in a southeasterly direction, with said curve to the right, having a radius of 25.00 feet, a central angle of 88°53'52", and a chord bearing and distance of South 45°44'09" East, 35.01 feet, an arc distance of 38.79 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
3. South 89°01'44" East, 52.04 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a nontangent curve to the right;
4. in a northeasterly direction, with said curve to the right, having a radius of 25.04 feet, a central angle of 92°21'40", and a chord bearing and distance of North 44°59'49" East, 40.36 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a compound curve to the right;
5. in an easterly direction, with said curve to the right, having a radius of 972.00 feet, a central angle of 14°31'52", and a chord bearing and distance of South 82°07'00" East, 35.92 feet, an arc distance of 246.52 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a compound curve to the right;
6. in a southeasterly direction, with said curve to the right, having a radius of 25.00 feet, a central angle of 91°50'24", and a chord bearing and distance of South 28°55'52" East, 35.92 feet, an arc distance of 70.04 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
7. South 70°08'49" East, 52.02 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found on the west line of Lot 1, Block S – HOA Amenity Center and Commercial Lot, Block S of Heritage Dripping Springs Phase 2, an addition to the City of Dripping Springs according to the plat thereof recorded in Document No. 24012412 of the Official Public Records of Hays County, Texas;

THENCE along the west lines of said Heritage Dripping Springs Phase 2, the following eight (8) courses and distances:

1. South 14°36'45" West, 4.62 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a tangent curve to the left

2. in a southerly direction, with said curve to the left, having a radius of 174.00 feet, a central angle of 46°39'06", and a chord bearing and distance of South 8°42'48" East, 137.79 feet, an arc distance of 141.68 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
3. South 32°03'59" East, 118.55 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a tangent curve to the right;
4. in a southeasterly direction, with said curve to the right, having a radius of 526.00 feet, a central angle of 16°59'07", and a chord bearing and distance of South 23°34'25" East, 155.36 feet, an arc distance of 155.93 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
5. South 15°04'51" East, 307.93 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
6. South 74°11'23" West, 52.00 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a nontangent curve to the right;
7. in a southwesterly direction, with said curve to the right, having a radius of 25.00 feet, a central angle of 92°21'38", and a chord bearing and distance of South 31°05'56" West, 36.08 feet, an arc distance of 40.30 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
8. South 12°43'16" East, 56.00 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found on the southerly right-of-way line of aforesaid Great Sequoia Lane marking the southernmost southeast corner of aforesaid Heritage Dripping Springs Phase 3;

THENCE along the south lines of said Heritage Dripping Springs Phase 3, the following six (6) courses and distances:

1. South 77°16'44" West, 157.22 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a tangent curve to the left;
2. in a westerly direction, with said curve to the left, having a radius of 912.00 feet, a central angle of 7°56'51", and a chord bearing and distance of South 73°18'18" West, 126.40, an arc distance of 126.50 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
3. North 20°40'07" West, 56.00 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found at the beginning of a nontangent curve to the left;
4. in a northeasterly direction, with said curve to the left, having a radius of 25.00 feet, a central angle of 77°39'26", and a chord bearing and distance of North 31°48'17" East, 31.35 feet, an arc distance of 33.88 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
5. South 75°12'12" West, 145.34 feet to a 1/2-inch iron rod with a plastic cap stamped "KHA" found;
6. South 32°07'07" West, 20.68 feet to a 1/2-inch iron rod with a plastic cap stamped "CHAPARRAL" found;

THENCE South 89°10'07" West, 230.68 feet continuing along the south line of said Heritage Dripping Springs Phase 3 and along the north line of a called 20.518 acre tract of land described in instrument to Dripping Springs Youth Sports Association recorded in Volume 784, Page 210 of the Deed Records of Hays County, Texas, to a 1/2-inch iron rod with a plastic cap stamped "KHA" found marking the southeast corner of aforesaid 45.53 acre tract;

THENCE, North 1°10'11" West, 912.75 feet along the east line of said 45.53 acre tract to the **POINT OF BEGINNING** and containing 12.404 acre of land in Hays County, Texas;

EXHIBIT A-6 – FUTURE IMPROVEMENT AREA LEGAL DESCRIPTION

Updated FIA – 46.52 acres:

BEING A 0.24 ACRE PORTION OF "TRACT 2" A CALLED 50.206 ACRE TRACT DESCRIBED TO SLF IV- DRIPPING SPRINGS JV, LP IN DOCUMENT NO 14037229 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

BEING A 15.64 ACRE TRACT OF LAND AND BEING A PORTION OF A CALLED 94.695 ACRE TRACT DESCRIBED TO SLF IV- DRIPPING SPRINGS JV, LP. RECORDED IN DOCUMENT NO. 14037231 AND DOCUMENT NO. 14037230 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY

BEING A 30.64 ACRE PORTION OF A CALLED 34.25 ACRE TRACT DESCRIBED TO SLF IV- DRIPPING SPRINGS JV, LP. RECORDED IN DOCUMENT NO. 14037229 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY

EXHIBIT B-1 – DISTRICT BOUNDARY MAP



EXHIBIT B-2 – IMPROVEMENT AREA #1, IMPROVEMENT AREA #2, IMPROVEMENT AREA #3A, IMPROVEMENT AREA #3B, AND FUTURE IMPROVEMENT AREA BOUNDARY MAP

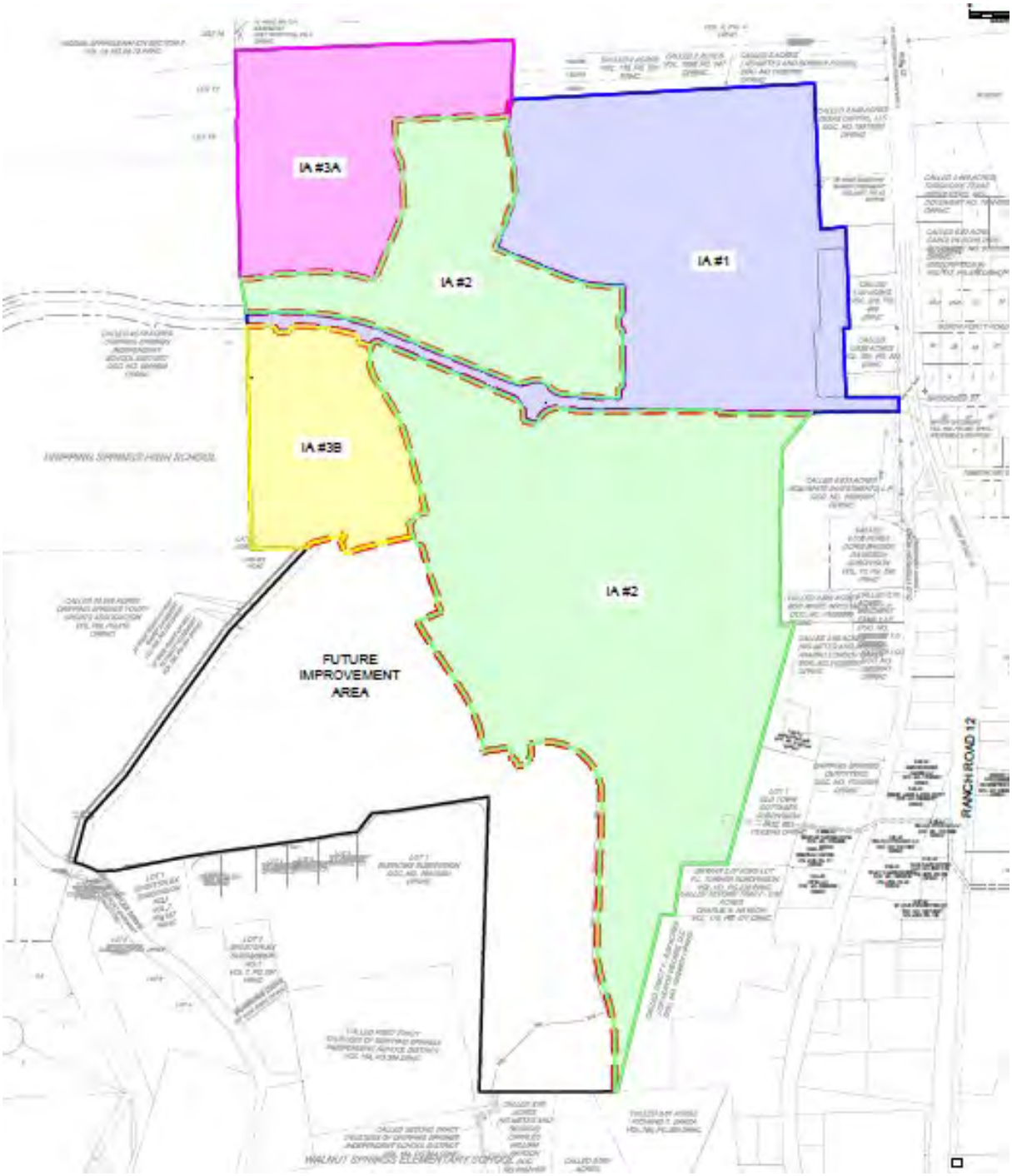


EXHIBIT C – AUTHORIZED IMPROVEMENTS

	Total Costs [a]	Improvement Area #1		Improvement Area #2		Improvement Area #3A		Improvement Area #3B		Future Improvement Area	
		%	Cost	%	Cost	%	Cost	%	Cost	%	Cost
Major Improvements [b]											
Roadway [c]	$ 6,136,773	25.61%	$ 1,571,806	24.99%	$ 1,533,717	15.42%	$ 946,331	9.99%	$ 612,778	23.99%	$ 1,472,141
Drainage	3,184,075	25.61%	815,534	24.99%	795,772	15.42%	491,005	9.99%	317,941	23.99%	763,823
Trails and Landscaping	482,499	25.61%	123,582	24.99%	120,587	15.42%	74,405	9.99%	48,179	23.99%	115,746
Soft Costs	1,568,536	25.61%	401,748	24.99%	392,012	15.42%	241,879	9.99%	156,624	23.99%	376,274
	$ 11,371,883		$ 2,912,670		$ 2,842,088		$ 1,753,620		$ 1,135,521		$ 2,727,983
Improvement Area #1 Improvements											
Roadway [c]	$ 1,220,992	100.00%	$ 1,220,992	0.00%	$ -	0.00%	$ -	0.00%	$ -	0.00%	$ -
Drainage	645,408	100.00%	645,408	0.00%	-	0.00%	-	0.00%	-	0.00%	-
Wastewater	1,644,140	100.00%	1,644,140	0.00%	-	0.00%	-	0.00%	-	0.00%	-
Landscaping	833,737	100.00%	833,737	0.00%	-	0.00%	-	0.00%	-	0.00%	-
Soft Costs	695,084	100.00%	695,084	0.00%	-	0.00%	-	0.00%	-	0.00%	-
	$ 5,039,361		$ 5,039,361		$ -		$ -		$ -		$ -
Improvement Area #2 Improvements											
Roadway [c]	$ 1,898,122	0.00%	$ -	100.00%	$ 1,898,122	0.00%	$ -	0.00%	$ -	0.00%	$ -
Drainage	1,604,672	0.00%	-	100.00%	1,604,672	0.00%	-	0.00%	-	0.00%	-
Wastewater	1,317,125	0.00%	-	100.00%	1,317,125	0.00%	-	0.00%	-	0.00%	-
Landscaping	624,657	0.00%	-	100.00%	624,657	0.00%	-	0.00%	-	0.00%	-
Soft Costs	871,132	0.00%	-	100.00%	871,132	0.00%	-	0.00%	-	0.00%	-
	$ 6,315,708		$ -		$ 6,315,708		$ -		$ -		$ -
Improvement Area #3A Improvements											
Roadway [c]	$ 1,288,791	0.00%	$ -	0.00%	$ -	100.00%	$ 1,288,791	0.00%	$ -	0.00%	$ -
Drainage	452,103	0.00%	-	0.00%	-	100.00%	452,103	0.00%	-	0.00%	-
Wastewater	591,668	0.00%	-	0.00%	-	100.00%	591,668	0.00%	-	0.00%	-
Landscaping	61,043	0.00%	-	0.00%	-	100.00%	61,043	0.00%	-	0.00%	-
Soft Costs	382,977	0.00%	-	0.00%	-	100.00%	382,977	0.00%	-	0.00%	-
	$ 2,776,581		$ -		$ -		$ 2,776,581		$ -		$ -
Improvement Area #3B Improvements											
Roadway [c]	$ 1,275,136	0.00%	$ -	0.00%	$ -	0.00%	$ -	100.00%	$ 1,275,136	0.00%	$ -
Drainage	229,400	0.00%	-	0.00%	-	0.00%	-	100.00%	229,400	0.00%	-
Wastewater	502,834	0.00%	-	0.00%	-	0.00%	-	100.00%	502,834	0.00%	-
Landscaping	44,204	0.00%	-	0.00%	-	0.00%	-	100.00%	44,204	0.00%	-
Soft Costs	328,252	0.00%	-	0.00%	-	0.00%	-	100.00%	328,252	0.00%	-
	$ 2,379,826		$ -		$ -		$ -		$ 2,379,826		$ -
Bond Issuance Costs [d]											
Debt Service Reserve Fund	$ 1,473,078		$ 488,465		$ 464,153		$ 315,938		$ 204,522		$ -
Capitalized Interest	634,524		-		303,367		201,024		130,133		-
Underwriter Discount	587,680		170,860		206,190		127,860		82,770		-
Cost of Issuance	1,388,024		540,378		392,785		276,117		178,744		-
Original Issue Discount	79,803		53,297		26,506		-		-		-
	$ 4,163,108		$ 1,253,000		$ 1,393,000		$ 920,939		$ 596,169		$ -
Administrative Reserves [d]											
First Year Annual Collection Costs	$ 170,000		$ 40,000		$ 80,000		$ 30,352		$ 19,648		$ -
	$ 170,000		$ 40,000		$ 80,000		$ 30,352		$ 19,648		$ -
Total	**$ 32,216,468**		**$ 9,245,031**		**$ 10,630,797**		**$ 5,481,492**		**$ 4,131,165**		**$ 2,727,983**

Notes:

[a] Costs were determined by the Engineer's Report prepared by Kimley Horn dated May 7, 2025.

[b] Major Improvements are allocated between Improvement Area #1, Improvement Area #2, Improvement Area #3A, Improvement Area #3B and the Future Improvement Area on a pro rata basis based on Estimated Buildout Value as shown on **Exhibit P-1 and Exhibit P-2.**

[c] Includes grading, erosion control, street lights, crosswalks, traffic signs, retaining walls and mobilization.

[d] If PID Bonds are issued to finance Authorized Improvements allocable to the Future Improvement Area, Bond Issuance Costs and Administrative Reserves associated with those PID Bonds will be determined at the time of such issuance.

EXHIBIT D – SERVICE PLAN

Improvement Area #1						
Installments Due		**1/31/2026**	**1/31/2027**	**1/31/2028**	**1/31/2029**	**1/31/2030**
Principal		$ 116,000.00	$ 121,000.00	$ 126,000.00	$ 132,000.00	$ 138,000.00
Interest		369,156.26	363,936.26	358,491.26	352,821.26	346,881.26
Capitalized Interest		-	-	-	-	-
	(1)	$ 485,156.26	$ 484,936.26	$ 484,491.26	$ 484,821.26	$ 484,881.26
Annual Collection Costs	(2)	$ 59,953.49	$ 33,560.23	$ 34,231.44	$ 34,916.07	$ 35,614.39
Additional Interest	(3)	$ 34,430.00	$ 33,850.00	$ 33,245.00	$ 32,615.00	$ 31,955.00
Total Annual Installment	**(4) = (1) + (2) + (3)**	**$ 579,539.75**	**$ 552,346.49**	**$ 551,967.70**	**$ 552,352.33**	**$ 552,450.65**

Improvement Area #2						
Installments Due		**1/31/2026**	**1/31/2027**	**1/31/2028**	**1/31/2029**	**1/31/2030**
Principal		$ 115,000.00	$ 120,000.00	$ 125,000.00	$ 130,000.00	$ 135,000.00
Interest		346,705.00	341,817.50	336,717.50	331,405.00	325,880.00
Capitalized Interest		-	-	-	-	-
	(1)	$ 461,705.00	$ 461,817.50	$ 461,717.50	$ 461,405.00	$ 460,880.00
Annual Collection Costs	(2)	$ 34,109.81	$ 43,462.01	$ 44,331.25	$ 45,217.88	$ 46,122.23
Additional Interest	(3)	$ 34,365.00	$ 33,790.00	$ 33,190.00	$ 32,565.00	$ 31,915.00
Total Annual Installment	**(4) = (1) + (2) + (3)**	**$ 530,179.81**	**$ 539,069.51**	**$ 539,238.75**	**$ 539,187.88**	**$ 538,917.23**

Improvement Area #3A						
Installments Due		**1/31/2026**	**1/31/2027**	**1/31/2028**	**1/31/2029**	**1/31/2030**
Principal		$ -	$ 59,000.00	$ 62,000.00	$ 66,000.00	$ 69,000.00
Interest		201,024.33	255,720.00	252,180.00	248,460.00	244,500.00
Capitalized Interest		(201,024.33)	-	-	-	-
	(1)	$ -	$ 314,720.00	$ 314,180.00	$ 314,460.00	$ 313,500.00
Annual Collection Costs	(2)	$ -	$ 24,281.44	$ 24,767.07	$ 25,262.41	$ 25,767.66
Additional Interest	(3)	$ -	$ 21,310.00	$ 21,015.00	$ 20,705.00	$ 20,375.00
Total Annual Installment	**(4) = (1) + (2) + (3)**	**$ -**	**$ 360,311.44**	**$ 359,962.07**	**$ 360,427.41**	**$ 359,642.66**

Improvement Area #3B						
Installments Due		**1/31/2026**	**1/31/2027**	**1/31/2028**	**1/31/2029**	**1/31/2030**
Principal		$ -	$ 38,000.00	$ 40,000.00	$ 43,000.00	$ 45,000.00
Interest		130,132.83	165,540.00	163,260.00	160,860.00	158,280.00
Capitalized Interest		(130,132.83)	-	-	-	-
	(1)	$ -	$ 203,540.00	$ 203,260.00	$ 203,860.00	$ 203,280.00
Annual Collection Costs	(2)	$ -	$ 15,718.56	$ 16,032.93	$ 16,353.59	$ 16,680.66
Additional Interest	(3)	$ -	$ 13,795.00	$ 13,605.00	$ 13,405.00	$ 13,190.00
Total Annual Installment	**(4) = (1) + (2) + (3)**	**$ -**	**$ 233,053.56**	**$ 232,897.93**	**$ 233,618.59**	**$ 233,150.66**

EXHIBIT E – SOURCES AND USES

	Improvement Area #1	Improvement Area #2	Improvement Area #3A	Improvement Area #3B	Future Improvement Area
Sources of Funds					
Improvement Area #1 PID Bond Par	$ 7,043,000	$ -	$ -	$ -	$ -
Improvement Area #2 PID Bond Par	-	6,873,000	-	-	-
Improvement Area #3A-Improvement Area #3B PID Bond Par	-	-	$ 4,262,000	$ 2,759,000	-
Owner Contribution [a]	2,202,031	3,757,797	1,219,492	1,372,165	2,727,983
Total Sources	**$ 9,245,031**	**$ 10,630,797**	**$ 5,481,492**	**$ 4,131,165**	**$ 2,727,983**
Uses of Funds					
Major Improvements	$ 2,912,670	$ 2,842,088	$ 1,753,620	$ 1,135,521	$ 2,727,983
Improvement Area #1 Improvements	5,039,361	-	-	-	-
Improvement Area #2 Improvements	-	6,315,708	-	-	-
Improvement Area #3A Improvements	-	-	2,776,581	-	-
Improvement Area #3B Improvements	-	-	-	2,379,826	-
	$ 7,952,031	$ 9,157,797	$ 4,530,201	$ 3,515,348	$ 2,727,983
Bond Issuance Costs [b]					
Debt Service Reserve Fund	$ 488,465	$ 464,153	$ 315,938	$ 204,522	$ -
Capitalized Interest	-	303,367	201,024	130,133	-
Underwriter Discount	170,860	206,190	127,860	82,770	-
Cost of Issuance	540,378	392,785	276,117	178,744	-
Original Issue Discount	53,297	26,506	-	-	-
	$ 1,253,000	$ 1,393,000	$ 920,939	$ 596,169	$ -
Administrative Reserves [b]					
First Year Annual Collection Costs	$ 40,000	$ 80,000	$ 30,352	$ 19,648	$ -
	$ 40,000	$ 80,000	$ 30,352	$ 19,648	$ -
Total Uses	**$ 9,245,031**	**$ 10,630,797**	**$ 5,481,492**	**$ 4,131,165**	**$ 2,727,983**

[a] Represents costs expended and/or to be expended by the Developer to construct the Authorized Improvements in excess of the applicable Assessment. Not subject to reimbursement with Improvement Area #1 Bonds, Improvement Area #2 Bonds, or Improvement Area #3A and Improvement Area #3B Project Bonds. The Owner contribution associated with the Future Improvement Area may be partially or fully subject to reimbursement if Assessments are levied and/or PID Bonds are issued to finance those Major Improvements allocable to the Future Improvement Area.

[b] If PID Bonds are issued to finance Authorized Improvements allocable to the Future Improvement Area, Bond Issuance Costs and Administrative Reserves associated with those PID Bonds will be determined at the time of such issuance.

EXHIBIT F – IMPROVEMENT AREA #1 ASSESSMENT ROLL

			Improvement Area #1	
Property ID[a]	Lot Type	Note	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
R186658	Non-Benefited		$ -	$ -
R186659	3		$ 46,351.64	$ 3,903.56
R186660	3		$ 46,351.64	$ 3,903.56
R186661	3		$ 46,351.64	$ 3,903.56
R186662	3		$ 46,351.64	$ 3,903.56
R186663	3		$ 46,351.64	$ 3,903.56
R186664	3		$ 46,351.64	$ 3,903.56
R186665	3		$ 46,351.64	$ 3,903.56
R186666	3		$ 46,351.64	$ 3,903.56
R186667	3		$ 46,351.64	$ 3,903.56
R186668	3		$ 46,351.64	$ 3,903.56
R186669	2		$ 42,643.51	$ 3,591.28
R186670	3		$ 46,351.64	$ 3,903.56
R186671	3		$ 46,351.64	$ 3,903.56
R186672	2		$ 42,643.51	$ 3,591.28
R186673	3		$ 46,351.64	$ 3,903.56
R186674	3		$ 46,351.64	$ 3,903.56
R186675	Non-Benefited		$ -	$ -
R186676	3		$ 46,351.64	$ 3,903.56
R186677	2		$ 42,643.51	$ 3,591.28
R186678	2		$ 42,643.51	$ 3,591.28
R186679	2		$ 42,643.51	$ 3,591.28
R186680	2		$ 42,643.51	$ 3,591.28
R186681	2		$ 42,643.51	$ 3,591.28
R186682	2		$ 42,643.51	$ 3,591.28
R186683	2		$ 42,643.51	$ 3,591.28
R186684	2		$ 42,643.51	$ 3,591.28
R186685	2		$ 42,643.51	$ 3,591.28
R186686	3		$ 46,351.64	$ 3,903.56
R186687	3		$ 46,351.64	$ 3,903.56
R186688	2		$ 42,643.51	$ 3,591.28
R186689	2		$ 42,643.51	$ 3,591.28
R186690	2		$ 42,643.51	$ 3,591.28
R186691	2		$ 42,643.51	$ 3,591.28
R186692	2		$ 42,643.51	$ 3,591.28

Property ID[a]	Lot Type	Note	Improvement Area #1 Outstanding Assessment [b]	Improvement Area #1 Annual Installment Due 1/31/2026 [b]
R186693	2		$ 42,643.51	$ 3,591.28
R186694	2		$ 42,643.51	$ 3,591.28
R186695	2		$ 42,643.51	$ 3,591.28
R186696	2		$ 42,643.51	$ 3,591.28
R186697	2		$ 42,643.51	$ 3,591.28
R186698	2		$ 42,643.51	$ 3,591.28
R186699	2		$ 42,643.51	$ 3,591.28
R186700	2		$ 42,643.51	$ 3,591.28
R186701	2		$ 42,643.51	$ 3,591.28
R186702	2		$ 42,643.51	$ 3,591.28
R186703	2		$ 42,643.51	$ 3,591.28
R186704	2		$ 42,643.51	$ 3,591.28
R186705	2		$ 42,643.51	$ 3,591.28
R186706	2		$ 42,643.51	$ 3,591.28
R186707	Non-Benefited		$ -	$ -
R186708	3		$ 46,351.64	$ 3,903.56
R186709	3		$ 46,351.64	$ 3,903.56
R186710	3		$ 46,351.64	$ 3,903.56
R186711	3		$ 46,351.64	$ 3,903.56
R186712	3		$ 46,351.64	$ 3,903.56
R186713	3		$ 46,351.64	$ 3,903.56
R186714	3		$ 46,351.64	$ 3,903.56
R186715	3		$ 46,351.64	$ 3,903.56
R186716	3		$ 46,351.64	$ 3,903.56
R186717	2		$ 42,643.51	$ 3,591.28
R186718	2		$ 42,643.51	$ 3,591.28
R186719	2		$ 42,643.51	$ 3,591.28
R186720	2		$ 42,643.51	$ 3,591.28
R186721	2		$ 42,643.51	$ 3,591.28
R186722	2		$ 42,643.51	$ 3,591.28
R186723	2		$ 42,643.51	$ 3,591.28
R186724	2		$ 42,643.51	$ 3,591.28
R186725	2		$ 42,643.51	$ 3,591.28
R186726	2		$ 42,643.51	$ 3,591.28
R186727	2		$ 42,643.51	$ 3,591.28

Property ID[a]	Lot Type	Note	Improvement Area #1 Outstanding Assessment [b]	Improvement Area #1 Annual Installment Due 1/31/2026 [b]
R186728	2		$ 42,643.51	$ 3,591.28
R186729	2		$ 42,643.51	$ 3,591.28
R186730	2		$ 42,643.51	$ 3,591.28
R186731	2		$ 42,643.51	$ 3,591.28
R186732	2		$ 42,643.51	$ 3,591.28
R186733	2		$ 42,643.51	$ 3,591.28
R186734	2		$ 42,643.51	$ 3,591.28
R186735	2		$ 42,643.51	$ 3,591.28
R186736	2		$ 42,643.51	$ 3,591.28
R186737	2		$ 42,643.51	$ 3,591.28
R186738	2		$ 42,643.51	$ 3,591.28
R186739	2		$ 42,643.51	$ 3,591.28
R186740	2		$ 42,643.51	$ 3,591.28
R186741	2		$ 42,643.51	$ 3,591.28
R186742	2		$ 42,643.51	$ 3,591.28
R186743	2		$ 42,643.51	$ 3,591.28
R186744	2		$ 42,643.51	$ 3,591.28
R186745	2		$ 42,643.51	$ 3,591.28
R186746	2	[c]	$ -	$ -
R186747	2		$ 42,643.51	$ 3,591.28
R186748	2		$ 42,643.51	$ 3,591.28
R186749	2		$ 42,643.51	$ 3,591.28
R186750	2		$ 42,643.51	$ 3,591.28
R186751	2		$ 42,643.51	$ 3,591.28
R186752	2		$ 42,643.51	$ 3,591.28
R186753	2		$ 42,643.51	$ 3,591.28
R186754	2		$ 42,643.51	$ 3,591.28
R186755	2		$ 42,643.51	$ 3,591.28
R186756	2		$ 42,643.51	$ 3,591.28
R186757	2		$ 42,643.51	$ 3,591.28
R186758	2		$ 42,643.51	$ 3,591.28
R186759	2		$ 42,643.51	$ 3,591.28
R186760	2		$ 42,643.51	$ 3,591.28
R186761	2		$ 42,643.51	$ 3,591.28
R186762	2		$ 42,643.51	$ 3,591.28

Property ID[a]	Lot Type	Note	Improvement Area #1 Outstanding Assessment [b]	Improvement Area #1 Annual Installment Due 1/31/2026 [b]
R186763	2		$ 42,643.51	$ 3,591.28
R186764	2		$ 42,643.51	$ 3,591.28
R186765	2		$ 42,643.51	$ 3,591.28
R186766	2		$ 42,643.51	$ 3,591.28
R186767	2		$ 42,643.51	$ 3,591.28
R186768	2		$ 42,643.51	$ 3,591.28
R186769	2		$ 42,643.51	$ 3,591.28
R186770	2		$ 42,643.51	$ 3,591.28
R186771	2		$ 42,643.51	$ 3,591.28
R186772	2		$ 42,643.51	$ 3,591.28
R186773	2		$ 42,643.51	$ 3,591.28
R186774	2		$ 42,643.51	$ 3,591.28
R186775	2		$ 42,643.51	$ 3,591.28
R186776	2		$ 42,643.51	$ 3,591.28
R186777	2		$ 42,643.51	$ 3,591.28
R186778	2		$ 42,643.51	$ 3,591.28
R186779	2		$ 42,643.51	$ 3,591.28
R186780	2		$ 42,643.51	$ 3,591.28
R186781	2		$ 42,643.51	$ 3,591.28
R186782	2		$ 42,643.51	$ 3,591.28
R186783	1		$ 40,789.45	$ 3,435.14
R186784	1		$ 40,789.45	$ 3,435.14
R186785	1		$ 40,789.45	$ 3,435.14
R186786	1		$ 40,789.45	$ 3,435.14
R186787	1		$ 40,789.45	$ 3,435.14
R186788	1		$ 40,789.45	$ 3,435.14
R186789	Non-Benefited		$ -	$ -
R186790	1		$ 40,789.45	$ 3,435.14
R186791	1		$ 40,789.45	$ 3,435.14
R186792	1		$ 40,789.45	$ 3,435.14
R186793	1		$ 40,789.45	$ 3,435.14
R186794	1		$ 40,789.45	$ 3,435.14
R186795	1		$ 40,789.45	$ 3,435.14
R186796	3		$ 46,351.64	$ 3,903.56
R186797	3		$ 46,351.64	$ 3,903.56

Property ID[a]	Lot Type	Note	Improvement Area #1 Outstanding Assessment [b]	Improvement Area #1 Annual Installment Due 1/31/2026 [b]
R186798	3		$ 46,351.64	$ 3,903.56
R186799	3		$ 46,351.64	$ 3,903.56
R186800	3		$ 46,351.64	$ 3,903.56
R186801	3		$ 46,351.64	$ 3,903.56
R186802	3		$ 46,351.64	$ 3,903.56
R186803	3		$ 46,351.64	$ 3,903.56
R186804	3		$ 46,351.64	$ 3,903.56
R186805	3		$ 46,351.64	$ 3,903.56
R186806	2		$ 42,643.51	$ 3,591.28
R186807	2		$ 42,643.51	$ 3,591.28
R186808	2		$ 42,643.51	$ 3,591.28
R186809	2		$ 42,643.51	$ 3,591.28
R186810	3		$ 46,351.64	$ 3,903.56
R186811	3		$ 46,351.64	$ 3,903.56
R186812	3		$ 46,351.64	$ 3,903.56
R186813	3		$ 46,351.64	$ 3,903.56
R186814	3		$ 46,351.64	$ 3,903.56
R186815	3		$ 46,351.64	$ 3,903.56
R186816	3		$ 46,351.64	$ 3,903.56
R186817	3		$ 46,351.64	$ 3,903.56
R186818	3		$ 46,351.64	$ 3,903.56
R186819	3		$ 46,351.64	$ 3,903.56
Total			**$ 6,843,356.33**	**$ 576,322.16**

Footnotes:

[a] Property IDs preliminary and subject to change based on the final certified rolls provided by the County prior to billing.

[b] Outstanding Assessment prior to 1/31/2026 Annual Installment.

[c] Parcel prepaid the outstanding Improvement Area #1 Assessment in full.

EXHIBIT G – IMPROVEMENT AREA #1 ANNUAL INSTALLMENTS

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	116,000.00	369,156.26	59,953.49	34,430.00	579,539.75
2027	121,000.00	363,936.26	33,560.23	33,850.00	552,346.49
2028	126,000.00	358,491.26	34,231.44	33,245.00	551,967.70
2029	132,000.00	352,821.26	34,916.07	32,615.00	552,352.33
2030	138,000.00	346,881.26	35,614.39	31,955.00	552,450.65
2031	144,000.00	340,671.26	36,326.68	31,265.00	552,262.94
2032	151,000.00	332,931.26	37,053.21	30,545.00	551,529.47
2033	159,000.00	324,815.00	37,794.27	29,790.00	551,399.27
2034	168,000.00	316,268.76	38,550.16	28,995.00	551,813.92
2035	176,000.00	307,238.76	39,321.16	28,155.00	550,714.92
2036	186,000.00	297,778.76	40,107.59	27,275.00	551,161.35
2037	196,000.00	287,781.26	40,909.74	26,345.00	551,036.00
2038	206,000.00	277,246.26	41,727.93	25,365.00	550,339.19
2039	217,000.00	266,173.76	42,562.49	24,335.00	550,071.25
2040	229,000.00	254,510.00	43,413.74	23,250.00	550,173.74
2041	241,000.00	242,201.26	44,282.02	22,105.00	549,588.28
2042	254,000.00	229,247.50	45,167.66	20,900.00	549,315.16
2043	268,000.00	215,595.00	46,071.01	19,630.00	549,296.01
2044	283,000.00	201,190.00	46,992.43	18,290.00	549,472.43
2045	298,000.00	185,625.00	47,932.28	16,875.00	548,432.28
2046	315,000.00	169,235.00	48,890.92	15,385.00	548,510.92
2047	333,000.00	151,910.00	49,868.74	13,810.00	548,588.74
2048	351,000.00	133,595.00	50,866.12	12,145.00	547,606.12
2049	371,000.00	114,290.00	51,883.44	10,390.00	547,563.44
2050	392,000.00	93,885.00	52,921.11	8,535.00	547,341.11
2051	414,000.00	72,325.00	53,979.53	6,575.00	546,879.53
2052	438,000.00	49,555.00	55,059.12	4,505.00	547,119.12
2053	463,000.00	25,465.00	56,160.30	2,315.00	546,940.30
Total	**$ 6,886,000.00**	**$ 6,680,820.14**	**$ 1,246,117.26**	**$ 612,875.00**	**$ 15,425,812.40**

Footnotes:

[a] Interest rate on Improvement Area #1 Bonds is 4.500% for term bonds due September 1, 2030, and 5.500% for term bonds due September 1, 2053.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

EXHIBIT H – IMPROVEMENT AREA #2 ASSESSMENT ROLL

		Improvement Area #2	
Property ID[a]	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
R205106	7	$ 47,413.08	$ 3,657.42
R205107	7	$ 47,413.08	$ 3,657.42
R205108	7	$ 47,413.08	$ 3,657.42
R205109	7	$ 47,413.08	$ 3,657.42
R205110	7	$ 47,413.08	$ 3,657.42
R205111	7	$ 47,413.08	$ 3,657.42
R205112	4	$ 39,826.99	$ 3,072.23
R205113	4	$ 39,826.99	$ 3,072.23
R205114	4	$ 39,826.99	$ 3,072.23
R205115	4	$ 39,826.99	$ 3,072.23
R205116	4	$ 39,826.99	$ 3,072.23
R205117	5	$ 41,723.51	$ 3,218.53
R205118	5	$ 41,723.51	$ 3,218.53
R205119	5	$ 41,723.51	$ 3,218.53
R205120	5	$ 41,723.51	$ 3,218.53
R205121	5	$ 41,723.51	$ 3,218.53
R205122	5	$ 41,723.51	$ 3,218.53
R205123	5	$ 41,723.51	$ 3,218.53
R205124	5	$ 41,723.51	$ 3,218.53
R205125	5	$ 41,723.51	$ 3,218.53
R205126	5	$ 41,723.51	$ 3,218.53
R205127	5	$ 41,723.51	$ 3,218.53
R205128	5	$ 41,723.51	$ 3,218.53
R205129	5	$ 41,723.51	$ 3,218.53
R205130	5	$ 41,723.51	$ 3,218.53
R205131	5	$ 41,723.51	$ 3,218.53
R205132	5	$ 41,723.51	$ 3,218.53
R205133	5	$ 41,723.51	$ 3,218.53
R205134	5	$ 41,723.51	$ 3,218.53
R205135	5	$ 41,723.51	$ 3,218.53
R205136	5	$ 41,723.51	$ 3,218.53
R205137	5	$ 41,723.51	$ 3,218.53
R205138	5	$ 41,723.51	$ 3,218.53
R205139	5	$ 41,723.51	$ 3,218.53
R205140	5	$ 41,723.51	$ 3,218.53
R205141	5	$ 41,723.51	$ 3,218.53
R205142	5	$ 41,723.51	$ 3,218.53
R205143	5	$ 41,723.51	$ 3,218.53
R205144	5	$ 41,723.51	$ 3,218.53
R205145	5	$ 41,723.51	$ 3,218.53

		Improvement Area #2	
Property ID[a]	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
R205146	7	$ 47,413.08	$ 3,657.42
R205147	6	$ 43,620.03	$ 3,364.83
R205148	6	$ 43,620.03	$ 3,364.83
R205149	6	$ 43,620.03	$ 3,364.83
R205150	6	$ 43,620.03	$ 3,364.83
R205151	6	$ 43,620.03	$ 3,364.83
R205152	6	$ 43,620.03	$ 3,364.83
R205153	6	$ 43,620.03	$ 3,364.83
R205154	6	$ 43,620.03	$ 3,364.83
R205155	6	$ 43,620.03	$ 3,364.83
R205156	6	$ 43,620.03	$ 3,364.83
R205157	6	$ 43,620.03	$ 3,364.83
R205158	6	$ 43,620.03	$ 3,364.83
R205159	6	$ 43,620.03	$ 3,364.83
R205160	6	$ 43,620.03	$ 3,364.83
R205161	6	$ 43,620.03	$ 3,364.83
R205162	6	$ 43,620.03	$ 3,364.83
R205163	6	$ 43,620.03	$ 3,364.83
R205164	6	$ 43,620.03	$ 3,364.83
R205165	6	$ 43,620.03	$ 3,364.83
R205166	6	$ 43,620.03	$ 3,364.83
R205167	6	$ 43,620.03	$ 3,364.83
R205168	6	$ 43,620.03	$ 3,364.83
R205169	6	$ 43,620.03	$ 3,364.83
R205170	6	$ 43,620.03	$ 3,364.83
R205171	6	$ 43,620.03	$ 3,364.83
R205172	6	$ 43,620.03	$ 3,364.83
R205173	6	$ 43,620.03	$ 3,364.83
R205174	6	$ 43,620.03	$ 3,364.83
R205175	6	$ 43,620.03	$ 3,364.83
R205176	6	$ 43,620.03	$ 3,364.83
R205177	6	$ 43,620.03	$ 3,364.83
R205178	Non-Benefited	$ -	$ -
R205179	5	$ 41,723.51	$ 3,218.53
R205180	5	$ 41,723.51	$ 3,218.53
R205181	5	$ 41,723.51	$ 3,218.53
R205182	5	$ 41,723.51	$ 3,218.53
R205183	5	$ 41,723.51	$ 3,218.53
R205184	5	$ 41,723.51	$ 3,218.53
R205185	5	$ 41,723.51	$ 3,218.53

		Improvement Area #2	
Property ID[a]	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
R205186	5	$ 41,723.51	$ 3,218.53
R205187	5	$ 41,723.51	$ 3,218.53
R205188	5	$ 41,723.51	$ 3,218.53
R205189	5	$ 41,723.51	$ 3,218.53
R205190	5	$ 41,723.51	$ 3,218.53
R205191	5	$ 41,723.51	$ 3,218.53
R205192	5	$ 41,723.51	$ 3,218.53
R205193	Non-Benefited	$ -	$ -
R205194	7	$ 47,413.08	$ 3,657.42
R205195	7	$ 47,413.08	$ 3,657.42
R205196	Non-Benefited	$ -	$ -
R205197	6	$ 43,620.03	$ 3,364.83
R205198	6	$ 43,620.03	$ 3,364.83
R205199	6	$ 43,620.03	$ 3,364.83
R205200	6	$ 43,620.03	$ 3,364.83
R205201	6	$ 43,620.03	$ 3,364.83
R205202	6	$ 43,620.03	$ 3,364.83
R205203	6	$ 43,620.03	$ 3,364.83
R205204	6	$ 43,620.03	$ 3,364.83
R205205	6	$ 43,620.03	$ 3,364.83
R205206	6	$ 43,620.03	$ 3,364.83
R205207	6	$ 43,620.03	$ 3,364.83
R205208	6	$ 43,620.03	$ 3,364.83
R205209	Non-Benefited	$ -	$ -
R205210	6	$ 43,620.03	$ 3,364.83
R205211	6	$ 43,620.03	$ 3,364.83
R205212	6	$ 43,620.03	$ 3,364.83
R205213	6	$ 43,620.03	$ 3,364.83
R205214	6	$ 43,620.03	$ 3,364.83
R205215	6	$ 43,620.03	$ 3,364.83
R205216	6	$ 43,620.03	$ 3,364.83
R205217	6	$ 43,620.03	$ 3,364.83
R205218	6	$ 43,620.03	$ 3,364.83
R205219	6	$ 43,620.03	$ 3,364.83
R205220	6	$ 43,620.03	$ 3,364.83
R205221	6	$ 43,620.03	$ 3,364.83
R205222	6	$ 43,620.03	$ 3,364.83
R205223	6	$ 43,620.03	$ 3,364.83
R205224	6	$ 43,620.03	$ 3,364.83
R205225	6	$ 43,620.03	$ 3,364.83

		Improvement Area #2	
Property ID[a]	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
R205226	6	$ 43,620.03	$ 3,364.83
R205227	6	$ 43,620.03	$ 3,364.83
R205228	6	$ 43,620.03	$ 3,364.83
R205229	6	$ 43,620.03	$ 3,364.83
R205230	6	$ 43,620.03	$ 3,364.83
R205231	6	$ 43,620.03	$ 3,364.83
R205232	5	$ 41,723.51	$ 3,218.53
R205233	5	$ 41,723.51	$ 3,218.53
R205234	5	$ 41,723.51	$ 3,218.53
R205235	5	$ 41,723.51	$ 3,218.53
R205236	5	$ 41,723.51	$ 3,218.53
R205237	5	$ 41,723.51	$ 3,218.53
R205238	5	$ 41,723.51	$ 3,218.53
R205239	5	$ 41,723.51	$ 3,218.53
R205240	5	$ 41,723.51	$ 3,218.53
R205241	5	$ 41,723.51	$ 3,218.53
R205242	5	$ 41,723.51	$ 3,218.53
R205243	5	$ 41,723.51	$ 3,218.53
R205244	5	$ 41,723.51	$ 3,218.53
R205245	5	$ 41,723.51	$ 3,218.53
R205246	5	$ 41,723.51	$ 3,218.53
R205247	5	$ 41,723.51	$ 3,218.53
R205248	5	$ 41,723.51	$ 3,218.53
R205249	5	$ 41,723.51	$ 3,218.53
R205250	5	$ 41,723.51	$ 3,218.53
R205251	5	$ 41,723.51	$ 3,218.53
R205252	5	$ 41,723.51	$ 3,218.53
R205253	5	$ 41,723.51	$ 3,218.53
R205254	5	$ 41,723.51	$ 3,218.53
R205255	5	$ 41,723.51	$ 3,218.53
R205256	5	$ 41,723.51	$ 3,218.53
R205257	Non-Benefited	$ -	$ -
R205258	6	$ 43,620.03	$ 3,364.83
R205259	6	$ 43,620.03	$ 3,364.83
R205260	6	$ 43,620.03	$ 3,364.83
R205261	6	$ 43,620.03	$ 3,364.83
R205262	6	$ 43,620.03	$ 3,364.83
R205263	6	$ 43,620.03	$ 3,364.83
R205264	6	$ 43,620.03	$ 3,364.83
R205265	6	$ 43,620.03	$ 3,364.83

		Improvement Area #2	
Property ID[a]	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
R205266	6	$ 43,620.03	$ 3,364.83
R205267	7	$ 47,413.08	$ 3,657.42
R205268	7	$ 47,413.08	$ 3,657.42
R205269	7	$ 47,413.08	$ 3,657.42
R205270	Non-Benefited	$ -	$ -
R205272	4	$ 39,826.99	$ 3,072.23
Total		**$ 6,873,000.00**	**$ 530,179.88**

Footnotes:

[a] Property IDs preliminary and subject to change based on the final certified rolls provided by the County prior to billing.
[b] Outstanding Assessment prior to 1/31/2026 Annual Installment.

EXHIBIT I – IMPROVEMENT AREA #2 ANNUAL INSTALLMENTS

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	115,000.00	346,705.00	34,109.81	34,365.00	530,179.81
2027	120,000.00	341,817.50	43,462.01	33,790.00	539,069.51
2028	125,000.00	336,717.50	44,331.25	33,190.00	539,238.75
2029	130,000.00	331,405.00	45,217.88	32,565.00	539,187.88
2030	135,000.00	325,880.00	46,122.23	31,915.00	538,917.23
2031	141,000.00	320,142.50	47,044.68	31,240.00	539,427.18
2032	147,000.00	314,150.00	47,985.57	30,535.00	539,670.57
2033	154,000.00	306,800.00	48,945.28	29,800.00	539,545.28
2034	161,000.00	299,100.00	49,924.19	29,030.00	539,054.19
2035	169,000.00	291,050.00	50,922.67	28,225.00	539,197.67
2036	178,000.00	282,600.00	51,941.13	27,380.00	539,921.13
2037	186,000.00	273,700.00	52,979.95	26,490.00	539,169.95
2038	196,000.00	264,400.00	54,039.55	25,560.00	539,999.55
2039	205,000.00	254,600.00	55,120.34	24,580.00	539,300.34
2040	215,000.00	244,350.00	56,222.74	23,555.00	539,127.74
2041	226,000.00	233,600.00	57,347.20	22,480.00	539,427.20
2042	238,000.00	222,300.00	58,494.14	21,350.00	540,144.14
2043	250,000.00	210,400.00	59,664.03	20,160.00	540,224.03
2044	262,000.00	197,900.00	60,857.31	18,910.00	539,667.31
2045	275,000.00	184,800.00	62,074.45	17,600.00	539,474.45
2046	290,000.00	170,362.50	63,315.94	16,225.00	539,903.44
2047	305,000.00	155,137.50	64,582.26	14,775.00	539,494.76
2048	322,000.00	139,125.00	65,873.91	13,250.00	540,248.91
2049	339,000.00	122,220.00	67,191.38	11,640.00	540,051.38
2050	357,000.00	104,422.50	68,535.21	9,945.00	539,902.71
2051	376,000.00	85,680.00	69,905.92	8,160.00	539,745.92
2052	397,000.00	65,940.00	71,304.03	6,280.00	540,524.03
2053	418,000.00	45,097.50	72,730.12	4,295.00	540,122.62
2054	441,000.00	23,152.50	74,184.72	2,205.00	540,542.22
Total	**$ 6,873,000.00**	**$ 6,493,555.00**	**$ 1,644,429.90**	**$ 629,495.00**	**$ 15,640,479.90**

Footnotes:

[a] Interest rate on Improvement Area #2 Bonds is 4.250% for term bonds due September 1, 2031, and 5.250% for term bonds due September 1, 2054.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

EXHIBIT J – IMPROVEMENT AREA #3A-3B ANNUAL INSTALLMENTS

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	331,157.16	-	-	(331,157.16)	-
2027	97,000.00	421,260.00	40,000.00	35,105.00	-	593,365.00
2028	102,000.00	415,440.00	40,800.00	34,620.00	-	592,860.00
2029	109,000.00	409,320.00	41,616.00	34,110.00	-	594,046.00
2030	114,000.00	402,780.00	42,448.32	33,565.00	-	592,793.32
2031	121,000.00	395,940.00	43,297.29	32,995.00	-	593,232.29
2032	128,000.00	388,680.00	44,163.24	32,390.00	-	593,233.24
2033	135,000.00	381,000.00	45,046.50	31,750.00	-	592,796.50
2034	143,000.00	372,900.00	45,947.43	31,075.00	-	592,922.43
2035	152,000.00	364,320.00	46,866.38	30,360.00	-	593,546.38
2036	161,000.00	355,200.00	47,803.71	29,600.00	-	593,603.71
2037	170,000.00	345,540.00	48,759.78	28,795.00	-	593,094.78
2038	180,000.00	335,340.00	49,734.98	27,945.00	-	593,019.98
2039	191,000.00	324,540.00	50,729.68	27,045.00	-	593,314.68
2040	202,000.00	313,080.00	51,744.27	26,090.00	-	592,914.27
2041	214,000.00	300,960.00	52,779.16	25,080.00	-	592,819.16
2042	227,000.00	288,120.00	53,834.74	24,010.00	-	592,964.74
2043	241,000.00	274,500.00	54,911.43	22,875.00	-	593,286.43
2044	255,000.00	260,040.00	56,009.66	21,670.00	-	592,719.66
2045	270,000.00	244,740.00	57,129.85	20,395.00	-	592,264.85
2046	287,000.00	228,540.00	58,272.45	19,045.00	-	592,857.45
2047	305,000.00	211,320.00	59,437.90	17,610.00	-	593,367.90
2048	323,000.00	193,020.00	60,626.66	16,085.00	-	592,731.66
2049	343,000.00	173,640.00	61,839.19	14,470.00	-	592,949.19
2050	364,000.00	153,060.00	63,075.97	12,755.00	-	592,890.97
2051	387,000.00	131,220.00	64,337.49	10,935.00	-	593,492.49
2052	410,000.00	108,000.00	65,624.24	9,000.00	-	592,624.24
2053	436,000.00	83,400.00	66,936.72	6,950.00	-	593,286.72
2054	463,000.00	57,240.00	68,275.45	4,770.00		593,285.45
2055	491,000.00	29,460.00	69,640.96	2,455.00		592,555.96
Total	**$ 7,021,000.00**	**$ 8,293,757.16**	**$ 1,551,689.45**	**$ 663,550.00**	**$ (331,157.16)**	**$ 17,198,839.45**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

EXHIBIT K-1 – IMPROVEMENT AREA #3A ASSESSMENT ROLL

		Improvement Area #3A	
Property ID[a]	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
R17780	Improvement Area #3A Initial Parcel	$ 4,262,000.00	$ -
Total		**$ 4,262,000.00**	**$ -**

Footnotes:

[a] Property IDs preliminary and subject to change based on the final certified rolls provided by the County prior to billing.

[b] Outstanding Assessment prior to 1/31/2026 Annual Installment.

EXHIBIT K-2 – IMPROVEMENT AREA #3A ASSESSMENT ROLL BY BLOCK AND LOT

Legal Description				Improvement Area #3A	
Property ID[a]	Block	Lot	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
TBD	C	49	10	$ 47,418.78	$ -
TBD	C	50	10	$ 47,418.78	$ -
TBD	C	51	10	$ 47,418.78	$ -
TBD	C	52	10	$ 47,418.78	$ -
TBD	C	53	10	$ 47,418.78	$ -
TBD	C	54	10	$ 47,418.78	$ -
TBD	C	55	Non-Benefited	$ -	$ -
TBD	K	1	9	$ 43,625.28	$ -
TBD	K	2	9	$ 43,625.28	$ -
TBD	K	3	9	$ 43,625.28	$ -
TBD	K	4	9	$ 43,625.28	$ -
TBD	K	5	9	$ 43,625.28	$ -
TBD	K	6	9	$ 43,625.28	$ -
TBD	K	7	9	$ 43,625.28	$ -
TBD	K	8	9	$ 43,625.28	$ -
TBD	M	1	8	$ 41,728.53	$ -
TBD	M	2	8	$ 41,728.53	$ -
TBD	M	3	8	$ 41,728.53	$ -
TBD	M	4	8	$ 41,728.53	$ -
TBD	M	5	8	$ 41,728.53	$ -
TBD	M	6	8	$ 41,728.53	$ -
TBD	M	7	8	$ 41,728.53	$ -
TBD	M	8	8	$ 41,728.53	$ -
TBD	M	9	8	$ 41,728.53	$ -
TBD	M	10	8	$ 41,728.53	$ -
TBD	M	11	8	$ 41,728.53	$ -
TBD	M	12	8	$ 41,728.53	$ -
TBD	M	21	8	$ 41,728.53	$ -
TBD	M	22	8	$ 41,728.53	$ -
TBD	M	23	8	$ 41,728.53	$ -
TBD	M	24	8	$ 41,728.53	$ -
TBD	M	25	8	$ 41,728.53	$ -
TBD	M	26	8	$ 41,728.53	$ -
TBD	M	27	8	$ 41,728.53	$ -
TBD	M	28	8	$ 41,728.53	$ -
TBD	M	29	8	$ 41,728.53	$ -
TBD	M	30	8	$ 41,728.53	$ -
TBD	M	31	8	$ 41,728.53	$ -
TBD	N	1	10	$ 47,418.78	$ -
TBD	N	2	10	$ 47,418.78	$ -

	Legal Description			Improvement Area #3A	
Property ID[a]	Block	Lot	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
TBD	N	3	10	$ 47,418.78	$ -
TBD	N	4	10	$ 47,418.78	$ -
TBD	N	5	10	$ 47,418.78	$ -
TBD	N	6	10	$ 47,418.78	$ -
TBD	N	7	10	$ 47,418.78	$ -
TBD	N	8	10	$ 47,418.78	$ -
TBD	N	9	10	$ 47,418.78	$ -
TBD	N	10	10	$ 47,418.78	$ -
TBD	N	11	10	$ 47,418.78	$ -
TBD	N	12	10	$ 47,418.78	$ -
TBD	N	13	10	$ 47,418.78	$ -
TBD	N	14	10	$ 47,418.78	$ -
TBD	N	21	8	$ 41,728.53	$ -
TBD	N	22	8	$ 41,728.53	$ -
TBD	N	23	8	$ 41,728.53	$ -
TBD	N	24	8	$ 41,728.53	$ -
TBD	N	25	8	$ 41,728.53	$ -
TBD	N	26	8	$ 41,728.53	$ -
TBD	N	27	8	$ 41,728.53	$ -
TBD	N	28	8	$ 41,728.53	$ -
TBD	N	29	8	$ 41,728.53	$ -
TBD	N	30	8	$ 41,728.53	$ -
TBD	N	31	8	$ 41,728.53	$ -
TBD	O	4	10	$ 47,418.78	$ -
TBD	O	5	10	$ 47,418.78	$ -
TBD	O	6	10	$ 47,418.78	$ -
TBD	O	7	10	$ 47,418.78	$ -
TBD	O	8	10	$ 47,418.78	$ -
TBD	O	9	9	$ 43,625.28	$ -
TBD	O	10	9	$ 43,625.28	$ -
TBD	O	11	9	$ 43,625.28	$ -
TBD	O	12	9	$ 43,625.28	$ -
TBD	O	13	9	$ 43,625.28	$ -
TBD	O	14	9	$ 43,625.28	$ -
TBD	O	15	9	$ 43,625.28	$ -
TBD	O	16	9	$ 43,625.28	$ -
TBD	O	17	9	$ 43,625.28	$ -
TBD	O	18	9	$ 43,625.28	$ -
TBD	O	19	9	$ 43,625.28	$ -
TBD	O	20	9	$ 43,625.28	$ -

	Legal Description			Improvement Area #3	
Property ID[a]	Block	Lot	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
TBD	O	21	9	$ 43,625.28	$ -
TBD	O	22	9	$ 43,625.28	$ -
TBD	O	23	9	$ 43,625.28	$ -
TBD	O	24	9	$ 43,625.28	$ -
TBD	O	25	9	$ 43,625.28	$ -
TBD	O	26	9	$ 43,625.28	$ -
TBD	O	27	9	$ 43,625.28	$ -
TBD	O	28	9	$ 43,625.28	$ -
TBD	O	29	9	$ 43,625.28	$ -
TBD	O	30	9	$ 43,625.28	$ -
TBD	O	31	9	$ 43,625.28	$ -
TBD	O	32	9	$ 43,625.28	$ -
TBD	O	33	9	$ 43,625.28	$ -
TBD	O	34	9	$ 43,625.28	$ -
TBD	O	35	9	$ 43,625.28	$ -
TBD	O	36	9	$ 43,625.28	$ -
TBD	O	37	9	$ 43,625.28	$ -
TBD	O	38	9	$ 43,625.28	$ -
TBD	O	39	Non-Benefited	$ -	$ -
Total				**$ 4,262,000.00**	**$ -**

Footnotes:

[a] Plat was recorded on May 2, 2025. Property IDs have not been assigned by the Appraisal District.

[b] Outstanding Assessment prior to 1/31/2026 Annual Installment.

EXHIBIT L – IMPROVEMENT AREA #3A ANNUAL INSTALLMENTS

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	201,024.33	-	-	(201,024.33)	-
2027	59,000.00	255,720.00	24,281.44	21,310.00	-	360,311.44
2028	62,000.00	252,180.00	24,767.07	21,015.00	-	359,962.07
2029	66,000.00	248,460.00	25,262.41	20,705.00	-	360,427.41
2030	69,000.00	244,500.00	25,767.66	20,375.00	-	359,642.66
2031	73,000.00	240,360.00	26,283.01	20,030.00	-	359,673.01
2032	78,000.00	235,980.00	26,808.67	19,665.00	-	360,453.67
2033	82,000.00	231,300.00	27,344.84	19,275.00	-	359,919.84
2034	87,000.00	226,380.00	27,891.74	18,865.00	-	360,136.74
2035	92,000.00	221,160.00	28,449.57	18,430.00	-	360,039.57
2036	98,000.00	215,640.00	29,018.56	17,970.00	-	360,628.56
2037	103,000.00	209,760.00	29,598.93	17,480.00	-	359,838.93
2038	109,000.00	203,580.00	30,190.91	16,965.00	-	359,735.91
2039	116,000.00	197,040.00	30,794.73	16,420.00	-	360,254.73
2040	123,000.00	190,080.00	31,410.62	15,840.00	-	360,330.62
2041	130,000.00	182,700.00	32,038.83	15,225.00	-	359,963.83
2042	138,000.00	174,900.00	32,679.61	14,575.00	-	360,154.61
2043	146,000.00	166,620.00	33,333.20	13,885.00	-	359,838.20
2044	155,000.00	157,860.00	33,999.86	13,155.00	-	360,014.86
2045	164,000.00	148,560.00	34,679.86	12,380.00	-	359,619.86
2046	174,000.00	138,720.00	35,373.46	11,560.00	-	359,653.46
2047	185,000.00	128,280.00	36,080.93	10,690.00	-	360,050.93
2048	196,000.00	117,180.00	36,802.55	9,765.00	-	359,747.55
2049	208,000.00	105,420.00	37,538.60	8,785.00	-	359,743.60
2050	221,000.00	92,940.00	38,289.37	7,745.00	-	359,974.37
2051	235,000.00	79,680.00	39,055.16	6,640.00	-	360,375.16
2052	249,000.00	65,580.00	39,836.26	5,465.00	-	359,881.26
2053	265,000.00	50,640.00	40,632.99	4,220.00	-	360,492.99
2054	281,000.00	34,740.00	41,445.65	2,895.00	-	360,080.65
2055	298,000.00	17,880.00	42,274.56	1,490.00	-	359,644.56
Total	**$ 4,262,000.00**	**$ 5,034,864.33**	**$ 941,931.05**	**$ 402,820.00**	**$ (201,024.33)**	**$ 10,440,591.05**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

EXHIBIT M-1 – IMPROVEMENT AREA #3B ASSESSMENT ROLL

		Improvement Area #3B	
Property ID[a]	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
R17780	Improvement Area #3B Initial Parcel	$ 2,759,000.00	$ -
Total		**$ 2,759,000.00**	**$ -**

Footnotes:

[a] Property IDs preliminary and subject to change based on the final certified rolls provided by the County prior to billing.
[b] Outstanding Assessment prior to 1/31/2026 Annual Installment.

EXHIBIT M-2 – IMPROVEMENT AREA #3B ASSESSMENT ROLL BY BLOCK AND LOT

Legal Description				Improvement Area #3B	
Property ID[a]	Block	Lot	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
TBD	T	1	11	$ 39,820.62	$ -
TBD	T	2	11	$ 39,820.62	$ -
TBD	T	3	11	$ 39,820.62	$ -
TBD	T	4	11	$ 39,820.62	$ -
TBD	T	5	11	$ 39,820.62	$ -
TBD	T	6	11	$ 39,820.62	$ -
TBD	T	7	11	$ 39,820.62	$ -
TBD	T	8	11	$ 39,820.62	$ -
TBD	T	9	11	$ 39,820.62	$ -
TBD	T	10	11	$ 39,820.62	$ -
TBD	T	11	11	$ 39,820.62	$ -
TBD	T	12	11	$ 39,820.62	$ -
TBD	T	13	11	$ 39,820.62	$ -
TBD	T	14	11	$ 39,820.62	$ -
TBD	T	15	11	$ 39,820.62	$ -
TBD	T	16	11	$ 39,820.62	$ -
TBD	T	17	11	$ 39,820.62	$ -
TBD	T	18	11	$ 39,820.62	$ -
TBD	T	19	11	$ 39,820.62	$ -
TBD	T	20	11	$ 39,820.62	$ -
TBD	T	21	11	$ 39,820.62	$ -
TBD	T	22	11	$ 39,820.62	$ -
TBD	T	23	11	$ 39,820.62	$ -
TBD	T	24	Non-Benefited	$ -	$ -
TBD	T	25	11	$ 39,820.62	$ -
TBD	T	26	11	$ 39,820.62	$ -
TBD	T	27	11	$ 39,820.62	$ -
TBD	T	28	11	$ 39,820.62	$ -
TBD	T	29	11	$ 39,820.62	$ -
TBD	T	30	11	$ 39,820.62	$ -
TBD	T	31	11	$ 39,820.62	$ -
TBD	T	32	11	$ 39,820.62	$ -
TBD	T	33	11	$ 39,820.62	$ -
TBD	T	34	11	$ 39,820.62	$ -
TBD	T	35	11	$ 39,820.62	$ -
TBD	T	36	11	$ 39,820.62	$ -
TBD	T	37	11	$ 39,820.62	$ -
TBD	T	38	11	$ 39,820.62	$ -
TBD	T	39	11	$ 39,820.62	$ -
TBD	T	40	11	$ 39,820.62	$ -

	Legal Description			Improvement Area #3B	
Property ID[a]	Block	Lot	Lot Type	Outstanding Assessment [b]	Annual Installment Due 1/31/2026 [b]
TBD	T	41	11	$ 39,820.62	$ -
TBD	T	42	11	$ 39,820.62	$ -
TBD	T	43	11	$ 39,820.62	$ -
TBD	T	44	11	$ 39,820.62	$ -
TBD	T	45	11	$ 39,820.62	$ -
TBD	T	46	11	$ 39,820.62	$ -
TBD	U	2	12	$ 43,613.06	$ -
TBD	U	3	12	$ 43,613.06	$ -
TBD	U	4	12	$ 43,613.06	$ -
TBD	U	5	12	$ 43,613.06	$ -
TBD	U	6	12	$ 43,613.06	$ -
TBD	U	7	12	$ 43,613.06	$ -
TBD	U	8	12	$ 43,613.06	$ -
TBD	U	9	12	$ 43,613.06	$ -
TBD	U	10	12	$ 43,613.06	$ -
TBD	U	11	12	$ 43,613.06	$ -
TBD	U	12	12	$ 43,613.06	$ -
TBD	U	13	12	$ 43,613.06	$ -
TBD	U	14	12	$ 43,613.06	$ -
TBD	U	15	12	$ 43,613.06	$ -
TBD	U	16	12	$ 43,613.06	$ -
TBD	U	17	12	$ 43,613.06	$ -
TBD	U	18	12	$ 43,613.06	$ -
TBD	U	19	12	$ 43,613.06	$ -
TBD	U	20	13	$ 47,405.50	$ -
TBD	U	21	13	$ 47,405.50	$ -
TBD	U	22	12	$ 43,613.06	$ -
TBD	U	23	12	$ 43,613.06	$ -
TBD	U	24	Non-Benefited	$ -	$ -
TBD			Non-Benefited	$ -	$ -
TBD			Non-Benefited	$ -	$ -
Total				**$ 2,759,000.00**	**$ -**

Footnotes:

[a] Plat was recorded on May 2, 2025. Property IDs have not been assigned by the Appraisal District.

[b] Outstanding Assessment prior to 1/31/2026 Annual Installment.

EXHIBIT N – IMPROVEMENT AREA #3B ANNUAL INSTALLMENTS

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	130,132.83	-	-	(130,132.83)	-
2027	38,000.00	165,540.00	15,718.56	13,795.00	-	233,053.56
2028	40,000.00	163,260.00	16,032.93	13,605.00	-	232,897.93
2029	43,000.00	160,860.00	16,353.59	13,405.00	-	233,618.59
2030	45,000.00	158,280.00	16,680.66	13,190.00	-	233,150.66
2031	48,000.00	155,580.00	17,014.27	12,965.00	-	233,559.27
2032	50,000.00	152,700.00	17,354.56	12,725.00	-	232,779.56
2033	53,000.00	149,700.00	17,701.65	12,475.00	-	232,876.65
2034	56,000.00	146,520.00	18,055.68	12,210.00	-	232,785.68
2035	60,000.00	143,160.00	18,416.79	11,930.00	-	233,506.79
2036	63,000.00	139,560.00	18,785.13	11,630.00	-	232,975.13
2037	67,000.00	135,780.00	19,160.83	11,315.00	-	233,255.83
2038	71,000.00	131,760.00	19,544.05	10,980.00	-	233,284.05
2039	75,000.00	127,500.00	19,934.93	10,625.00	-	233,059.93
2040	79,000.00	123,000.00	20,333.63	10,250.00	-	232,583.63
2041	84,000.00	118,260.00	20,740.30	9,855.00	-	232,855.30
2042	89,000.00	113,220.00	21,155.11	9,435.00	-	232,810.11
2043	95,000.00	107,880.00	21,578.21	8,990.00	-	233,448.21
2044	100,000.00	102,180.00	22,009.77	8,515.00	-	232,704.77
2045	106,000.00	96,180.00	22,449.97	8,015.00	-	232,644.97
2046	113,000.00	89,820.00	22,898.97	7,485.00	-	233,203.97
2047	120,000.00	83,040.00	23,356.95	6,920.00	-	233,316.95
2048	127,000.00	75,840.00	23,824.09	6,320.00	-	232,984.09
2049	135,000.00	68,220.00	24,300.57	5,685.00	-	233,205.57
2050	143,000.00	60,120.00	24,786.58	5,010.00	-	232,916.58
2051	152,000.00	51,540.00	25,282.31	4,295.00	-	233,117.31
2052	161,000.00	42,420.00	25,787.96	3,535.00	-	232,742.96
2053	171,000.00	32,760.00	26,303.72	2,730.00	-	232,793.72
2054	182,000.00	22,500.00	26,829.79	1,875.00	-	233,204.79
2055	193,000.00	11,580.00	27,366.39	965.00	-	232,911.39
Total	**$ 2,759,000.00**	**$ 3,258,892.83**	**$ 609,757.95**	**$ 260,730.00**	**$ (130,132.83)**	**$ 6,758,247.95**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

EXHIBIT O – MAXIMUM ASSESSMENT PER LOT TYPE

Lot Type	Units	Total Assessment	Maximum Assessment per Lot Type
Improvement Area #1			
1	12	$ 489,473.34	$40,789.45 per Unit
2	100	$ 4,264,351.10	$42,643.51 per Unit
3	46	$ 2,132,175.55	$46,351.64 per Unit
Total		**$ 6,886,000.00**	
Improvement Area #2			
4	6	$ 238,961.92	$39,826.99 per Unit
5	68	$ 2,837,198.68	$41,723.51 per Unit
6	74	$ 3,227,882.45	$43,620.03 per Unit
7	12	$ 568,956.95	$47,413.08 per Unit
Total		**$ 6,873,000.00**	
Improvement Area #3A			
8	34	$ 1,418,769.92	$41,728.53 per Unit
9	38	$ 1,657,760.57	$43,625.28 per Unit
10	25	$ 1,185,469.51	$47,418.78 per Unit
Total		**$ 4,262,000.00**	
Improvement Area #3B			
11	45	$ 1,791,927.84	$39,820.62 per Unit
12	20	$ 872,261.17	$43,613.06 per Unit
13	2	$ 94,811.00	$47,405.50 per Unit
Total		**$ 2,759,000.00**	

EXHIBIT P – ESTIMATED BUILDOUT VALUE AND ALLOCATION OF MAJOR IMPROVEMENTS

	Units	Estimated Buildout Value Per Unit [a]	Estimated Buildout Value	% of Estimated Buildout Value	% of Major Improvements [b]
Improvement Area #1					
35'	12 lots	$ 440,000	$ 5,280,000		
40'	100 lots	$ 460,000	$ 46,000,000		
45'	46 lots	$ 500,000	$ 23,000,000		
			$ 74,280,000		**25.61%**
Improvement Area #2					
35'	6 lots	$ 420,000	$ 2,520,000		
40'	68 lots	$ 440,000	$ 29,920,000		
45'	74 lots	$ 460,000	$ 34,040,000		
50'	12 lots	$ 500,000	$ 6,000,000		
			$ 72,480,000		**24.99%**
Percentage of Major Improvements Allocated to Improvement Area #1 and Improvement Area #2:					**50.61%**

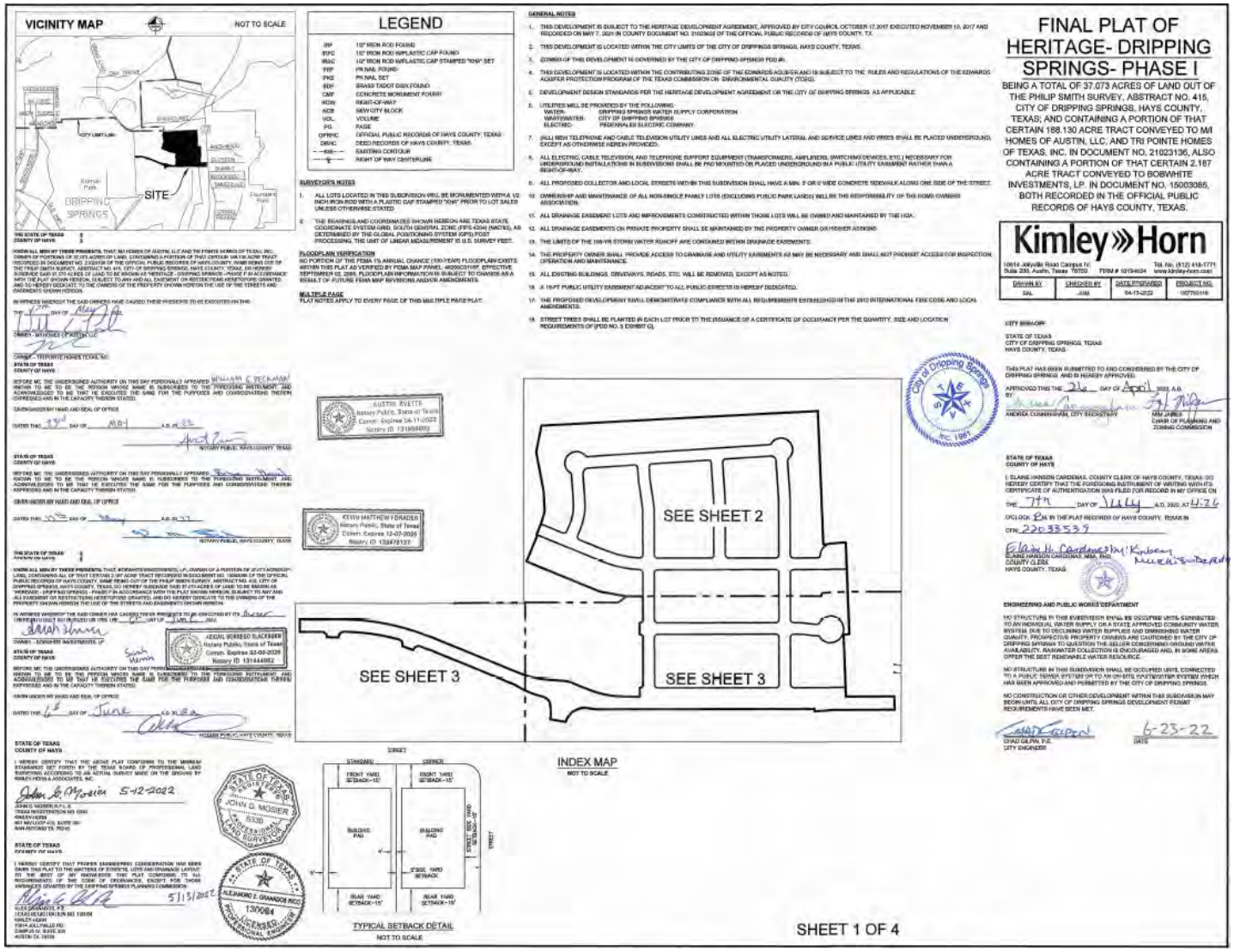
	Units	Estimated Buildout Value Per Unit [a]	Estimated Buildout Value	% of Estimated Buildout Value	% of Major Improvements [b]
Improvement Area #3A					
40'	34 lots	$ 440,000	$ 14,960,000		
45'	38 lots	$ 460,000	$ 17,480,000		
50'	25 lots	$ 500,000	$ 12,500,000		
			$ 44,940,000	**31.22%**	**15.42%**
Improvement Area #3B					
35'	45 lots	$ 420,000	$ 18,900,000		
45'	20 lots	$ 460,000	$ 9,200,000		
50'	2 lots	$ 500,000	$ 1,000,000		
			$ 29,100,000	**20.22%**	**9.99%**
Future Improvement Area at the time of 2025 Amended and Restated Service and Assessment Plan					
45'	76 lots	$ 460,000	$ 34,960,000		
50'	39 lots	$ 500,000	$ 19,500,000		
Multi-Family	103 lots	$ 150,000	$ 15,450,000		
			$ 69,910,000	**48.57%**	**23.99%**
Improvement Area #3A, Improvement Area #3B & Future Improvement Area Total:			**$ 143,950,000**	**100.00%**	**49.39%**

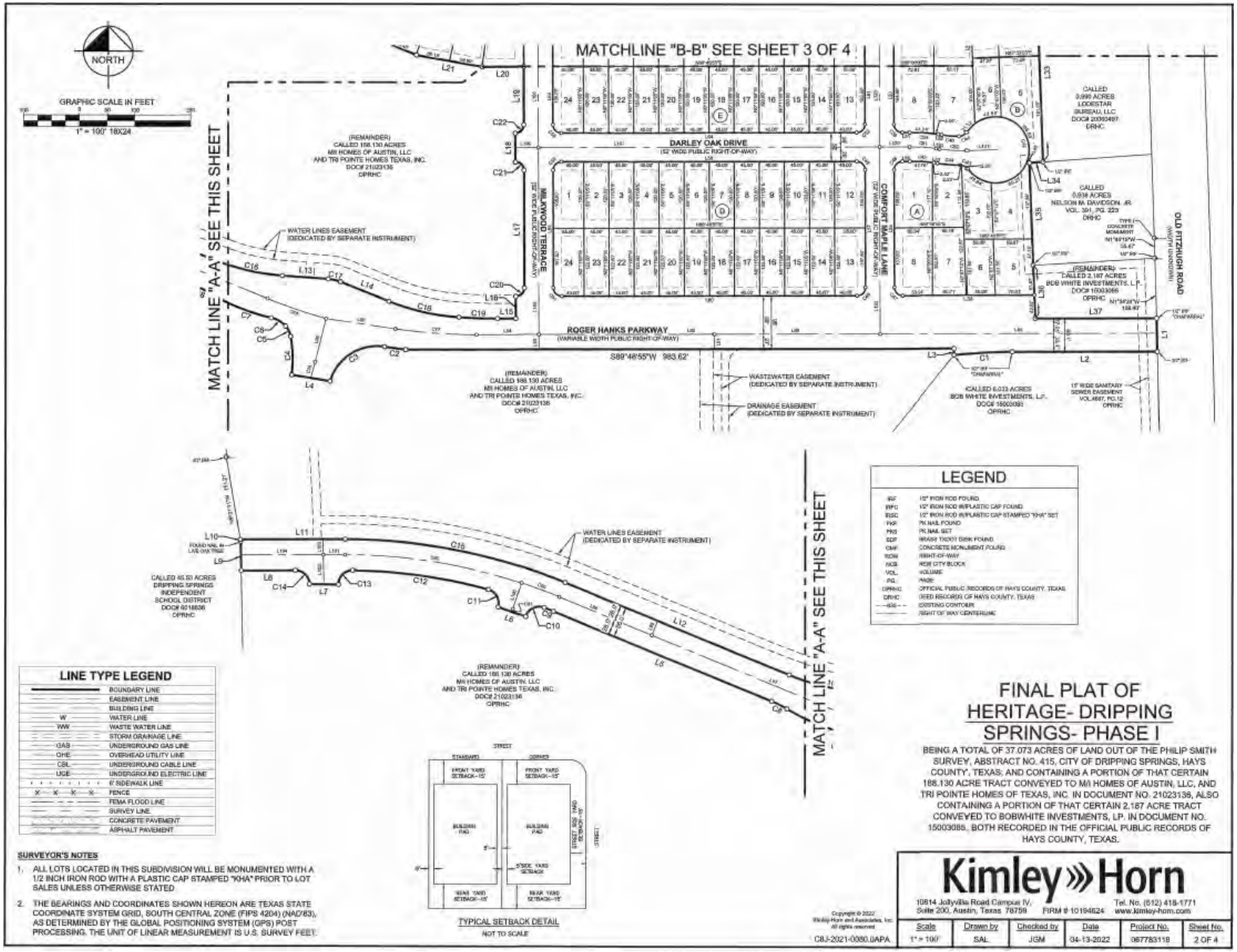
Footnotes:

[a] For the purposes of determining the allocation of Assessments between Lot Types in Future Improvement Areas, the Estimated Buildout Values shown above will not change.

[b] Major Improvements allocated to Improvement Area #1 and Improvement Area #2 on a pro rata basis as deterimed by the Estimated Buildout Value of the Future Improvement Area in the 2024 Amended and Restated Service and Assessment Plan.

EXHIBIT Q-1 – IMPROVEMENT AREA #1 FINAL PLAT




NORTH
GRAPHIC SCALE IN FEET
1" = 100' 18X24
MATCHLINE "B-B" SEE SHEET 3 OF 4
MATCH LINE "A-A" SEE THIS SHEET
DARLEY OAK DRIVE
(52' WIDE PUBLIC RIGHT-OF-WAY)
ROGER HANKS PARKWAY
(VARIABLE WIDTH PUBLIC RIGHT-OF-WAY)
MILKWOOD TERRACE
COMFORT MAPLE LANE
OLD FITZHUGH ROAD
(REMAINDER)
CALLED 188.130 ACRES
MI HOMES OF AUSTIN, LLC
AND TRI POINTE HOMES TEXAS, INC.
DOC# 21023136
OPRHC
WATER LINES EASEMENT
(DEDICATED BY SEPARATE INSTRUMENT)
WASTEWATER EASEMENT
(DEDICATED BY SEPARATE INSTRUMENT)
DRAINAGE EASEMENT
(DEDICATED BY SEPARATE INSTRUMENT)
CALLED 6.033 ACRES
BOB WHITE INVESTMENTS, L.P.
DOC# 15003085
OPRHC
CALLED 46.93 ACRES
DRIPPING SPRINGS
INDEPENDENT
SCHOOL DISTRICT
DOC# 9016836
OPRHC
S89°48'55"W 983.62'
LEGEND
LINE TYPE LEGEND
BOUNDARY LINE
EASEMENT LINE
BUILDING LINE
WATER LINE
WASTE WATER LINE
STORM DRAINAGE LINE
UNDERGROUND GAS LINE
OVERHEAD UTILITY LINE
UNDERGROUND CABLE LINE
UNDERGROUND ELECTRIC LINE
6' SIDEWALK LINE
FENCE
FEMA FLOOD LINE
SURVEY LINE
CONCRETE PAVEMENT
ASPHALT PAVEMENT
SURVEYOR'S NOTES
1. ALL LOTS LOCATED IN THIS SUBDIVISION WILL BE MONUMENTED WITH A 1/2 INCH IRON ROD WITH A PLASTIC CAP STAMPED "KHA" PRIOR TO LOT SALES UNLESS OTHERWISE STATED
2. THE BEARINGS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM (GPS) POST PROCESSING. THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.
TYPICAL SETBACK DETAIL
NOT TO SCALE
FINAL PLAT OF
HERITAGE- DRIPPING
SPRINGS- PHASE I
BEING A TOTAL OF 37.073 ACRES OF LAND OUT OF THE PHILIP SMITH SURVEY, ABSTRACT NO. 415, CITY OF DRIPPING SPRINGS, HAYS COUNTY, TEXAS; AND CONTAINING A PORTION OF THAT CERTAIN 188.130 ACRE TRACT CONVEYED TO M/I HOMES OF AUSTIN, LLC, AND TRI POINTE HOMES OF TEXAS, INC. IN DOCUMENT NO. 21023136, ALSO CONTAINING A PORTION OF THAT CERTAIN 2.187 ACRE TRACT CONVEYED TO BOBWHITE INVESTMENTS, LP. IN DOCUMENT NO. 15003085, BOTH RECORDED IN THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.
Kimley»Horn
10814 Jollyville Road Campus IV,
Suite 200, Austin, Texas 78759
Tel. No. (512) 418-1771
FIRM # 10194824
www.kimley-horn.com
Scale 1" = 100'
Drawn by SAL
Checked by JGM
Date 04-13-2022
Project No. 067783118
Sheet No. 2 OF 4
CBJ-2021-0080.0APA



FINAL PLAT OF HERITAGE- DRIPPING SPRINGS- PHASE I

BEING A TOTAL OF 37.073 ACRES OF LAND OUT OF THE PHILIP SMITH SURVEY, ABSTRACT NO. 415, CITY OF DRIPPING SPRINGS, HAYS COUNTY, TEXAS; AND CONTAINING A PORTION OF THAT CERTAIN 186.130 ACRE TRACT CONVEYED TO M/I HOMES OF AUSTIN, LLC, AND TRI POINTE HOMES OF TEXAS, INC. IN DOCUMENT NO. 21023136, ALSO CONTAINING A PORTION OF THAT CERTAIN 2.187 ACRE TRACT CONVEYED TO BOBWHITE INVESTMENTS, LP. IN DOCUMENT NO. 15003085, BOTH RECORDED IN THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

LEGEND

IRF	1/2" IRON ROD FOUND
IRFC	1/2" IRON ROD W/PLASTIC CAP FOUND
IRSC	1/2" IRON ROD W/PLASTIC CAP STAMPED "KHA" SET
PKF	"X" NAIL FOUND
PKS	"X" NAIL SET
BDF	BRASS DISKOT DISK FOUND
CMF	CONCRETE MONUMENT FOUND
ROW	RIGHT-OF-WAY
NCB	NEW CITY BLOCK
VOL.	VOLUME
PG.	PAGE
OPRHC	OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS
DRHC	DEED RECORDS OF HAYS COUNTY, TEXAS
--635--	EXISTING CONTOUR
—℄—	RIGHT OF WAY CENTERLINE

TYPICAL SETBACK DETAIL
NOT TO SCALE

SURVEYOR'S NOTES

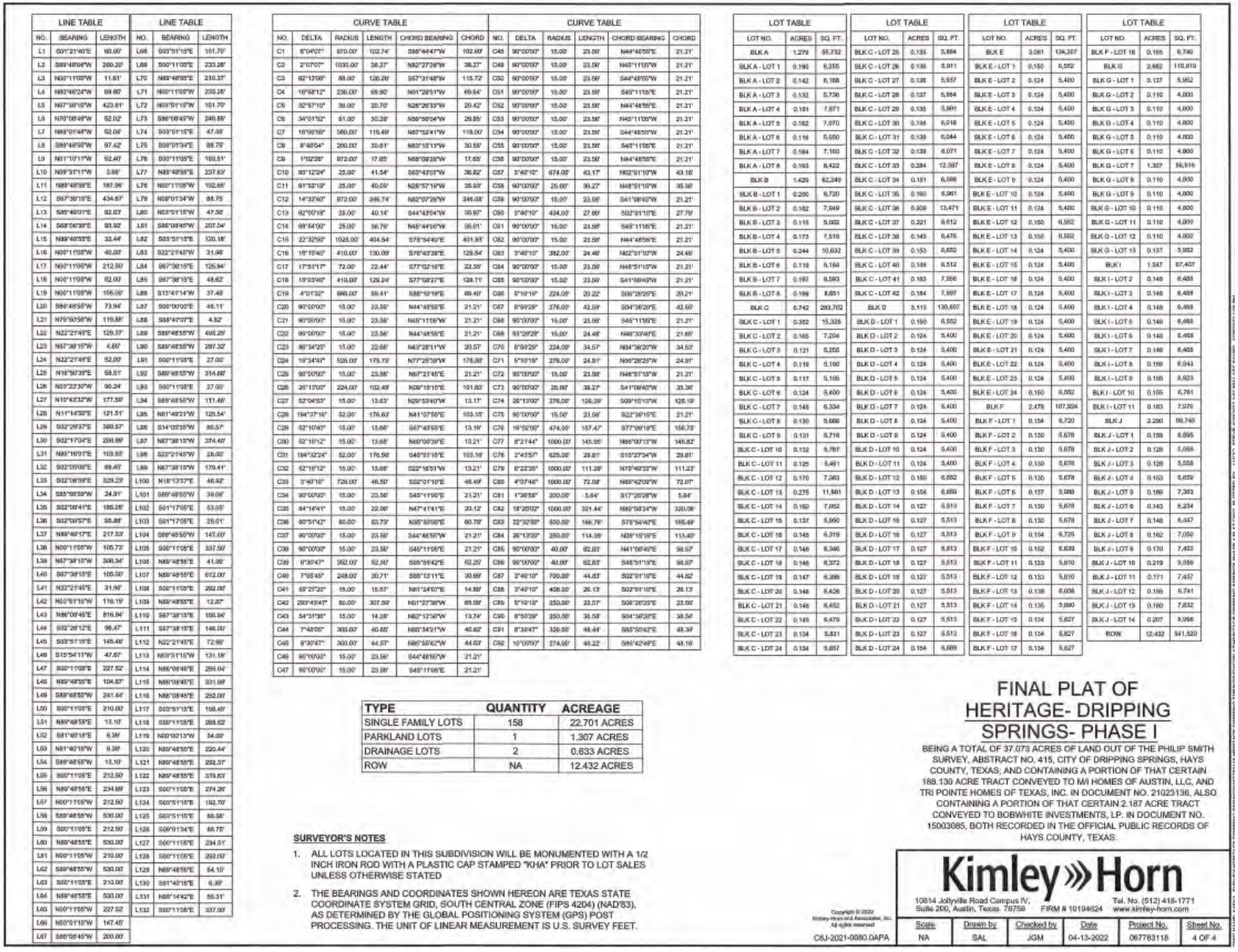
1. ALL LOTS LOCATED IN THIS SUBDIVISION WILL BE MONUMENTED WITH A 1/2 INCH IRON ROD WITH A PLASTIC CAP STAMPED "KHA" PRIOR TO LOT SALES UNLESS OTHERWISE STATED
2. THE BEARINGS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD'83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM (GPS) POST PROCESSING. THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.

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CSJ-2021-0090.0APA

Kimley»Horn
10814 Jollyville Road Campus IV, Suite 200, Austin, Texas 78759 FIRM # 10194824 Tel. No. (512) 418-1771 www.kimley-horn.com

Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
1" = 100'	SAL	JGM	04-13-2022	067783118	3 OF 4



LINE TABLE		
NO.	BEARING	LENGTH
L1	S01°21'40"E	60.00'
L2	S89°48'04"W	269.28'
L3	N00°11'05"W	11.61'
L4	N89°48'24"W	69.66'
L5	N07°38'15"W	423.81'
L6	N70°08'49"W	52.02'
L7	N89°01'48"W	52.04'
L8	S89°48'55"W	97.42'
L9	N01°17'11"W	52.40'
L10	N09°31'11"W	3.66'
L11	N89°48'55"E	167.96'
L12	S07°38'15"E	434.83'
L13	S85°49'01"E	82.63'
L14	S68°06'38"E	93.92'
L15	N89°48'55"E	32.44'
L16	N00°11'05"W	40.00'
L17	N00°11'05"W	212.50'
L18	N00°11'05"W	62.00'
L19	N00°11'05"W	106.00'
L20	S89°48'55"W	73.94'
L21	N79°50'58"W	119.88'
L22	N22°21'46"E	129.37'
L23	N67°38'15"W	4.66'
L24	N22°21'46"E	52.00'
L25	N16°50'39"E	58.51'
L26	N03°23'30"W	90.24'
L27	N10°43'32"W	177.58'
L28	N11°14'59"E	121.51'
L29	S02°29'37"E	389.57'
L30	S02°17'04"E	208.86'
L31	N85°16'01"E	103.93'
L32	S02°05'06"E	88.46'
L33	S02°08'39"E	329.29'
L34	S85°59'39"W	24.91'
L35	S02°08'41"E	185.85'
L36	S02°09'57"E	95.88'
L37	N89°49'17"E	217.53'
L38	N00°11'05"W	105.73'
L39	N67°38'15"W	308.34'
L40	S67°38'15"E	105.00'
L41	N22°21'45"E	31.96'
L42	N03°51'15"W	116.19'
L43	N86°08'45"E	816.94'
L44	S02°26'12"E	96.47'
L45	S03°51'15"E	145.48'
L46	S15°54'11"W	47.67'
L47	S00°11'05"E	227.52'
L48	N89°48'55"E	104.67'
L49	S89°48'55"W	241.44'
L50	S00°11'05"E	210.00'
L51	N89°48'55"E	13.10'
L52	S81°40'16"E	6.39'
L53	N81°40'16"W	6.39'
L54	S89°48'55"W	13.10'
L55	S00°11'05"E	212.50'
L56	N89°48'55"E	234.69'
L57	N00°11'05"W	212.50'
L58	S89°48'55"W	530.00'
L59	S00°11'05"E	212.50'
L60	N89°48'55"E	530.00'
L61	N00°11'05"W	210.00'
L62	S89°48'55"W	530.00'
L63	S00°11'05"E	210.00'
L64	N89°48'55"E	530.00'
L65	N00°11'05"W	227.52'
L66	N03°51'15"W	147.48'
L67	S86°08'45"W	200.00'

LINE TABLE		
NO.	BEARING	LENGTH
L68	S03°51'15"E	151.70'
L69	S00°11'05"E	233.28'
L70	N89°48'55"E	210.33'
L71	N00°11'05"W	233.28'
L72	N03°51'15"W	151.70'
L73	S86°08'45"W	240.88'
L74	S03°51'15"E	47.99'
L75	S00°01'34"E	88.79'
L76	S00°11'05"E	169.51'
L77	N89°48'55"E	237.63'
L78	N00°11'05"W	102.65'
L79	N09°01'34"W	88.75'
L80	N03°51'15"W	47.56'
L81	S86°08'45"W	207.04'
L82	S03°51'15"E	120.18'
L83	S22°21'45"W	31.96'
L84	S67°38'15"E	125.94'
L85	S67°38'15"E	48.62'
L86	S13°47'14"W	37.46'
L87	S00°00'00"E	46.11'
L88	S88°47'07"E	4.82'
L89	S89°48'55"W	495.25'
L90	S89°48'55"W	297.32'
L91	S00°11'05"E	27.00'
L92	S89°48'55"W	314.66'
L93	S00°11'05"E	27.00'
L94	S89°48'55"W	111.48'
L95	N61°49'21"W	125.54'
L96	S14°03'38"W	80.57'
L97	N67°38'15"W	374.40'
L98	S22°21'45"W	28.00'
L99	N67°38'15"W	179.41'
L100	N18°13'57"E	46.92'
L101	S89°48'55"W	34.06'
L102	S61°17'05"E	53.05'
L103	S61°17'05"E	28.01'
L104	S89°48'55"W	147.60'
L105	S00°11'05"E	337.50'
L106	N89°48'55"E	41.06'
L107	N89°48'55"E	612.00'
L108	S00°11'05"E	292.00'
L109	N89°48'55"E	12.87'
L110	S67°38'15"E	109.94'
L111	S67°38'15"E	146.00'
L112	N22°21'45"E	72.96'
L113	N03°51'15"W	131.18'
L114	N86°08'45"E	289.04'
L115	N86°08'45"E	331.68'
L116	N86°08'45"E	252.00'
L117	S03°51'15"E	158.48'
L118	S00°11'05"E	288.62'
L119	N00°00'13"W	34.00'
L120	N89°48'55"E	220.44'
L121	N89°48'55"E	292.37'
L122	N89°48'55"E	319.63'
L123	S00°11'05"E	274.26'
L124	S03°51'15"E	192.70'
L125	S03°51'15"E	86.58'
L126	S09°01'34"E	88.75'
L127	S00°11'05"E	234.51'
L128	S00°11'05"E	292.00'
L129	N89°48'55"E	54.10'
L130	S81°40'16"E	6.39'
L131	N89°14'42"E	55.31'
L132	S00°11'05"E	337.50'

CURVE TABLE					
NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	8°04'07"	970.00'	102.74'	S86°46'47"W	102.69'
C2	2°07'07"	1035.00'	38.27'	N82°27'26"W	38.27'
C3	82°13'08"	88.00'	126.29'	S67°31'48"W	115.72'
C4	16°58'12"	236.00'	69.92'	N81°28'51"W	69.64'
C5	32°53'10"	39.00'	22.70'	N26°26'33"W	20.42'
C6	34°01'52"	51.00'	30.29'	N56°56'04"W	29.85'
C7	18°59'59"	360.00'	119.49'	N83°52'41"W	119.00'
C8	8°46'04"	200.00'	30.61'	N83°15'13"W	30.58'
C9	1°02'26"	972.00'	17.65'	N88°09'28"W	17.65'
C10	93°12'24"	25.00'	41.54'	S63°47'07"W	36.92'
C11	91°52'19"	25.00'	40.09'	N26°57'16"W	35.93'
C12	14°32'40"	872.00'	246.74'	N82°07'26"W	246.08'
C13	92°06'18"	25.00'	40.14'	S44°43'04"W	35.87'
C14	88°54'00"	25.00'	38.79'	N45°44'05"W	35.01'
C15	22°32'00"	1025.00'	404.54'	S78°54'45"E	401.93'
C16	18°19'40"	410.00'	130.99'	S76°43'38"E	129.54'
C17	17°51'17"	72.00'	22.44'	S77°02'16"E	22.35'
C18	18°53'40"	410.00'	135.24'	S77°08'27"E	134.71'
C19	4°01'32"	988.00'	69.41'	S86°10'19"E	69.40'
C20	90°00'00"	15.00'	23.56'	N44°48'55"E	21.21'
C21	90°00'00"	15.00'	23.56'	N45°11'05"W	21.21'
C22	90°00'00"	15.00'	23.56'	N44°48'55"E	21.21'
C23	86°34'25"	15.00'	22.66'	N43°28'11"W	20.57'
C24	19°34'40"	526.00'	179.72'	N77°25'39"W	178.88'
C25	90°00'00"	15.00'	23.56'	N87°21'45"E	21.21'
C26	26°13'00"	224.00'	102.49'	N59°15'15"E	101.60'
C27	52°04'53"	15.00'	13.63'	N29°53'40"W	13.17'
C28	194°37'16"	52.00'	176.62'	N41°07'56"E	103.15'
C29	52°10'07"	15.00'	13.66'	S67°49'56"E	13.19'
C30	52°16'12"	15.00'	13.68'	N60°06'39"E	13.21'
C31	194°32'24"	52.00'	176.56'	S46°51'15"E	103.19'
C32	52°16'12"	15.00'	13.68'	S22°16'51"W	13.21'
C33	3°46'10"	726.00'	46.92'	S02°01'10"E	46.49'
C34	90°00'00"	15.00'	23.56'	S45°11'05"E	21.21'
C35	84°14'41"	15.00'	22.06'	N47°41'41"E	20.12'
C36	90°51'42"	60.00'	63.79'	N85°39'06"E	60.78'
C37	90°00'00"	15.00'	23.56'	S44°48'55"W	21.21'
C38	90°00'00"	15.00'	23.56'	S45°11'05"E	21.21'
C39	9°39'47"	362.00'	62.80'	S85°58'42"E	62.72'
C40	7°05'45"	248.00'	30.71'	S85°13'11"E	30.69'
C41	59°27'20"	15.00'	15.57'	N61°24'07"E	14.89'
C42	293°43'41"	60.00'	307.59'	N01°27'36"W	65.59'
C43	54°31'38"	15.00'	14.28'	N62°12'36"W	13.74'
C44	7°48'06"	300.00'	40.85'	N65°34'21"W	40.82'
C45	9°39'47"	300.00'	44.67'	N85°58'42"W	44.63'
C46	90°00'00"	15.00'	23.56'	S44°48'55"W	21.21'
C47	90°00'00"	15.00'	23.56'	S45°11'05"E	21.21'

CURVE TABLE					
NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C48	90°00'00"	15.00'	23.56'	N44°48'55"E	21.21'
C49	90°00'00"	15.00'	23.56'	N45°11'05"W	21.21'
C50	90°00'00"	15.00'	23.56'	S44°48'55"W	21.21'
C51	90°00'00"	15.00'	23.56'	S45°11'05"E	21.21'
C52	90°00'00"	15.00'	23.56'	N44°48'55"E	21.21'
C53	90°00'00"	15.00'	23.56'	N45°11'05"W	21.21'
C54	90°00'00"	15.00'	23.56'	S44°48'55"W	21.21'
C55	90°00'00"	15.00'	23.56'	S45°11'05"E	21.21'
C56	90°00'00"	15.00'	23.56'	N44°48'55"E	21.21'
C57	3°46'10"	674.00'	43.17'	N02°01'10"W	43.16'
C58	90°00'00"	25.00'	39.27'	N45°11'05"W	35.36'
C59	90°00'00"	15.00'	23.56'	S41°08'45"W	21.21'
C60	3°46'10"	434.00'	27.80'	S02°01'10"E	27.79'
C61	90°00'00"	15.00'	23.56'	S45°11'05"E	21.21'
C62	90°00'00"	15.00'	23.56'	N44°48'55"E	21.21'
C63	5°46'10"	382.00'	24.46'	N02°01'10"W	24.46'
C64	90°00'00"	15.00'	23.56'	N48°51'05"W	21.21'
C65	90°00'00"	15.00'	23.56'	S41°08'45"W	21.21'
C66	5°16'16"	224.09'	20.22'	S06°26'20"E	20.21'
C67	6°59'28"	276.09'	42.59'	S04°36'20"E	42.55'
C68	90°00'00"	15.00'	23.56'	S45°11'05"E	21.21'
C69	93°29'28"	15.00'	24.48'	N48°39'49"E	21.89'
C70	6°59'28"	224.09'	34.57'	N04°36'20"W	34.53'
C71	5°16'16"	276.09'	24.91'	N06°26'29"W	24.91'
C72	90°00'00"	15.00'	23.56'	N48°51'05"W	21.21'
C73	90°00'00"	25.00'	39.27'	S41°08'45"W	35.36'
C74	26°13'00"	276.09'	126.29'	S09°15'15"W	125.19'
C75	90°00'00"	15.00'	23.56'	S22°16'15"E	21.21'
C76	19°02'05"	474.09'	157.47'	S77°06'18"E	156.75'
C77	8°21'44"	1000.00'	145.95'	N86°00'13"W	145.82'
C78	2°43'57"	625.00'	29.81'	S15°27'34"W	29.81'
C79	6°22'35"	1000.00'	111.28'	N70°49'33"W	111.23'
C80	4°07'46"	1000.00'	72.08'	N69°42'09"W	72.07'
C81	1°39'58"	200.00'	5.84'	S17°28'28"W	5.84'
C82	18°25'02"	1000.00'	321.44'	N60°59'34"W	320.09'
C83	22°32'00"	500.00'	196.76'	S78°54'45"E	195.48'
C84	26°13'00"	250.00'	114.39'	N09°15'15"E	113.40'
C85	90°00'00"	40.00'	62.83'	N41°08'45"E	56.57'
C86	90°00'00"	40.00'	62.83'	S48°51'15"E	56.57'
C87	3°46'10"	700.00'	44.83'	S02°01'10"E	44.82'
C88	3°46'10"	408.00'	26.13'	S02°01'10"E	26.13'
C89	5°16'16"	250.00'	23.01'	S06°26'20"E	23.00'
C90	6°59'28"	250.00'	30.51'	S04°36'20"E	30.50'
C91	8°39'47"	326.00'	49.44'	S85°50'42"E	49.39'
C92	10°05'00"	274.00'	48.22'	S86°42'48"E	48.16'

LOT TABLE		
LOT NO.	ACRES	SQ. FT.
BLK A	1.279	55,732
BLK A - LOT 1	0.190	8,255
BLK A - LOT 2	0.142	6,188
BLK A - LOT 3	0.132	5,736
BLK A - LOT 4	0.181	7,871
BLK A - LOT 5	0.182	7,970
BLK A - LOT 6	0.116	5,050
BLK A - LOT 7	0.164	7,160
BLK A - LOT 8	0.193	8,422
BLK B	1.429	62,249
BLK B - LOT 1	0.200	8,720
BLK B - LOT 2	0.162	7,048
BLK B - LOT 3	0.115	5,002
BLK B - LOT 4	0.173	7,519
BLK B - LOT 5	0.244	10,632
BLK B - LOT 6	0.119	5,184
BLK B - LOT 7	0.197	8,593
BLK B - LOT 8	0.198	8,651
BLK C	6.742	293,702
BLK C - LOT 1	0.352	15,328
BLK C - LOT 2	0.165	7,204
BLK C - LOT 3	0.121	5,255
BLK C - LOT 4	0.116	5,160
BLK C - LOT 5	0.117	5,105
BLK C - LOT 6	0.124	5,400
BLK C - LOT 7	0.145	6,334
BLK C - LOT 8	0.130	5,669
BLK C - LOT 9	0.131	5,716
BLK C - LOT 10	0.132	5,767
BLK C - LOT 11	0.125	5,461
BLK C - LOT 12	0.170	7,383
BLK C - LOT 13	0.275	11,991
BLK C - LOT 14	0.152	7,052
BLK C - LOT 15	0.137	5,950
BLK C - LOT 16	0.145	6,319
BLK C - LOT 17	0.148	6,446
BLK C - LOT 18	0.146	6,372
BLK C - LOT 19	0.147	6,389
BLK C - LOT 20	0.148	6,429
BLK C - LOT 21	0.148	6,452
BLK C - LOT 22	0.148	6,479
BLK C - LOT 23	0.134	5,831
BLK C - LOT 24	0.134	5,857

LOT TABLE		
LOT NO.	ACRES	SQ. FT.
BLK C - LOT 25	0.135	5,884
BLK C - LOT 26	0.136	5,911
BLK C - LOT 27	0.136	5,937
BLK C - LOT 28	0.137	5,964
BLK C - LOT 29	0.138	5,991
BLK C - LOT 30	0.138	6,018
BLK C - LOT 31	0.139	6,044
BLK C - LOT 32	0.139	6,071
BLK C - LOT 33	0.284	12,387
BLK C - LOT 34	0.151	6,566
BLK C - LOT 35	0.150	6,961
BLK C - LOT 36	0.309	13,471
BLK C - LOT 37	0.221	9,612
BLK C - LOT 38	0.149	6,476
BLK C - LOT 39	0.153	6,652
BLK C - LOT 40	0.149	6,512
BLK C - LOT 41	0.183	7,956
BLK C - LOT 42	0.184	7,997
BLK D	3.113	135,607
BLK D - LOT 1	0.150	6,552
BLK D - LOT 2	0.124	5,400
BLK D - LOT 3	0.124	5,400
BLK D - LOT 4	0.124	5,400
BLK D - LOT 5	0.124	5,400
BLK D - LOT 6	0.124	5,400
BLK D - LOT 7	0.124	5,400
BLK D - LOT 8	0.124	5,400
BLK D - LOT 9	0.124	5,400
BLK D - LOT 10	0.124	5,400
BLK D - LOT 11	0.124	5,400
BLK D - LOT 12	0.150	6,552
BLK D - LOT 13	0.154	6,699
BLK D - LOT 14	0.127	5,513
BLK D - LOT 15	0.127	5,513
BLK D - LOT 16	0.127	5,513
BLK D - LOT 17	0.127	5,513
BLK D - LOT 18	0.127	5,513
BLK D - LOT 19	0.127	5,513
BLK D - LOT 20	0.127	5,513
BLK D - LOT 21	0.127	5,513
BLK D - LOT 22	0.127	5,513
BLK D - LOT 23	0.127	5,513
BLK D - LOT 24	0.154	6,689

LOT TABLE		
LOT NO.	ACRES	SQ. FT.
BLK E	3.081	134,207
BLK E - LOT 1	0.150	6,552
BLK E - LOT 2	0.124	5,400
BLK E - LOT 3	0.124	5,400
BLK E - LOT 4	0.124	5,400
BLK E - LOT 5	0.124	5,400
BLK E - LOT 6	0.124	5,400
BLK E - LOT 7	0.124	5,400
BLK E - LOT 8	0.124	5,400
BLK E - LOT 9	0.124	5,400
BLK E - LOT 10	0.124	5,400
BLK E - LOT 11	0.124	5,400
BLK E - LOT 12	0.150	6,552
BLK E - LOT 13	0.150	6,552
BLK E - LOT 14	0.124	5,400
BLK E - LOT 15	0.124	5,400
BLK E - LOT 16	0.124	5,400
BLK E - LOT 17	0.124	5,400
BLK E - LOT 18	0.124	5,400
BLK E - LOT 19	0.124	5,400
BLK E - LOT 20	0.124	5,400
BLK E - LOT 21	0.124	5,400
BLK E - LOT 22	0.124	5,400
BLK E - LOT 23	0.124	5,400
BLK E - LOT 24	0.150	6,552
BLK F	2.478	107,924
BLK F - LOT 1	0.154	6,720
BLK F - LOT 2	0.130	5,678
BLK F - LOT 3	0.130	5,678
BLK F - LOT 4	0.130	5,678
BLK F - LOT 5	0.130	5,678
BLK F - LOT 6	0.137	5,988
BLK F - LOT 7	0.130	5,678
BLK F - LOT 8	0.130	5,678
BLK F - LOT 9	0.154	6,725
BLK F - LOT 10	0.152	6,639
BLK F - LOT 11	0.133	5,810
BLK F - LOT 12	0.133	5,810
BLK F - LOT 13	0.139	6,056
BLK F - LOT 14	0.135	5,890
BLK F - LOT 15	0.124	5,827
BLK F - LOT 16	0.124	5,827
BLK F - LOT 17	0.124	5,827

LOT TABLE		
LOT NO.	ACRES	SQ. FT.
BLK F - LOT 18	0.155	6,740
BLK G	2.662	115,919
BLK G - LOT 1	0.137	5,952
BLK G - LOT 2	0.110	4,800
BLK G - LOT 3	0.110	4,800
BLK G - LOT 4	0.110	4,800
BLK G - LOT 5	0.110	4,800
BLK G - LOT 6	0.110	4,800
BLK G - LOT 7	1.307	56,916
BLK G - LOT 8	0.110	4,800
BLK G - LOT 9	0.110	4,800
BLK G - LOT 10	0.110	4,800
BLK G - LOT 11	0.110	4,800
BLK G - LOT 12	0.110	4,800
BLK G - LOT 13	0.137	5,952
BLK I	1.547	67,407
BLK I - LOT 2	0.148	6,468
BLK I - LOT 3	0.148	6,468
BLK I - LOT 4	0.148	6,468
BLK I - LOT 5	0.148	6,468
BLK I - LOT 6	0.148	6,468
BLK I - LOT 7	0.148	6,468
BLK I - LOT 8	0.159	6,943
BLK I - LOT 9	0.159	6,923
BLK I - LOT 10	0.155	6,761
BLK I - LOT 11	0.183	7,970
BLK J	2.230	99,745
BLK J - LOT 1	0.159	6,895
BLK J - LOT 2	0.128	5,568
BLK J - LOT 3	0.128	5,558
BLK J - LOT 4	0.163	6,659
BLK J - LOT 5	0.169	7,363
BLK J - LOT 6	0.143	6,234
BLK J - LOT 7	0.148	6,447
BLK J - LOT 8	0.162	7,050
BLK J - LOT 9	0.170	7,403
BLK J - LOT 10	0.219	9,559
BLK J - LOT 11	0.171	7,437
BLK J - LOT 12	0.155	6,741
BLK J - LOT 13	0.180	7,832
BLK J - LOT 14	0.207	9,008
ROW	12.432	541,520

TYPE	QUANTITY	ACREAGE
SINGLE FAMILY LOTS	158	22.701 ACRES
PARKLAND LOTS	1	1.307 ACRES
DRAINAGE LOTS	2	0.633 ACRES
ROW	NA	12.432 ACRES

SURVEYOR'S NOTES

1. ALL LOTS LOCATED IN THIS SUBDIVISION WILL BE MONUMENTED WITH A 1/2 INCH IRON ROD WITH A PLASTIC CAP STAMPED "KHA" PRIOR TO LOT SALES UNLESS OTHERWISE STATED
2. THE BEARINGS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD'83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM (GPS) POST PROCESSING. THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.

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C6J-2021-0080.0APA

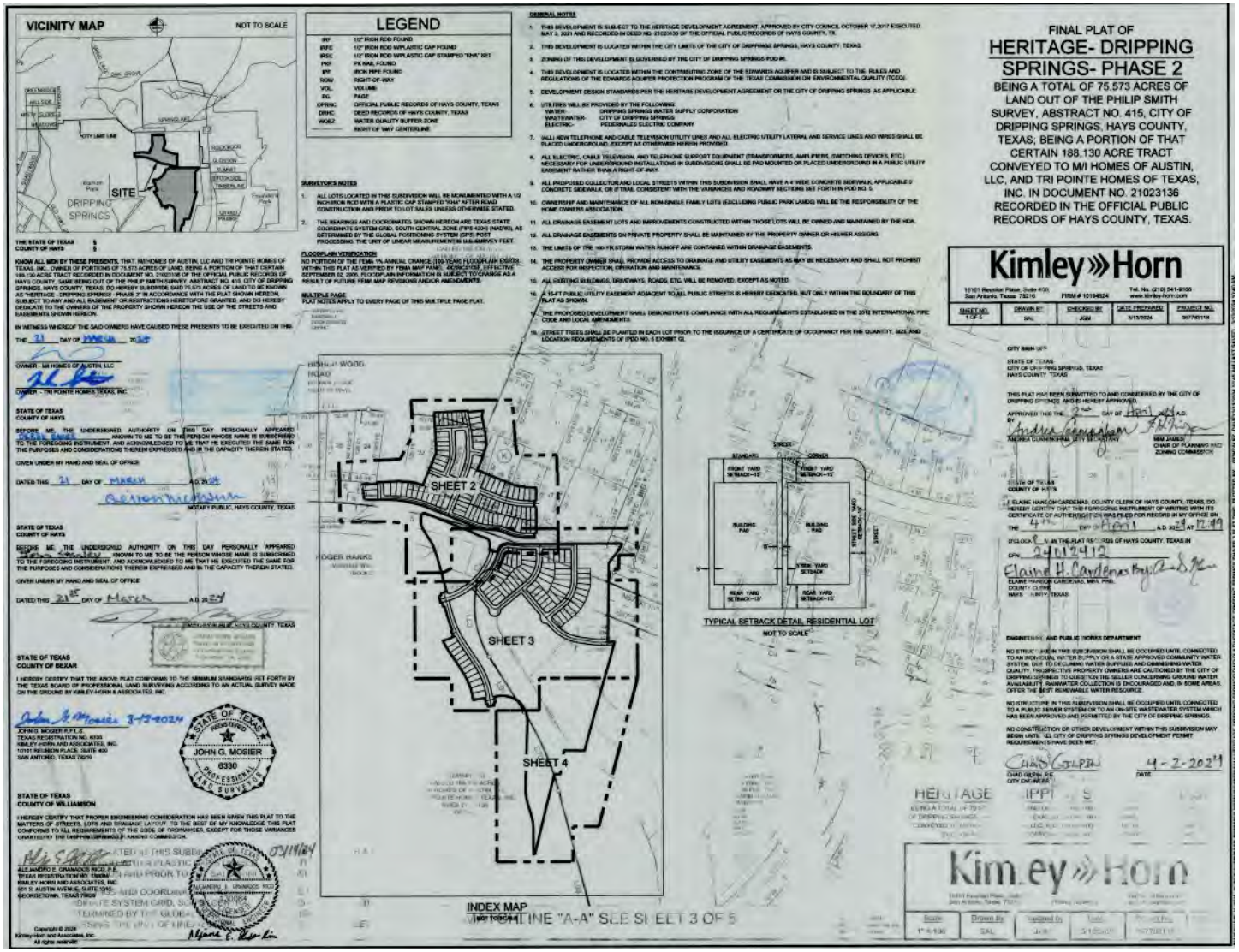
FINAL PLAT OF HERITAGE- DRIPPING SPRINGS- PHASE I

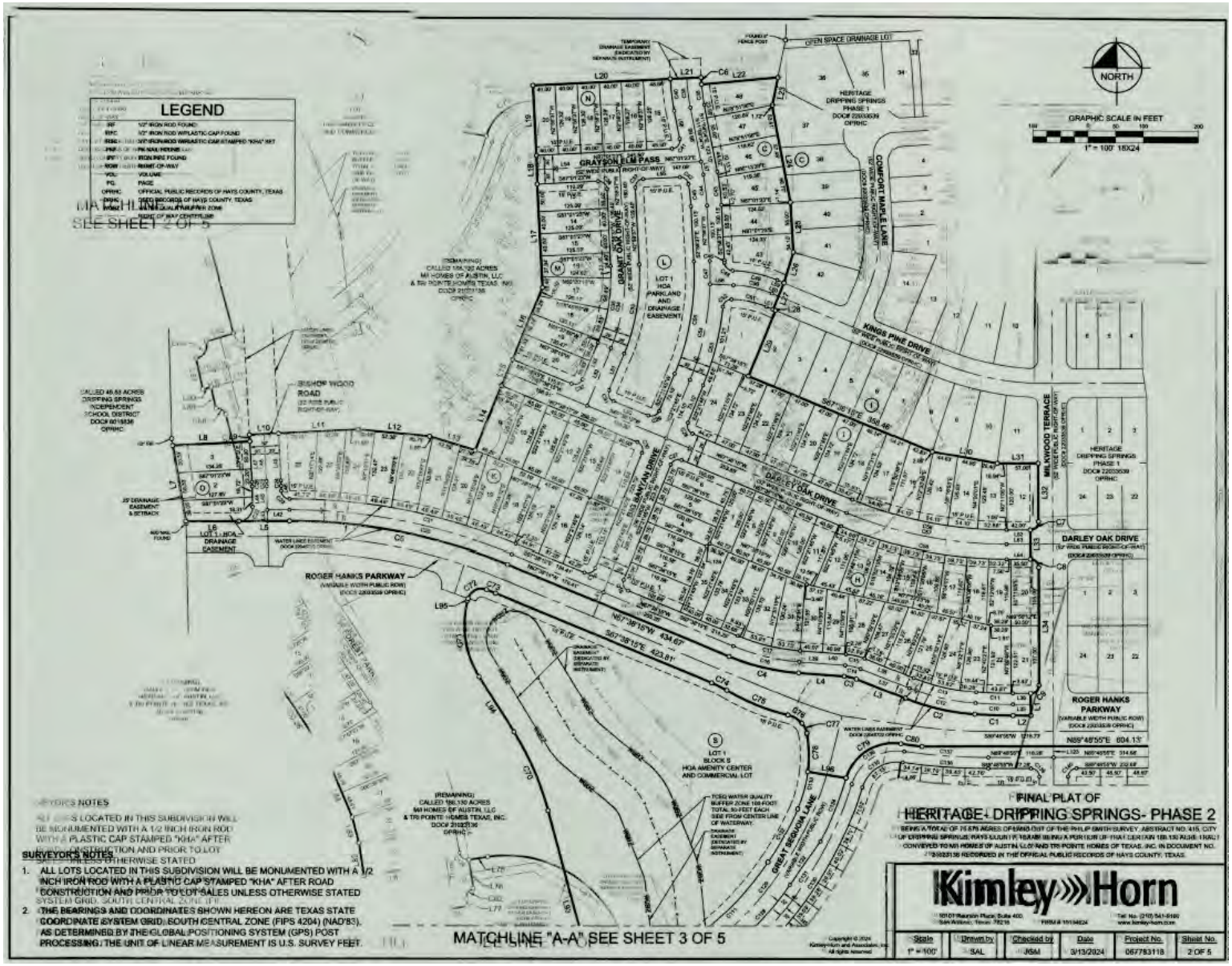
BEING A TOTAL OF 37.073 ACRES OF LAND OUT OF THE PHILIP SMITH SURVEY, ABSTRACT NO. 415, CITY OF DRIPPING SPRINGS, HAYS COUNTY, TEXAS; AND CONTAINING A PORTION OF THAT CERTAIN 188.130 ACRE TRACT CONVEYED TO M/I HOMES OF AUSTIN, LLC, AND TRI POINTE HOMES OF TEXAS, INC. IN DOCUMENT NO. 21023136, ALSO CONTAINING A PORTION OF THAT CERTAIN 2.187 ACRE TRACT CONVEYED TO BOBWHITE INVESTMENTS, LP. IN DOCUMENT NO. 15003085, BOTH RECORDED IN THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

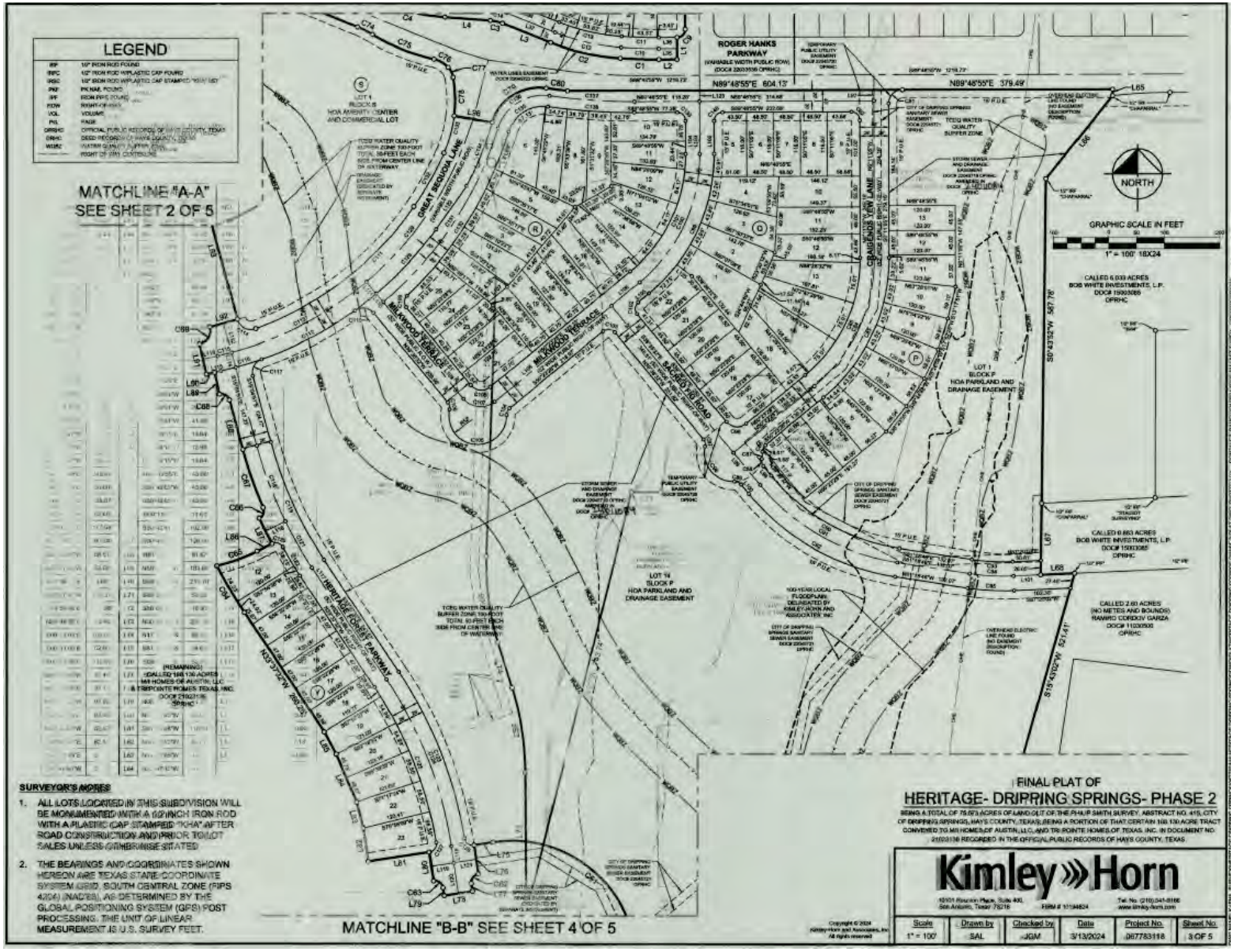
Kimley»Horn
10814 Jollyville Road Campus IV, Suite 200, Austin, Texas 78759 Tel. No. (512) 418-1771
FIRM # 10194824 www.kimley-horn.com

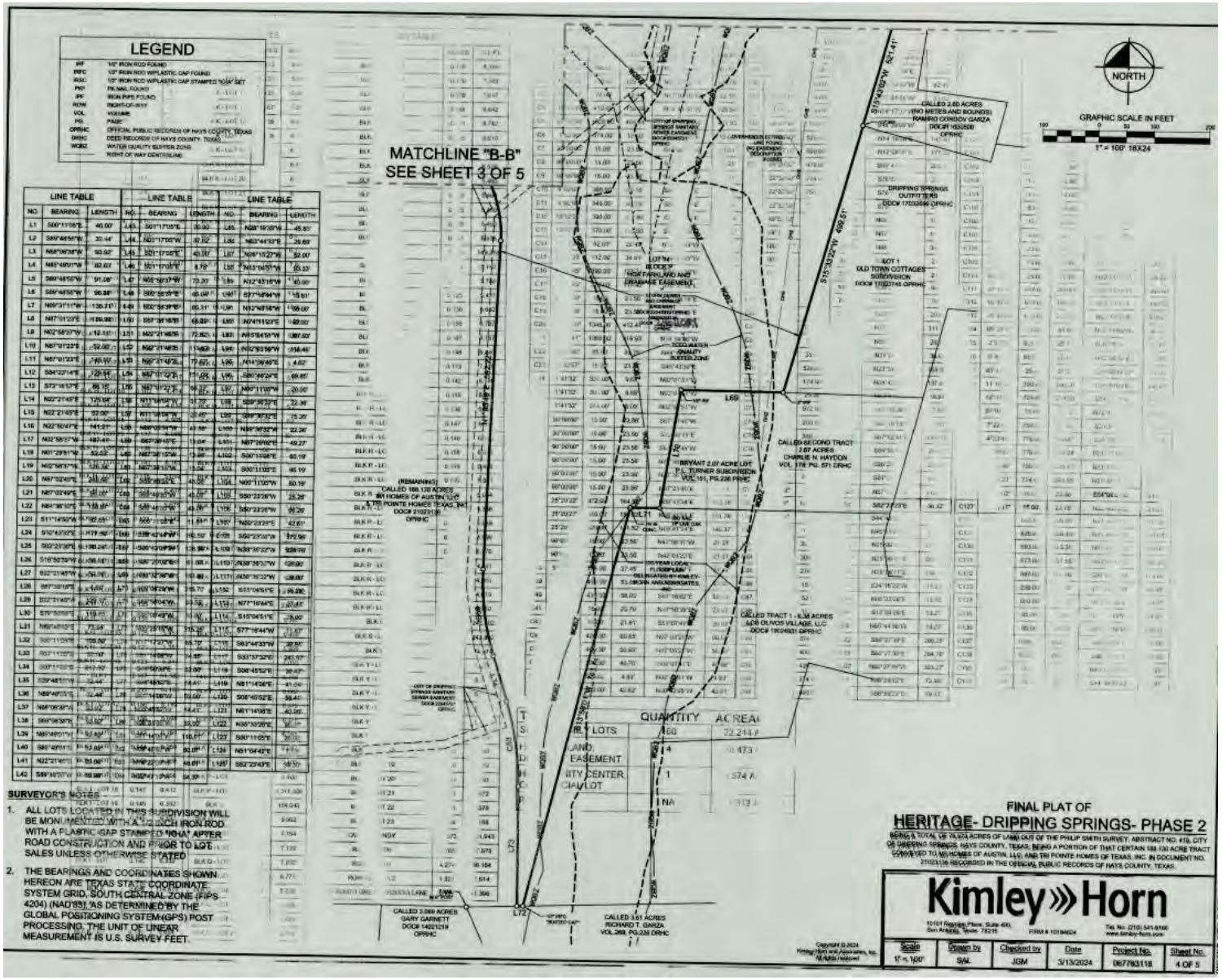
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NA	SAL	JGM	04-13-2022	067783118	4 OF 4

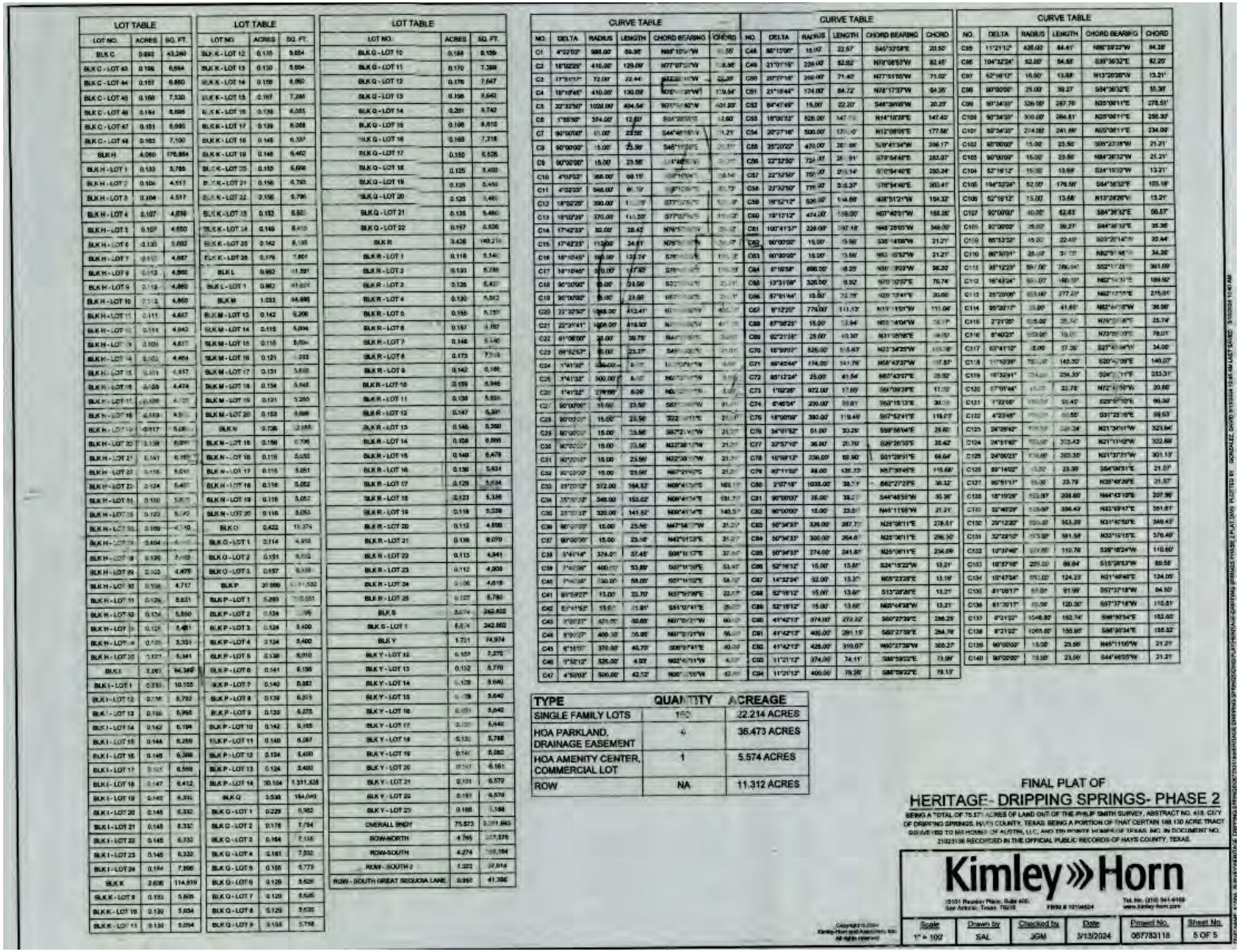
EXHIBIT Q-2 - IMPROVEMENT AREA #2 FINAL PLAT




LEGEND
NORTH
GRAPHIC SCALE IN FEET
1" = 100' 18X24
GRAYSON ELM PASS
GRANT OAK DRIVE
COMFORT MAPLE LANE
KINGS PINE DRIVE
MILKWOOD TERRACE
DARLEY OAK DRIVE
BISHOP WOOD ROAD
ROGER HANKS PARKWAY
GREAT BEGINNING LANE
HERITAGE DRIPPING SPRINGS PHASE 1 DOC# 22033639 OPRHC
OPEN SPACE (DRAINAGE LOT)
LOT 1 HOA PARKLAND AND DRAINAGE EASEMENT
LOT 1 BLOCK S HOA AMENITY CENTER AND COMMERCIAL LOT
S67°38'15"E 358.46'
N67°38'15"W 434.67'
S67°38'15"E 423.81'
N89°48'50"E 604.13'
SURVEYOR'S NOTES
1. ALL LOTS LOCATED IN THIS SUBDIVISION WILL BE MONUMENTED WITH A 1/2 INCH IRON ROD WITH A PLASTIC CAP STAMPED "KHA" AFTER ROAD CONSTRUCTION AND PRIOR TO LOT SALES UNLESS OTHERWISE STATED
2. THE BEARINGS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD'83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM (GPS) POST PROCESSING. THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.
MATCHLINE "A-A" SEE SHEET 3 OF 5
FINAL PLAT OF
HERITAGE- DRIPPING SPRINGS- PHASE 2
Kimley»Horn
Scale 1" = 100'
Drawn by SAL
Checked by JSM
Date 3/13/2024
Project No. 067783118
Sheet No. 2 OF 5


LEGEND
MATCHLINE "A-A" SEE SHEET 2 OF 5
MATCHLINE "B-B" SEE SHEET 4 OF 5
ROGER HANKS PARKWAY
N89°48'55"E 604.13'
N89°48'55"E 379.49'
GREAT BERMUDA LANE
CRABGRASS VIEW LANE
BLUEWOOD TERRACE
SACRED OAK ROAD
HERITAGE FOREST PARKWAY
NORTH
GRAPHIC SCALE IN FEET
1" = 100' 18X24
CALLED 6.033 ACRES
BOB WHITE INVESTMENTS, L.P.
DOC# 19003089
OPRHC
CALLED 6.863 ACRES
BOB WHITE INVESTMENTS, L.P.
DOC# 19003085
OPRHC
CALLED 2.80 ACRES
(NO METES AND BOUNDS)
RAMIRO CORDOV GARZA
DOC# 11030500
OPRHC
LOT 1
BLOCK F
HOA PARKLAND AND DRAINAGE EASEMENT
LOT 1
BLOCK S
HOA AMENITY CENTER AND COMMERCIAL LOT
LOT 14
BLOCK P
HOA PARKLAND AND DRAINAGE EASEMENT
S30°43'52"W 587.78'
S19°43'52"W 601.41'
SURVEYOR'S NOTES
1. ALL LOTS LOCATED IN THIS SUBDIVISION WILL BE MONUMENTED WITH A 1/2" INCH IRON ROD WITH A PLASTIC CAP STAMPED "KHA" AFTER ROAD CONSTRUCTION AND PRIOR TO LOT SALES UNLESS OTHERWISE STATED.
2. THE BEARINGS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD'83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM (GPS) POST PROCESSING. THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.
FINAL PLAT OF
HERITAGE- DRIPPING SPRINGS- PHASE 2
Kimley»Horn
Scale 1" = 100'
Drawn by SAL
Checked by JGM
Date 3/13/2024
Project No. 067783118
Sheet No. 3 OF 5


LEGEND
MATCHLINE "B-B"
SEE SHEET 3 OF 5
NORTH
GRAPHIC SCALE IN FEET
1" = 100' 18X24
LINE TABLE
SURVEYOR'S NOTES
1. ALL LOTS LOCATED IN THIS SUBDIVISION WILL BE MONUMENTED WITH A ½" INCH IRON ROD WITH A PLASTIC CAP STAMPED "KHA" AFTER ROAD CONSTRUCTION AND PRIOR TO LOT SALES UNLESS OTHERWISE STATED.
2. THE BEARINGS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD/83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM(GPS) POST PROCESSING. THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.
QUANTITY ACREAGE
FINAL PLAT OF
HERITAGE- DRIPPING SPRINGS- PHASE 2
Kimley»Horn



LOT TABLE

LOT NO.	ACRES	SQ. FT.
BLK C	0.992	43,240
BLK C - LOT 43	0.196	8,564
BLK C - LOT 44	0.197	8,580
BLK C - LOT 45	0.168	7,330
BLK C - LOT 46	0.164	8,595
BLK C - LOT 47	0.151	6,595
BLK C - LOT 48	0.163	7,100
BLK H	4.060	176,864
BLK H - LOT 1	0.133	5,785
BLK H - LOT 2	0.106	4,617
BLK H - LOT 3	0.104	4,517
BLK H - LOT 4	0.107	4,639
BLK H - LOT 5	0.107	4,650
BLK H - LOT 6	0.133	5,802
BLK H - LOT 7	0.107	4,667
BLK H - LOT 8	0.112	4,866
BLK H - LOT 9	0.110	4,800
BLK H - LOT 10	0.112	4,860
BLK H - LOT 11	0.111	4,847
BLK H - LOT 12	0.111	4,843
BLK H - LOT 13	0.105	4,617
BLK H - LOT 14	0.103	4,464
BLK H - LOT 15	0.101	4,457
BLK H - LOT 16	0.103	4,474
BLK H - LOT 17	0.109	4,727
BLK H - LOT 18	0.110	4,800
BLK H - LOT 19	0.111	4,847
BLK H - LOT 20	0.138	6,021
BLK H - LOT 21	0.141	6,151
BLK H - LOT 22	0.115	5,021
BLK H - LOT 23	0.124	5,407
BLK H - LOT 24	0.130	5,675
BLK H - LOT 25	0.123	5,349
BLK H - LOT 26	0.109	4,749
BLK H - LOT 27	0.104	4,548
BLK H - LOT 28	0.109	4,775
BLK H - LOT 29	0.108	4,717
BLK H - LOT 30	0.126	5,531
BLK H - LOT 31	0.124	5,550
BLK H - LOT 32	0.125	5,451
BLK H - LOT 33	0.125	5,331
BLK H - LOT 34	0.123	5,341
BLK I	3.261	94,349
BLK I - LOT 1	0.233	10,155
BLK I - LOT 12	0.136	5,792
BLK I - LOT 13	0.136	5,956
BLK I - LOT 14	0.142	6,194
BLK I - LOT 15	0.144	6,259
BLK I - LOT 16	0.145	6,309
BLK I - LOT 17	0.135	6,559
BLK I - LOT 18	0.147	6,412
BLK I - LOT 19	0.142	6,191
BLK I - LOT 20	0.145	6,332
BLK I - LOT 21	0.145	6,332
BLK I - LOT 22	0.145	6,332
BLK I - LOT 23	0.145	6,332
BLK I - LOT 24	0.164	7,166
BLK K	2.636	114,819
BLK K - LOT 9	0.133	5,805
BLK K - LOT 10	0.130	5,654
BLK K - LOT 11	0.130	5,654

LOT TABLE

LOT NO.	ACRES	SQ. FT.
BLK K - LOT 12	0.135	5,854
BLK K - LOT 13	0.130	5,654
BLK K - LOT 14	0.159	6,960
BLK K - LOT 15	0.167	7,286
BLK K - LOT 16	0.139	6,055
BLK K - LOT 17	0.139	6,068
BLK K - LOT 18	0.145	6,337
BLK K - LOT 19	0.148	6,462
BLK K - LOT 20	0.153	6,668
BLK K - LOT 21	0.156	6,795
BLK K - LOT 22	0.156	6,795
BLK K - LOT 23	0.152	6,620
BLK K - LOT 24	0.149	6,493
BLK K - LOT 25	0.142	6,185
BLK K - LOT 26	0.179	7,801
BLK L	0.992	43,201
BLK L - LOT 1	0.992	43,201
BLK M	1.033	44,996
BLK M - LOT 13	0.142	6,208
BLK M - LOT 14	0.115	5,004
BLK M - LOT 15	0.115	5,004
BLK M - LOT 16	0.121	5,283
BLK M - LOT 17	0.131	5,695
BLK M - LOT 18	0.134	5,846
BLK M - LOT 19	0.121	5,265
BLK M - LOT 20	0.153	6,666
BLK N	0.736	32,055
BLK N - LOT 15	0.156	6,795
BLK N - LOT 16	0.116	5,052
BLK N - LOT 17	0.116	5,051
BLK N - LOT 18	0.116	5,052
BLK N - LOT 19	0.116	5,052
BLK N - LOT 20	0.116	5,053
BLK O	0.422	18,374
BLK O - LOT 1	0.114	4,958
BLK O - LOT 2	0.151	6,592
BLK O - LOT 3	0.157	6,838
BLK P	20.988	914,532
BLK P - LOT 1	5.293	230,551
BLK P - LOT 2	0.124	5,396
BLK P - LOT 3	0.124	5,400
BLK P - LOT 4	0.124	5,400
BLK P - LOT 5	0.138	6,010
BLK P - LOT 6	0.141	6,150
BLK P - LOT 7	0.142	6,182
BLK P - LOT 8	0.139	6,075
BLK P - LOT 9	0.139	6,075
BLK P - LOT 10	0.142	6,165
BLK P - LOT 11	0.140	6,087
BLK P - LOT 12	0.124	5,400
BLK P - LOT 13	0.124	5,400
BLK P - LOT 14	30.184	1,311,525
BLK Q	3.530	154,040
BLK Q - LOT 1	0.229	9,962
BLK Q - LOT 2	0.178	7,754
BLK Q - LOT 3	0.164	7,135
BLK Q - LOT 4	0.161	7,032
BLK Q - LOT 5	0.155	6,775
BLK Q - LOT 6	0.129	5,629
BLK Q - LOT 7	0.129	5,605
BLK Q - LOT 8	0.129	5,630
BLK Q - LOT 9	0.155	5,758

LOT TABLE

LOT NO.	ACRES	SQ. FT.
BLK Q - LOT 10	0.168	8,159
BLK Q - LOT 11	0.170	7,389
BLK Q - LOT 12	0.176	7,647
BLK Q - LOT 13	0.196	8,542
BLK Q - LOT 14	0.201	8,742
BLK Q - LOT 15	0.196	8,518
BLK Q - LOT 16	0.168	7,318
BLK Q - LOT 17	0.150	6,526
BLK Q - LOT 18	0.125	5,450
BLK Q - LOT 19	0.125	5,450
BLK Q - LOT 20	0.125	5,450
BLK Q - LOT 21	0.135	5,880
BLK Q - LOT 22	0.157	6,836
BLK R	3.426	149,216
BLK R - LOT 1	0.118	5,146
BLK R - LOT 2	0.133	5,788
BLK R - LOT 3	0.125	5,437
BLK R - LOT 4	0.130	5,662
BLK R - LOT 5	0.155	6,757
BLK R - LOT 6	0.157	6,797
BLK R - LOT 7	0.146	6,340
BLK R - LOT 8	0.173	7,518
BLK R - LOT 9	0.142	6,188
BLK R - LOT 10	0.159	6,946
BLK R - LOT 11	0.126	5,504
BLK R - LOT 12	0.147	6,391
BLK R - LOT 13	0.146	6,360
BLK R - LOT 14	0.158	6,888
BLK R - LOT 15	0.149	6,478
BLK R - LOT 16	0.126	5,504
BLK R - LOT 17	0.129	5,634
BLK R - LOT 18	0.123	5,336
BLK R - LOT 19	0.118	5,139
BLK R - LOT 20	0.112	4,868
BLK R - LOT 21	0.136	6,070
BLK R - LOT 22	0.113	4,941
BLK R - LOT 23	0.112	4,900
BLK R - LOT 24	0.106	4,618
BLK R - LOT 25	0.127	5,780
BLK S	5.574	242,802
BLK S - LOT 1	5.574	242,802
BLK Y	1.721	74,974
BLK Y - LOT 12	0.157	7,275
BLK Y - LOT 13	0.132	5,770
BLK Y - LOT 14	0.129	5,640
BLK Y - LOT 15	0.129	5,640
BLK Y - LOT 16	0.131	5,842
BLK Y - LOT 17	0.126	5,440
BLK Y - LOT 18	0.131	5,788
BLK Y - LOT 19	0.147	6,082
BLK Y - LOT 20	0.151	6,161
BLK Y - LOT 21	0.151	6,579
BLK Y - LOT 22	0.151	6,578
BLK Y - LOT 23	0.165	5,168
OVERALL BNDY	75.573	3,291,945
ROW-NORTH	4.795	207,975
ROW-SOUTH	4.274	186,184
ROW - SOUTH 2	1.323	57,614
ROW - SOUTH GREAT SEQUOIA LANE	0.960	41,796

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	4°02'03"	980.00'	69.06'	N68°10'01"W	69.05'
C2	16°02'25"	410.00'	129.06'	N77°07'07"W	128.56'
C3	17°51'17"	72.00'	22.44'	N72°02'16"W	22.35'
C4	18°16'46"	410.00'	130.09'	N76°14'31"W	129.54'
C5	22°32'50"	1028.00'	404.54'	N70°14'52"W	401.93'
C6	1°55'50"	374.00'	12.60'	S64°28'55"E	12.60'
C7	90°00'00"	15.00'	23.56'	S44°46'55"E	21.21'
C8	90°00'00"	15.00'	23.56'	S45°13'05"W	21.21'
C9	90°00'00"	15.00'	23.56'	S44°46'55"E	21.21'
C10	4°02'03"	980.00'	69.15'	S66°10'04"E	69.14'
C11	4°02'03"	940.00'	66.32'	S66°10'04"E	66.31'
C12	18°00'25"	390.00'	122.55'	S77°07'25"E	122.05'
C13	16°02'25"	370.00'	115.59'	S77°07'25"E	115.14'
C14	17°42'23"	92.00'	28.42'	N76°15'19"W	28.31'
C15	17°42'23"	112.00'	34.61'	N76°15'19"W	34.47'
C16	18°10'45"	940.00'	298.24'	S76°11'48"E	296.93'
C17	18°10'45"	910.00'	288.70'	S76°11'48"E	287.49'
C18	90°00'00"	15.00'	23.56'	S22°46'55"E	21.21'
C19	90°00'00"	15.00'	23.56'	S67°13'05"W	21.21'
C20	22°32'50"	1028.00'	412.41'	N70°14'52"W	409.70'
C21	22°31'41"	1000.00'	393.03'	N70°15'27"W	390.57'
C22	91°06'09"	26.00'	39.75'	N44°13'51"E	35.69'
C23	89°52'53"	26.00'	23.27'	S45°09'26"E	23.00'
C24	1°41'32"	390.00'	9.59'	N67°07'41"W	9.59'
C25	1°41'32"	500.00'	14.77'	N67°07'41"W	14.77'
C26	1°41'32"	270.00'	8.00'	N67°07'41"W	8.00'
C27	90°00'00"	15.00'	23.56'	S67°13'05"W	21.21'
C28	90°00'00"	15.00'	23.56'	S22°46'55"E	21.21'
C29	90°00'00"	15.00'	23.56'	S67°13'05"W	21.21'
C30	90°00'00"	15.00'	23.56'	N22°46'55"W	21.21'
C31	90°00'00"	15.00'	23.56'	N22°46'55"W	21.21'
C32	90°00'00"	15.00'	23.56'	N67°13'05"E	21.21'
C33	23°20'02"	372.00'	164.52'	N09°41'04"E	163.31'
C34	25°30'02"	345.00'	153.62'	N09°41'04"E	152.37'
C35	23°20'02"	320.00'	141.52'	N09°41'04"E	140.51'
C36	90°00'00"	15.00'	23.56'	N67°58'17"W	21.21'
C37	90°00'00"	15.00'	23.56'	N42°01'23"E	21.21'
C38	5°46'14"	374.00'	37.45'	S68°11'57"E	37.43'
C39	7°48'08"	400.00'	53.80'	S67°18'30"E	53.76'
C40	7°48'08"	350.00'	58.05'	S67°18'30"E	58.02'
C41	89°59'27"	15.00'	23.70'	N63°56'39"E	23.81'
C42	83°41'52"	15.00'	21.91'	S51°07'41"E	20.02'
C43	9°00'27"	520.00'	80.65'	N07°07'21"W	80.57'
C44	8°00'27"	400.00'	55.95'	N07°07'21"W	55.90'
C45	6°18'00"	370.00'	40.70'	S08°07'41"E	40.68'
C46	1°52'12"	526.00'	4.92'	N02°47'51"W	4.92'
C47	4°52'03"	500.00'	42.52'	N00°10'55"W	42.51'

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C48	86°13'05"	15.00'	22.57'	S45°32'58"E	20.52'
C49	21°01'15"	220.00'	82.02'	N73°08'53"W	82.45'
C50	20°27'16"	200.00'	71.40'	N77°51'05"W	71.02'
C51	21°18'44"	174.00'	64.72'	N78°17'37"W	64.35'
C52	84°47'49"	15.00'	22.20'	S48°39'08"W	20.23'
C53	18°00'32"	526.00'	147.99'	N14°10'28"E	147.40'
C54	20°27'16"	500.00'	178.50'	N13°08'06"E	177.56'
C55	35°20'22"	470.00'	289.86'	S39°41'34"W	285.17'
C56	22°32'50"	724.00'	284.91'	S79°54'46"E	283.07'
C57	22°32'50"	750.00'	295.14'	S79°54'46"E	293.24'
C58	22°32'50"	776.00'	305.37'	S79°54'46"E	303.41'
C59	18°52'12"	526.00'	144.88'	N28°51'21"W	144.32'
C60	78°13'12"	474.00'	519.00'	N07°46'51"W	492.85'
C61	100°41'37"	226.00'	397.18'	N48°25'03"W	348.00'
C62	90°00'00"	15.00'	23.56'	S36°14'05"W	21.21'
C63	90°00'00"	15.00'	23.56'	N53°45'55"W	21.21'
C64	8°16'58"	666.00'	96.29'	N39°08'04"W	96.20'
C65	13°31'09"	326.00'	76.93'	N70°10'07"E	76.76'
C66	82°01'44"	15.00'	21.48'	N20°13'41"E	19.68'
C67	6°12'20"	774.00'	111.12'	N13°11'01"W	111.02'
C68	83°36'25"	15.00'	21.94'	N55°14'04"W	20.07'
C69	82°21'35"	26.00'	40.30'	N31°05'56"E	36.82'
C70	16°39'07"	526.00'	153.63'	N23°34'25"W	153.08'
C71	69°40'44"	174.00'	211.76'	N58°43'37"W	197.57'
C72	95°13'24"	25.00'	41.54'	N65°43'57"E	36.92'
C73	1°02'26"	972.00'	17.69'	S66°09'29"E	17.69'
C74	6°46'04"	230.00'	39.01'	S63°15'13"E	38.98'
C75	18°00'58"	380.00'	119.49'	S67°15'41"E	119.01'
C76	24°01'52"	51.00'	30.29'	S59°56'04"E	29.80'
C77	32°57'10"	36.00'	20.70'	S26°26'35"E	20.42'
C78	16°58'12"	226.00'	66.90'	S01°26'51"E	66.64'
C79	62°11'02"	44.00'	47.75'	N57°30'45"E	45.44'
C80	2°07'18"	1035.00'	38.31'	S62°27'23"E	38.32'
C81	90°00'00"	26.00'	39.27'	S44°46'55"E	35.36'
C82	90°00'00"	15.00'	23.56'	N45°13'05"E	21.21'
C83	50°34'33"	326.00'	287.77'	N25°06'11"E	278.51'
C84	50°34'33"	300.00'	264.81'	N25°06'11"E	256.30'
C85	50°34'33"	274.00'	241.85'	N25°06'11"E	234.09'
C86	52°18'12"	15.00'	13.69'	S24°15'22"W	13.21'
C87	14°32'24"	52.00'	13.21'	N58°23'28"E	13.18'
C88	52°18'12"	15.00'	13.69'	S13°26'26"E	13.21'
C89	52°18'12"	15.00'	13.69'	N65°44'48"W	13.21'
C90	41°42'13"	374.00'	272.22'	S60°27'39"E	266.29'
C91	41°42'13"	400.00'	291.15'	S60°27'39"E	284.76'
C92	41°42'13"	426.00'	310.07'	N60°27'39"W	303.23'
C93	11°21'12"	374.00'	74.11'	S66°59'22"E	73.99'
C94	11°21'12"	400.00'	79.26'	S66°59'22"E	79.13'

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C95	11°21'12"	426.00'	84.41'	N66°59'22"W	84.28'
C96	104°34'24"	52.00'	94.88'	S39°36'32"E	82.29'
C97	52°18'12"	15.00'	13.69'	N13°26'26"W	13.21'
C98	90°00'00"	25.00'	39.27'	S84°36'32"E	35.36'
C99	90°34'33"	326.00'	257.29'	N25°06'11"E	278.51'
C100	90°34'33"	300.00'	264.81'	N25°06'11"E	256.30'
C101	90°34'33"	274.00'	241.66'	N25°06'11"E	234.09'
C102	90°00'00"	15.00'	23.56'	S05°23'28"W	21.21'
C103	90°00'00"	15.00'	23.56'	N84°36'32"W	21.21'
C104	52°18'12"	15.00'	13.69'	S24°15'22"W	13.21'
C105	104°34'24"	52.00'	170.59'	S84°36'32"E	103.18'
C106	52°18'12"	15.00'	13.69'	N13°26'26"W	13.21'
C107	90°00'00"	40.00'	62.83'	S84°36'32"E	56.57'
C108	90°00'00"	25.00'	39.27'	S84°36'32"E	35.36'
C109	85°52'32"	15.00'	22.48'	S03°20'14"W	20.44'
C110	90°30'01"	25.00'	31.72'	N82°51'48"E	34.26'
C111	35°12'29"	59.00'	726.04'	S52°11'25"E	361.09'
C112	16°48'24"	60.00'	160.00'	N62°15'51"E	199.92'
C113	25°20'06"	953.00'	377.72'	N62°47'54"E	375.01'
C114	85°20'17"	29.00'	41.99'	N62°47'18"W	38.98'
C115	2°21'20"	615.00'	25.74'	N76°01'48"E	25.74'
C116	8°40'23"	153.00'	19.01'	N73°20'00"E	19.01'
C117	69°41'10"	15.00'	37.30'	S27°46'44"W	34.00'
C118	11°19'28"	734.00'	145.30'	S20°10'09"E	145.07'
C119	18°32'41"	734.00'	284.35'	S29°01'11"E	282.74'
C120	67°01'46"	15.00'	22.78'	N72°15'50"W	20.60'
C121	1°22'06"	1560.00'	59.42'	S23°57'05"E	59.39'
C122	4°23'45"	770.00'	59.55'	S31°23'16"E	59.53'
C123	24°05'42"	518.00'	217.84'	N21°34'41"W	323.84'
C124	24°51'48"	530.00'	229.83'	N21°11'42"W	322.88'
C125	24°00'25"	530.00'	203.30'	N21°37'21"W	301.13'
C126	89°14'02"	15.00'	23.39'	S64°06'51"E	21.07'
C127	90°51'17"	15.00'	23.79'	N25°46'26"E	21.37'
C128	58°15'29"	503.00'	205.60'	N44°43'10"E	207.99'
C129	52°46'29"	535.00'	338.43'	N33°59'47"E	351.81'
C130	25°12'20"	550.00'	353.29'	N31°40'50"E	349.43'
C131	32°23'12"	513.00'	361.58'	N33°19'15"E	376.46'
C132	10°37'46"	527.00'	110.78'	S39°16'24"W	110.60'
C133	16°57'16"	225.00'	66.84'	S15°36'53"W	66.58'
C134	10°47'54"	550.00'	124.23'	N21°46'46"E	124.00'
C135	41°08'17"	65.00'	91.99'	S57°37'18"W	84.50'
C136	41°09'17"	65.00'	120.30'	S57°37'18"W	110.51'
C137	6°21'22"	1546.00'	152.74'	S58°19'34"E	152.60'
C138	8°21'22"	1065.00'	155.85'	S58°19'34"E	155.72'
C139	90°00'00"	15.00'	23.56'	N45°13'05"W	21.21'
C140	90°00'00"	15.00'	23.56'	S44°46'55"W	21.21'

TYPE	QUANTITY	ACREAGE
SINGLE FAMILY LOTS	190	22.214 ACRES
HOA PARKLAND, DRAINAGE EASEMENT	4	36.473 ACRES
HOA AMENITY CENTER, COMMERCIAL LOT	1	5.574 ACRES
ROW	NA	11.312 ACRES

FINAL PLAT OF

HERITAGE- DRIPPING SPRINGS- PHASE 2

BEING A TOTAL OF 75.57± ACRES OF LAND OUT OF THE PHILIP SMITH SURVEY, ABSTRACT NO. 415, CITY OF DRIPPING SPRINGS, HAYS COUNTY, TEXAS, BEING A PORTION OF THAT CERTAIN 189.130 ACRE TRACT CONVEYED TO MS HOMES OF AUSTIN, LLC, AND TEN PRIVATE HOMES OF TEXAS, INC. IN DOCUMENT NO. 21023136 RECORDED IN THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

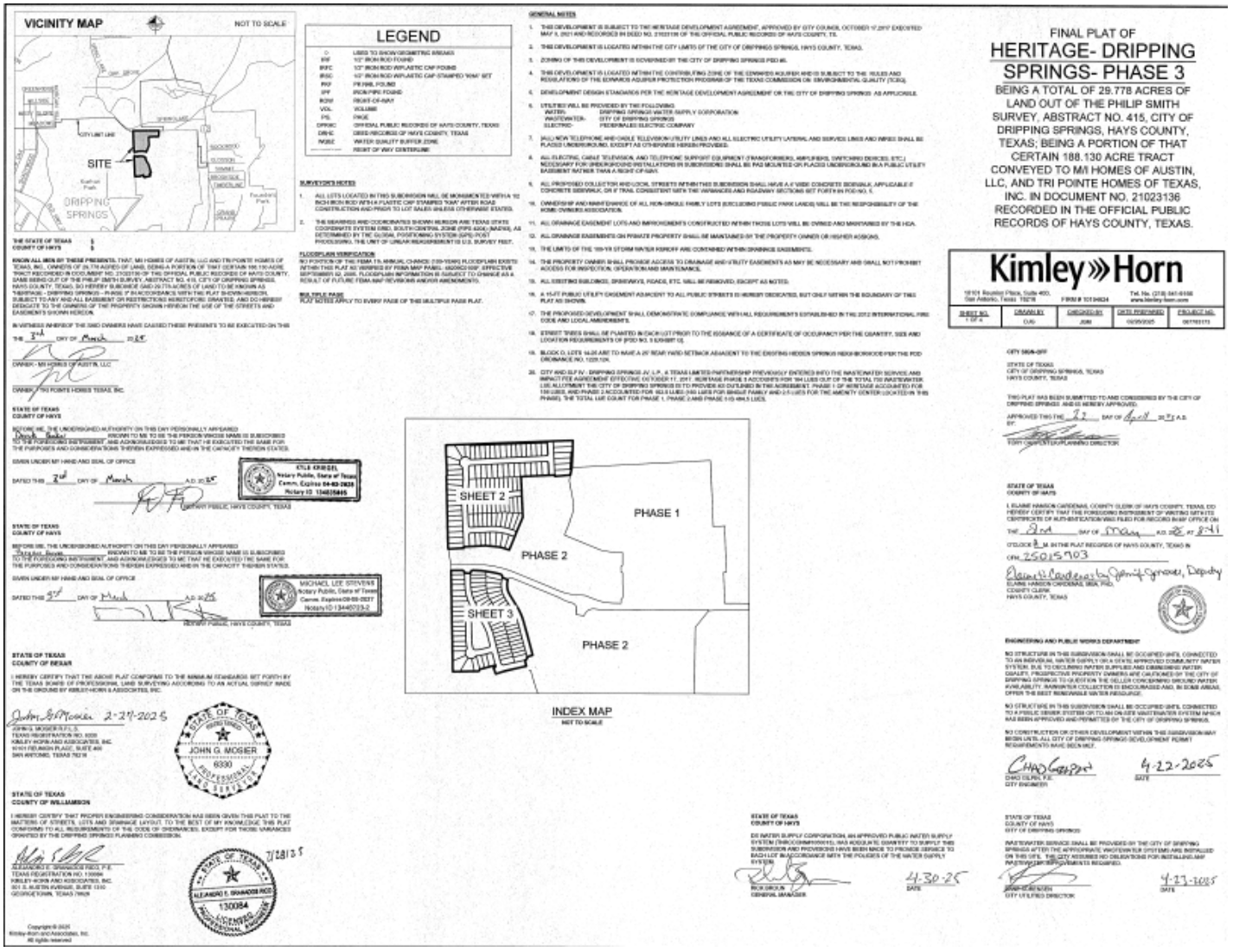
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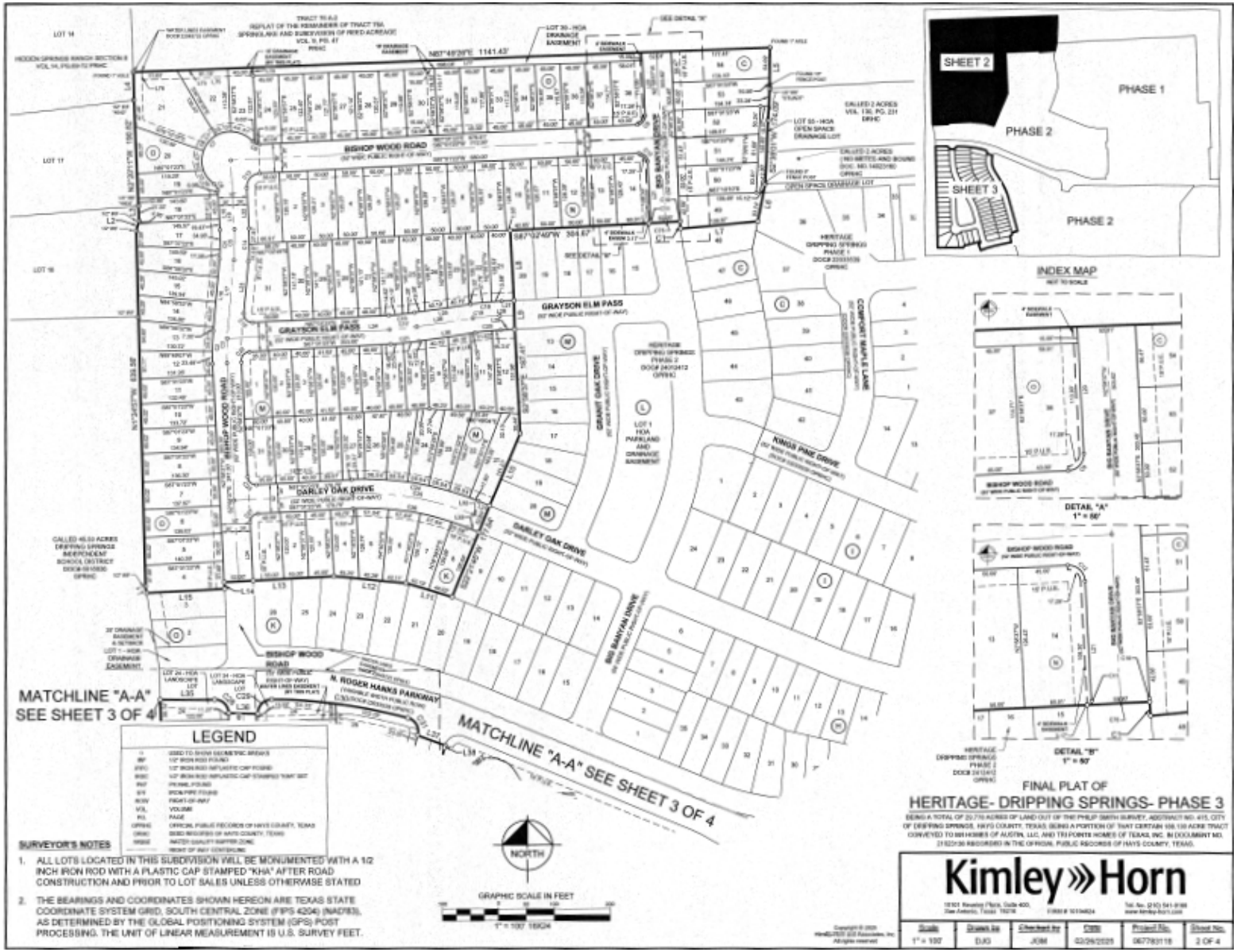
10101 Reunion Place, Suite 400, San Antonio, Texas 78216 FIRM # 10194624 Tel. No. (210) 541-9166 www.kimley-horn.com

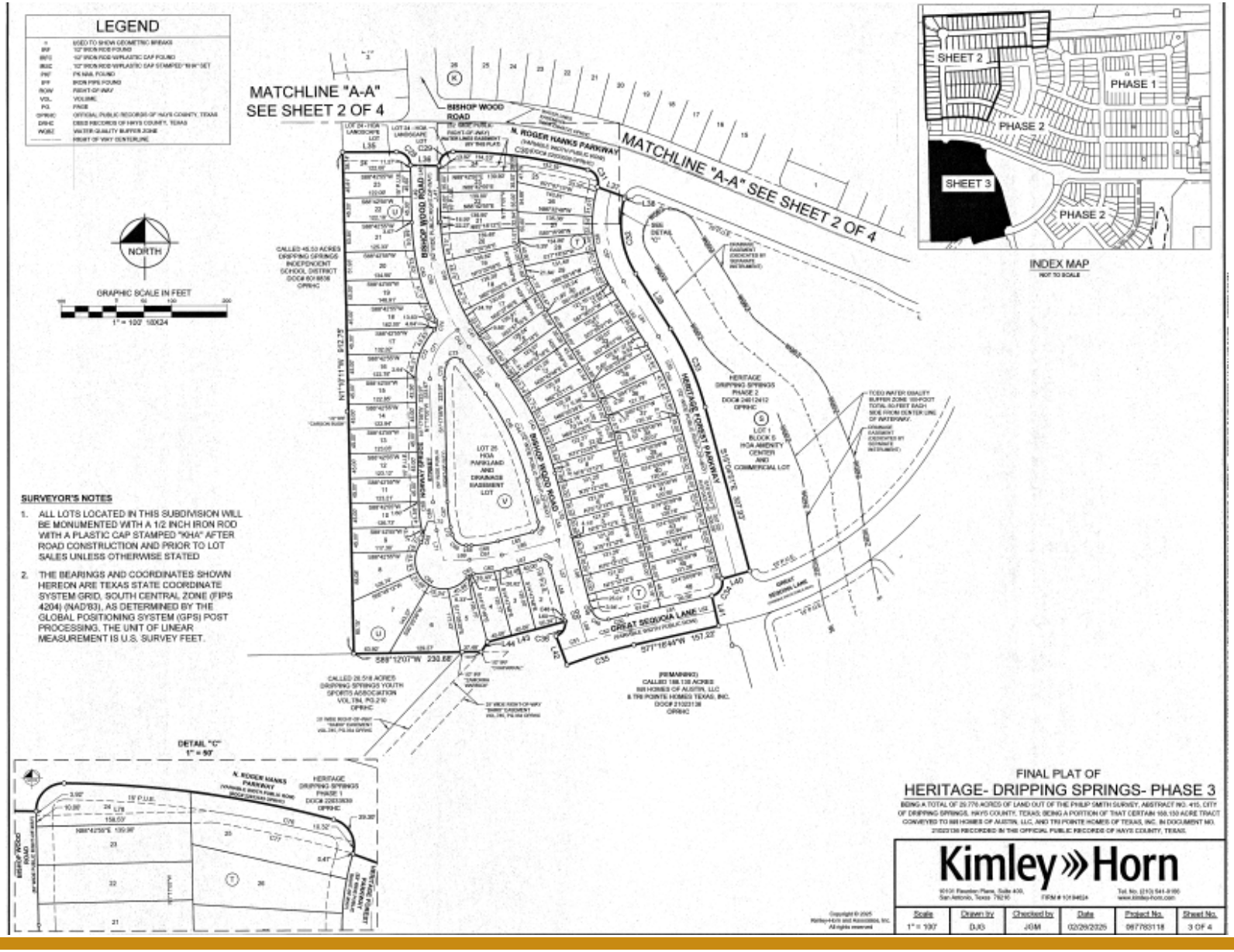
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1" = 100'	SAL	JGM	3/13/2024	067783118	5 OF 5

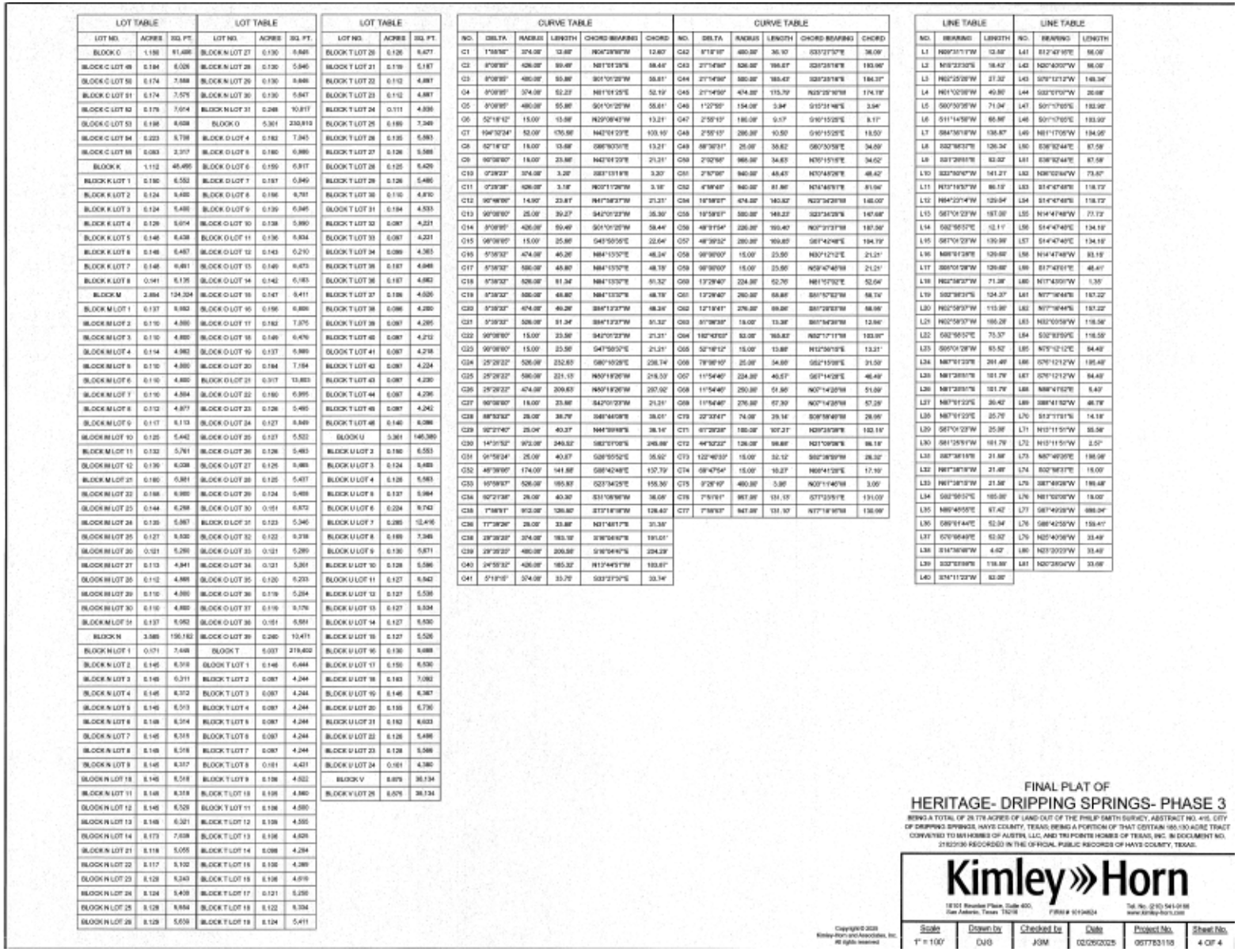
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EXHIBIT Q-3 - IMPROVEMENT AREA #3A AND IMPROVEMENT AREA #3B FINAL PLAT




SHEET 2
PHASE 1
PHASE 2
SHEET 3
PHASE 2
INDEX MAP
DETAIL "A"
1" = 50'
DETAIL "B"
1" = 50'
BISHOP WOOD ROAD
GRAYSON ELM PASS
GRANT OAK DRIVE
COMFORT MAPLE LANE
KINGS PINE DRIVE
DARLEY OAK DRIVE
BIG BANYAN DRIVE
N. ROGER HANKS PARKWAY
MATCHLINE "A-A"
SEE SHEET 3 OF 4
MATCHLINE "A-A" SEE SHEET 3 OF 4
LEGEND
SURVEYOR'S NOTES
1. ALL LOTS LOCATED IN THIS SUBDIVISION WILL BE MONUMENTED WITH A 1/2 INCH IRON ROD WITH A PLASTIC CAP STAMPED "KHA" AFTER ROAD CONSTRUCTION AND PRIOR TO LOT SALES UNLESS OTHERWISE STATED
2. THE BEARINGS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM (GPS) POST PROCESSING. THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.
NORTH
GRAPHIC SCALE IN FEET
1" = 100' 100GH
FINAL PLAT OF
HERITAGE- DRIPPING SPRINGS- PHASE 3
Kimley»Horn
Scale 1" = 100'
Drawn by DJG
Checked by JGM
Date 02/26/2025
Project No. 067783116
Sheet No. 2 OF 4


LEGEND
MATCHLINE "A-A" SEE SHEET 2 OF 4
MATCHLINE "A-A" SEE SHEET 2 OF 4
BISHOP WOOD ROAD
N. ROGER HANKS PARKWAY
HERITAGE FOREST PARKWAY
GREAT SEQUOIA LANE
SHEET 2
SHEET 3
PHASE 1
PHASE 2
PHASE 2
INDEX MAP
NOT TO SCALE
NORTH
GRAPHIC SCALE IN FEET
1" = 100'
SURVEYOR'S NOTES
1. ALL LOTS LOCATED IN THIS SUBDIVISION WILL BE MONUMENTED WITH A 1/2 INCH IRON ROD WITH A PLASTIC CAP STAMPED "KHA" AFTER ROAD CONSTRUCTION AND PRIOR TO LOT SALES UNLESS OTHERWISE STATED
2. THE BEARINGS AND COORDINATES SHOWN HEREON ARE TEXAS STATE COORDINATE SYSTEM GRID, SOUTH CENTRAL ZONE (FIPS 4204) (NAD'83), AS DETERMINED BY THE GLOBAL POSITIONING SYSTEM (GPS) POST PROCESSING. THE UNIT OF LINEAR MEASUREMENT IS U.S. SURVEY FEET.
DETAIL "C"
1" = 50'
FINAL PLAT OF
HERITAGE- DRIPPING SPRINGS- PHASE 3
Kimley»Horn
Scale 1" = 100'
Drawn by DJG
Checked by JGM
Date 02/26/2025
Project No. 067783118
Sheet No. 3 OF 4



LOT TABLE		
LOT NO.	ACRES	SQ. FT.
BLOCK C	1.150	91,488
BLOCK C LOT 49	0.184	8,026
BLOCK C LOT 50	0.174	7,588
BLOCK C LOT 51	0.174	7,575
BLOCK C LOT 52	0.179	7,814
BLOCK C LOT 53	0.196	8,538
BLOCK C LOT 54	0.223	9,736
BLOCK C LOT 55	0.083	3,317
BLOCK K	1.112	48,466
BLOCK K LOT 1	0.150	6,552
BLOCK K LOT 2	0.124	5,400
BLOCK K LOT 3	0.124	5,400
BLOCK K LOT 4	0.129	5,614
BLOCK K LOT 5	0.148	6,438
BLOCK K LOT 6	0.148	6,467
BLOCK K LOT 7	0.148	6,461
BLOCK K LOT 8	0.141	6,135
BLOCK M	2.884	124,204
BLOCK M LOT 1	0.137	5,952
BLOCK M LOT 2	0.110	4,800
BLOCK M LOT 3	0.110	4,800
BLOCK M LOT 4	0.114	4,962
BLOCK M LOT 5	0.110	4,800
BLOCK M LOT 6	0.110	4,800
BLOCK M LOT 7	0.110	4,884
BLOCK M LOT 8	0.112	4,877
BLOCK M LOT 9	0.117	5,113
BLOCK M LOT 10	0.125	5,442
BLOCK M LOT 11	0.122	5,761
BLOCK M LOT 12	0.139	6,038
BLOCK M LOT 21	0.160	6,981
BLOCK M LOT 22	0.158	6,880
BLOCK M LOT 23	0.144	6,268
BLOCK M LOT 24	0.135	5,887
BLOCK M LOT 25	0.127	5,530
BLOCK M LOT 26	0.121	5,269
BLOCK M LOT 27	0.113	4,941
BLOCK M LOT 28	0.112	4,866
BLOCK M LOT 29	0.110	4,800
BLOCK M LOT 30	0.110	4,800
BLOCK M LOT 31	0.137	5,962
BLOCK N	3.588	156,182
BLOCK N LOT 1	0.171	7,448
BLOCK N LOT 2	0.145	6,318
BLOCK N LOT 3	0.149	6,511
BLOCK N LOT 4	0.145	6,312
BLOCK N LOT 5	0.145	6,313
BLOCK N LOT 6	0.148	6,314
BLOCK N LOT 7	0.145	6,318
BLOCK N LOT 8	0.148	6,318
BLOCK N LOT 9	0.145	6,317
BLOCK N LOT 10	0.145	6,318
BLOCK N LOT 11	0.148	6,318
BLOCK N LOT 12	0.145	6,328
BLOCK N LOT 13	0.148	6,321
BLOCK N LOT 14	0.173	7,538
BLOCK N LOT 21	0.118	5,055
BLOCK N LOT 22	0.117	5,102
BLOCK N LOT 23	0.128	5,243
BLOCK N LOT 24	0.124	5,409
BLOCK N LOT 25	0.128	5,554
BLOCK N LOT 26	0.129	5,639

LOT TABLE		
LOT NO.	ACRES	SQ. FT.
BLOCK N LOT 27	0.130	5,645
BLOCK N LOT 28	0.130	5,646
BLOCK N LOT 29	0.130	5,646
BLOCK N LOT 30	0.130	5,647
BLOCK N LOT 31	0.248	10,817
BLOCK O	5.361	233,513
BLOCK O LOT 4	0.162	7,045
BLOCK O LOT 5	0.160	6,986
BLOCK O LOT 6	0.159	6,917
BLOCK O LOT 7	0.157	6,849
BLOCK O LOT 8	0.156	6,791
BLOCK O LOT 9	0.139	6,045
BLOCK O LOT 10	0.138	5,990
BLOCK O LOT 11	0.136	5,934
BLOCK O LOT 12	0.143	6,210
BLOCK O LOT 13	0.149	6,473
BLOCK O LOT 14	0.142	6,183
BLOCK O LOT 15	0.147	6,411
BLOCK O LOT 16	0.156	6,806
BLOCK O LOT 17	0.162	7,075
BLOCK O LOT 18	0.149	6,476
BLOCK O LOT 19	0.137	5,980
BLOCK O LOT 20	0.164	7,164
BLOCK O LOT 21	0.317	13,803
BLOCK O LOT 22	0.160	6,995
BLOCK O LOT 23	0.126	5,495
BLOCK O LOT 24	0.127	5,549
BLOCK O LOT 25	0.127	5,522
BLOCK O LOT 26	0.126	5,483
BLOCK O LOT 27	0.125	5,465
BLOCK O LOT 28	0.125	5,457
BLOCK O LOT 29	0.124	5,409
BLOCK O LOT 30	0.151	6,572
BLOCK O LOT 31	0.123	5,346
BLOCK O LOT 32	0.123	5,378
BLOCK O LOT 33	0.121	5,289
BLOCK O LOT 34	0.121	5,261
BLOCK O LOT 35	0.120	5,233
BLOCK O LOT 36	0.119	5,204
BLOCK O LOT 37	0.119	5,176
BLOCK O LOT 38	0.151	6,591
BLOCK O LOT 39	0.260	10,471
BLOCK T	5.037	219,402
BLOCK T LOT 1	0.146	6,444
BLOCK T LOT 2	0.097	4,244
BLOCK T LOT 3	0.097	4,244
BLOCK T LOT 4	0.097	4,244
BLOCK T LOT 5	0.097	4,244
BLOCK T LOT 6	0.097	4,244
BLOCK T LOT 7	0.097	4,244
BLOCK T LOT 8	0.101	4,431
BLOCK T LOT 9	0.106	4,622
BLOCK T LOT 10	0.101	4,394
BLOCK T LOT 11	0.106	4,590
BLOCK T LOT 12	0.106	4,595
BLOCK T LOT 13	0.106	4,626
BLOCK T LOT 14	0.098	4,284
BLOCK T LOT 15	0.106	4,589
BLOCK T LOT 16	0.106	4,619
BLOCK T LOT 17	0.121	5,256
BLOCK T LOT 18	0.122	5,334
BLOCK T LOT 19	0.124	5,411

LOT TABLE		
LOT NO.	ACRES	SQ. FT.
BLOCK T LOT 20	0.126	5,477
BLOCK T LOT 21	0.119	5,187
BLOCK T LOT 22	0.112	4,887
BLOCK T LOT 23	0.112	4,887
BLOCK T LOT 24	0.111	4,836
BLOCK T LOT 25	0.169	7,349
BLOCK T LOT 26	0.135	5,883
BLOCK T LOT 27	0.126	5,488
BLOCK T LOT 28	0.125	5,429
BLOCK T LOT 29	0.126	5,486
BLOCK T LOT 30	0.110	4,810
BLOCK T LOT 31	0.104	4,533
BLOCK T LOT 32	0.097	4,221
BLOCK T LOT 33	0.097	4,221
BLOCK T LOT 34	0.099	4,303
BLOCK T LOT 35	0.107	4,648
BLOCK T LOT 36	0.107	4,662
BLOCK T LOT 37	0.106	4,626
BLOCK T LOT 38	0.096	4,200
BLOCK T LOT 39	0.097	4,205
BLOCK T LOT 40	0.097	4,212
BLOCK T LOT 41	0.097	4,216
BLOCK T LOT 42	0.097	4,224
BLOCK T LOT 43	0.097	4,230
BLOCK T LOT 44	0.097	4,236
BLOCK T LOT 45	0.097	4,242
BLOCK T LOT 46	0.140	6,086
BLOCK U	3.361	146,389
BLOCK U LOT 2	0.150	6,553
BLOCK U LOT 3	0.124	5,400
BLOCK U LOT 4	0.128	5,563
BLOCK U LOT 5	0.127	5,564
BLOCK U LOT 6	0.224	9,743
BLOCK U LOT 7	0.285	12,416
BLOCK U LOT 8	0.169	7,348
BLOCK U LOT 9	0.130	5,671
BLOCK U LOT 10	0.128	5,586
BLOCK U LOT 11	0.127	5,542
BLOCK U LOT 12	0.127	5,536
BLOCK U LOT 13	0.127	5,534
BLOCK U LOT 14	0.127	5,530
BLOCK U LOT 15	0.127	5,526
BLOCK U LOT 16	0.130	5,668
BLOCK U LOT 17	0.150	6,530
BLOCK U LOT 18	0.163	7,092
BLOCK U LOT 19	0.146	6,367
BLOCK U LOT 20	0.155	6,736
BLOCK U LOT 21	0.152	6,633
BLOCK U LOT 22	0.126	5,486
BLOCK U LOT 23	0.128	5,566
BLOCK U LOT 24	0.161	4,360
BLOCK V	0.879	38,134
BLOCK V LOT 26	0.876	38,134

CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	1°58'56"	374.00'	12.95'	N56°28'56"W	12.95'
C2	8°08'55"	426.00'	59.46'	N61°16'23"E	59.46'
C3	8°08'55"	480.00'	55.86'	S61°16'23"W	55.81'
C4	8°08'55"	374.00'	52.23'	N61°16'23"E	52.19'
C5	8°08'55"	480.00'	55.86'	S61°16'23"W	55.81'
C6	52°18'12"	15.00'	13.69'	N29°08'43"W	13.21'
C7	194°32'24"	52.00'	176.56'	N42°16'23"E	103.19'
C8	52°18'12"	15.00'	13.69'	S66°50'31"E	13.21'
C9	90°00'00"	15.00'	23.56'	N42°16'23"E	21.21'
C10	0°28'23"	374.00'	3.09'	S33°31'31"E	3.09'
C11	0°28'23"	426.00'	3.18'	N33°31'29"W	3.18'
C12	90°08'00"	14.90'	23.87'	N41°38'23"W	21.31'
C13	90°08'00"	25.00'	39.27'	S42°20'23"W	35.30'
C14	8°08'55"	426.00'	59.46'	S61°16'23"W	59.44'
C15	90°08'00"	15.00'	25.86'	S45°56'56"E	22.64'
C16	5°38'32"	474.00'	46.26'	N84°13'57"E	46.24'
C17	5°38'32"	580.00'	45.80'	N84°13'57"E	45.79'
C18	5°38'32"	526.00'	51.34'	N84°13'57"E	51.32'
C19	5°38'32"	580.00'	58.80'	N84°13'57"E	58.78'
C20	5°38'32"	474.00'	46.26'	S84°13'57"W	46.24'
C21	5°38'32"	526.00'	51.34'	S84°13'57"W	51.32'
C22	90°08'00"	15.00'	23.58'	S42°20'23"W	21.21'
C23	90°08'00"	15.00'	23.58'	S47°39'37"E	21.21'
C24	25°28'23"	526.00'	232.83	S80°16'26"E	230.74'
C25	25°28'23"	580.00'	221.15	N80°16'26"W	219.53'
C26	25°28'23"	474.00'	209.83	N80°16'26"W	297.92'
C27	90°08'00"	15.00'	23.58'	S42°20'23"W	21.21'
C28	88°53'52"	28.00'	38.79'	S46°44'38"E	35.01'
C29	90°21'40"	25.04'	40.37'	N44°39'48"E	36.16'
C30	14°31'52"	972.00'	246.52'	S82°51'08"E	245.89'
C31	04°58'24"	25.00'	40.67'	S26°55'52"E	35.92'
C32	46°39'06"	174.00'	141.66'	S66°42'48"E	137.79'
C33	16°58'53"	526.00'	155.83'	S23°34'25"E	155.30'
C34	90°21'40"	25.00'	40.30'	S31°06'08"W	36.08'
C35	7°38'51"	972.00'	129.82'	S73°18'18"W	129.63'
C36	77°38'26"	28.00'	33.88'	N31°48'17"E	31.36'
C37	23°26'23"	374.00'	153.10'	S78°56'40"E	151.01'
C38	23°26'23"	480.00'	200.00'	S78°56'40"E	204.29'
C40	24°55'32"	426.00'	185.32'	N12°44'51"W	183.81'
C41	5°18'15"	374.00'	33.70'	S03°27'31"E	33.34'

CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C42	8°18'16"	480.00'	36.10'	S03°27'32"E	36.09'
C43	27°14'56"	526.00'	186.67'	S20°28'18"E	185.66'
C44	27°14'56"	580.00'	165.43'	S20°28'18"E	164.91'
C45	27°14'56"	474.00'	175.70'	N20°28'18"W	174.75'
C46	1°22'55"	154.00'	3.84'	S15°31'46"E	3.84'
C47	2°55'13"	186.00'	9.57'	S16°15'25"E	9.57'
C48	2°55'13"	286.00'	10.50'	S16°15'25"E	10.50'
C49	88°36'31"	25.00'	38.82'	S80°30'59"E	34.69'
C50	2°02'56"	966.00'	34.63'	N76°15'15"E	34.62'
C51	2°57'09"	940.00'	48.43'	N70°48'28"E	48.42'
C52	4°38'45"	940.00'	81.86'	N74°46'51"E	81.84'
C54	16°38'57"	474.00'	140.82'	N23°34'28"W	140.33'
C55	19°58'57"	580.00'	148.23'	S23°34'28"E	147.88'
C56	48°31'54"	226.00'	159.40'	N30°31'31"W	154.66'
C57	48°39'32"	280.00'	169.65'	S61°42'48"E	164.79'
C58	90°00'00"	15.00'	23.56'	N50°12'12"E	21.21'
C59	90°00'00"	15.00'	23.56'	N39°47'48"W	21.21'
C60	13°28'40"	224.00'	52.70'	N61°15'52"E	52.64'
C61	13°28'40"	280.00'	65.86'	S61°15'52"W	65.74'
C62	12°19'41"	276.00'	59.39'	S61°28'53"W	59.28'
C63	51°36'35"	15.00'	13.38'	S61°34'35"W	12.94'
C64	192°43'03"	52.00'	168.63'	N52°17'11"W	103.97'
C65	52°18'12"	15.00'	13.69'	N12°39'13"E	13.21'
C66	78°36'10"	25.00'	34.60'	S62°15'39"E	31.50'
C67	11°54'46"	224.00'	46.57'	S67°14'28"E	46.49'
C68	11°54'46"	280.00'	58.21'	N67°14'28"W	58.11'
C69	11°54'46"	276.00'	57.39'	N67°14'28"W	57.28'
C73	22°33'47"	74.00'	29.14'	S08°58'46"W	28.95'
C71	61°29'26"	180.00'	107.61'	N39°28'28"E	102.51'
C72	44°32'22"	126.00'	98.00'	N31°09'28"E	95.58'
C73	122°46'33"	15.00'	32.12'	S62°38'59"W	26.32'
C74	68°47'54"	15.00'	18.27'	N68°41'28"E	17.19'
C75	9°28'10"	480.00'	3.96'	N03°11'46"W	3.95'
C76	7°51'01"	967.00'	131.15'	S77°23'51"E	131.05'
C77	7°38'51"	947.00'	131.10'	N77°18'18"W	130.99'

LINE TABLE		
NO.	BEARING	LENGTH
L1	N69°31'17"W	12.58'
L2	N19°22'32"E	18.42'
L3	N62°25'28"W	27.32'
L4	N61°02'08"W	49.80'
L5	S60°50'26"W	71.04'
L6	S11°14'58"W	66.86'
L7	S84°36'18"W	106.87'
L8	S32°56'37"E	126.34'
L9	S31°29'01"E	82.32'
L10	S33°55'07"W	141.21'
L11	N73°16'57"W	86.15'
L12	N84°23'14"W	129.94'
L13	S67°01'23"W	157.09'
L14	S82°56'37"E	12.11'
L15	S67°01'23"W	139.99'
L16	N66°01'28"E	129.60'
L17	S67°01'23"W	129.60'
L18	N62°58'37"W	71.38'
L19	S82°56'37"E	124.37'
L20	N62°58'37"W	113.99'
L21	N62°58'37"W	166.28'
L22	S82°56'37"E	75.37'
L23	S65°04'28"W	65.52'
L24	N67°01'23"E	261.49'
L25	N81°28'01"E	101.79'
L26	N81°28'01"E	101.79'
L27	N67°01'23"E	39.42'
L28	N67°01'23"E	25.79'
L29	S67°01'23"W	25.98'
L30	S81°25'59"W	101.79'
L31	S67°38'18"E	21.98'
L32	N67°38'18"W	21.98'
L33	N67°38'18"W	21.98'
L34	S82°56'37"E	165.00'
L35	N89°46'55"E	57.42'
L36	S89°01'44"E	52.04'
L37	S76°56'49"E	62.92'
L38	S14°36'08"W	4.62'
L39	S32°56'08"E	116.55'
L40	S76°11'23"W	52.05'

LINE TABLE		
NO.	BEARING	LENGTH
L41	S12°43'16"E	56.09'
L42	N20°43'00"W	56.09'
L43	S76°12'12"W	149.34'
L44	S32°01'07"W	20.09'
L45	S01°17'05"E	183.99'
L46	S01°17'05"E	183.99'
L47	N81°17'05"W	194.99'
L48	S32°56'37"E	87.58'
L49	S36°52'44"E	87.58'
L50	S36°52'44"E	87.58'
L51	N36°52'44"W	73.87'
L52	S14°47'48"E	118.73'
L53	S14°47'48"E	118.73'
L54	S14°47'48"E	118.73'
L55	N14°47'48"W	73.73'
L56	S14°47'48"E	134.19'
L57	S14°47'48"E	134.19'
L58	N14°47'48"W	83.19'
L59	S17°47'01"E	48.41'
L60	N17°43'01"W	1.35'
L61	N77°16'44"E	157.22'
L62	N77°16'44"E	157.22'
L63	N32°00'58"W	118.56'
L64	S32°56'09"E	118.59'
L65	N75°12'12"E	84.48'
L66	S76°12'12"W	195.48'
L67	S76°12'12"W	84.48'
L68	N88°41'52"E	5.43'
L69	S88°41'52"W	46.78'
L70	S13°11'51"E	14.18'
L71	N13°11'51"W	55.56'
L72	N13°11'51"W	2.57'
L73	N87°48'09"E	198.98'
L74	S02°56'37"E	15.00'
L75	S87°48'28"W	198.48'
L76	N81°00'06"W	19.00'
L77	S87°48'28"W	686.04'
L78	S88°42'56"W	159.41'
L79	N25°40'36"W	33.48'
L80	N23°20'23"W	33.48'
L81	N20°26'04"W	33.68'

FINAL PLAT OF

HERITAGE- DRIPPING SPRINGS- PHASE 3

BEING A TOTAL OF 28.179 ACRES OF LAND OUT OF THE PHILIP SMITH SURVEY, ABSTRACT NO. 416, CITY OF DRIPPING SPRINGS, HAYS COUNTY, TEXAS; BEING A PORTION OF THAT CERTAIN 186.130 ACRE TRACT CONVEYED TO MH HOMES OF AUSTIN, LLC, AND TRI POINTE HOMES OF TEXAS, INC. IN DOCUMENT NO. 21823130 RECORDED IN THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS.

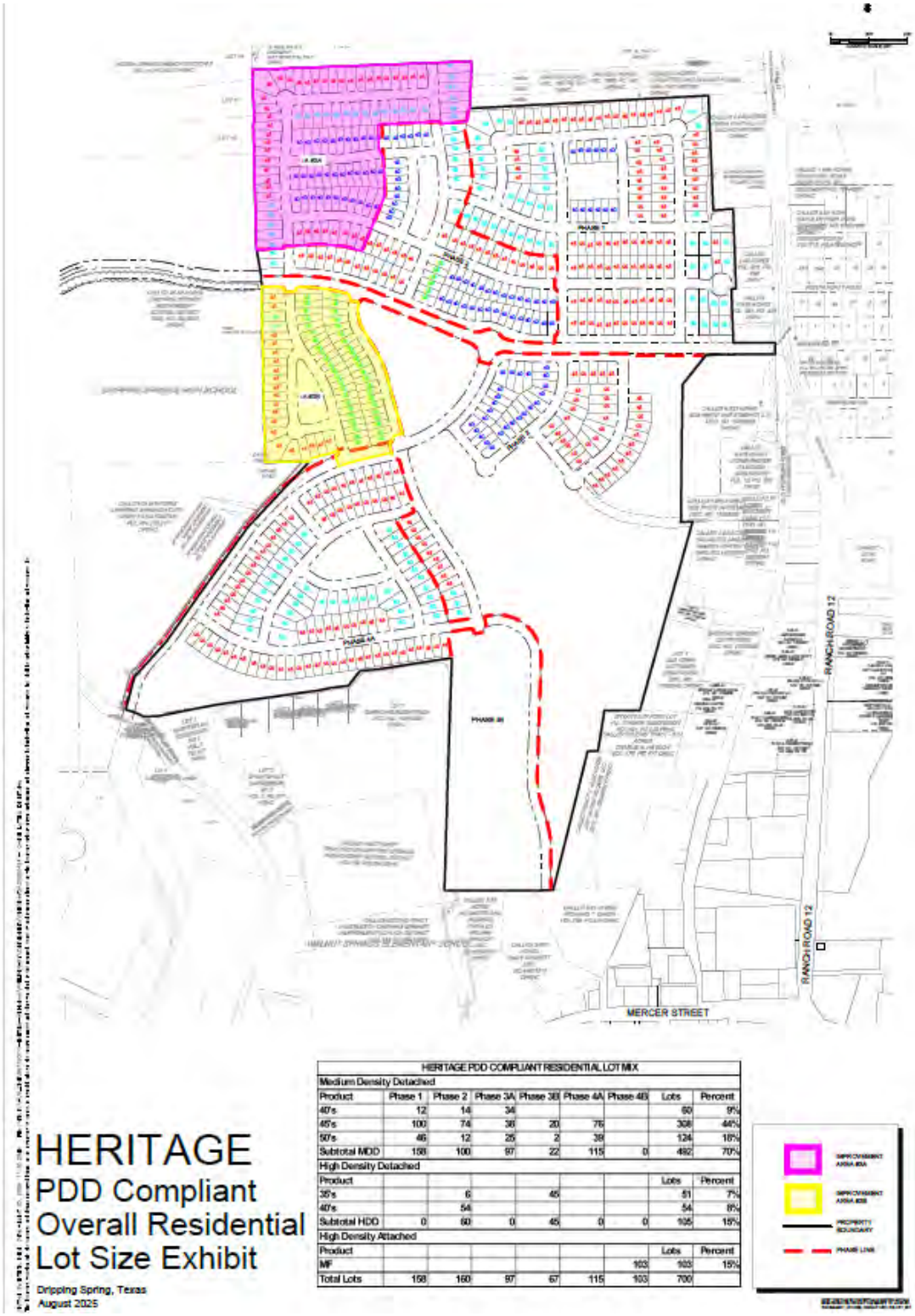
Kimley»Horn

10101 Reunion Place, Suite 400, San Antonio, Texas 78216 — FIRM # 10194824 — Tel. No. (210) 541-9166 — www.kimley-horn.com

Scale	Drawn by	Checked by	Date	Project No.	Sheet No.
1" = 100'	CJG	JSM	02/25/2025	067783116	4 OF 4

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EXHIBIT R – LOT TYPE CLASSIFICATION MAP



HERITAGE PDD COMPLIANT RESIDENTIAL LOT MIX

Medium Density Detached								
Product	Phase 1	Phase 2	Phase 3A	Phase 3B	Phase 4A	Phase 4B	Lots	Percent
40's	12	14	34				60	9%
45's	100	74	38	20	76		308	44%
50's	46	12	25	2	39		124	18%
Subtotal MDD	158	100	97	22	115	0	492	70%
High Density Detached								
Product							Lots	Percent
35's		6		45			51	7%
40's		54					54	8%
Subtotal HDD	0	60	0	45	0	0	105	15%
High Density Attached								
Product							Lots	Percent
MF						103	103	15%
Total Lots	158	160	97	67	115	103	700	

EXHIBIT S – MAP OF MAJOR IMPROVEMENTS

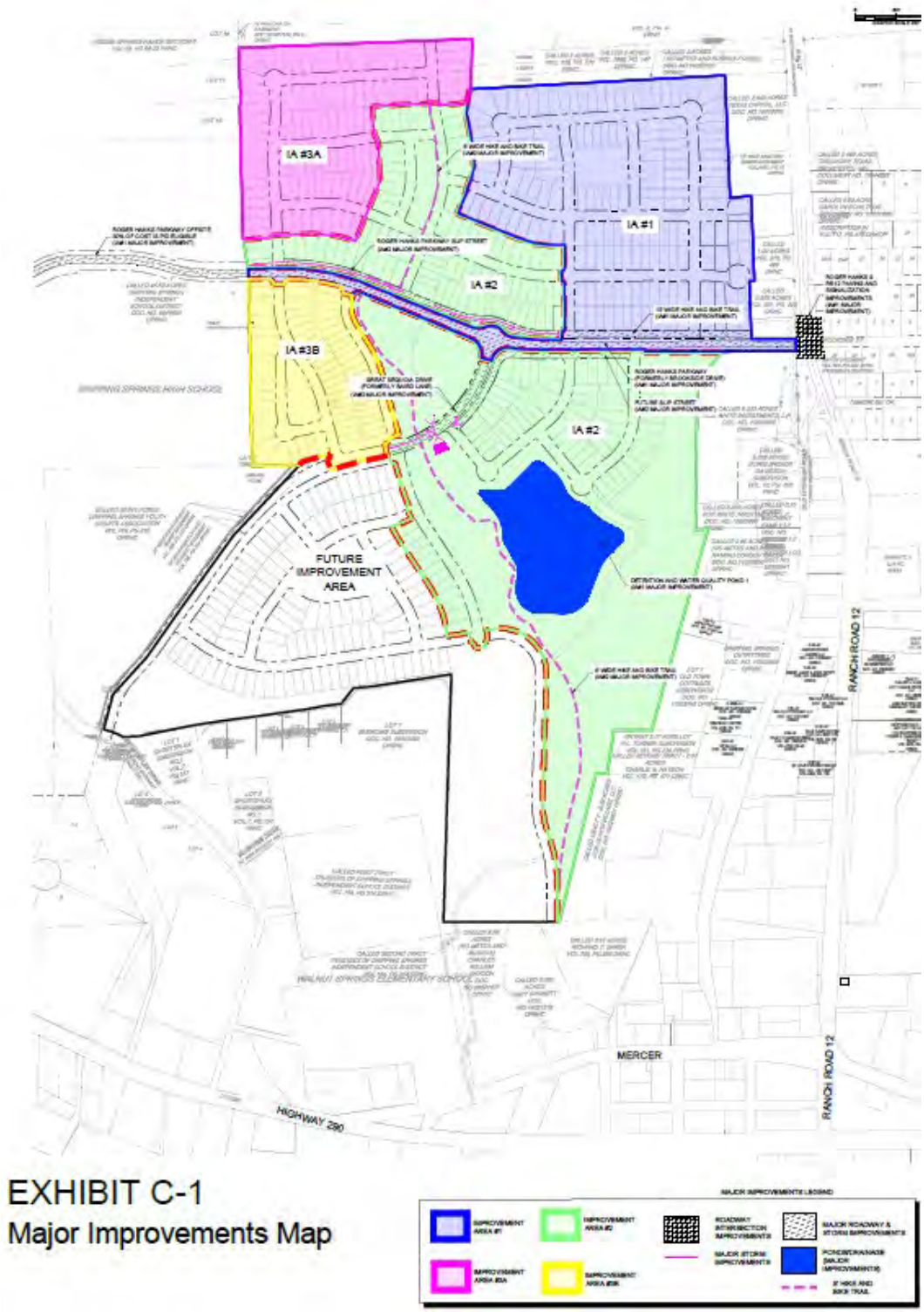


EXHIBIT C-1
Major Improvements Map

EXHIBIT T – MAP OF IMPROVEMENT AREA #1 IMPROVEMENTS

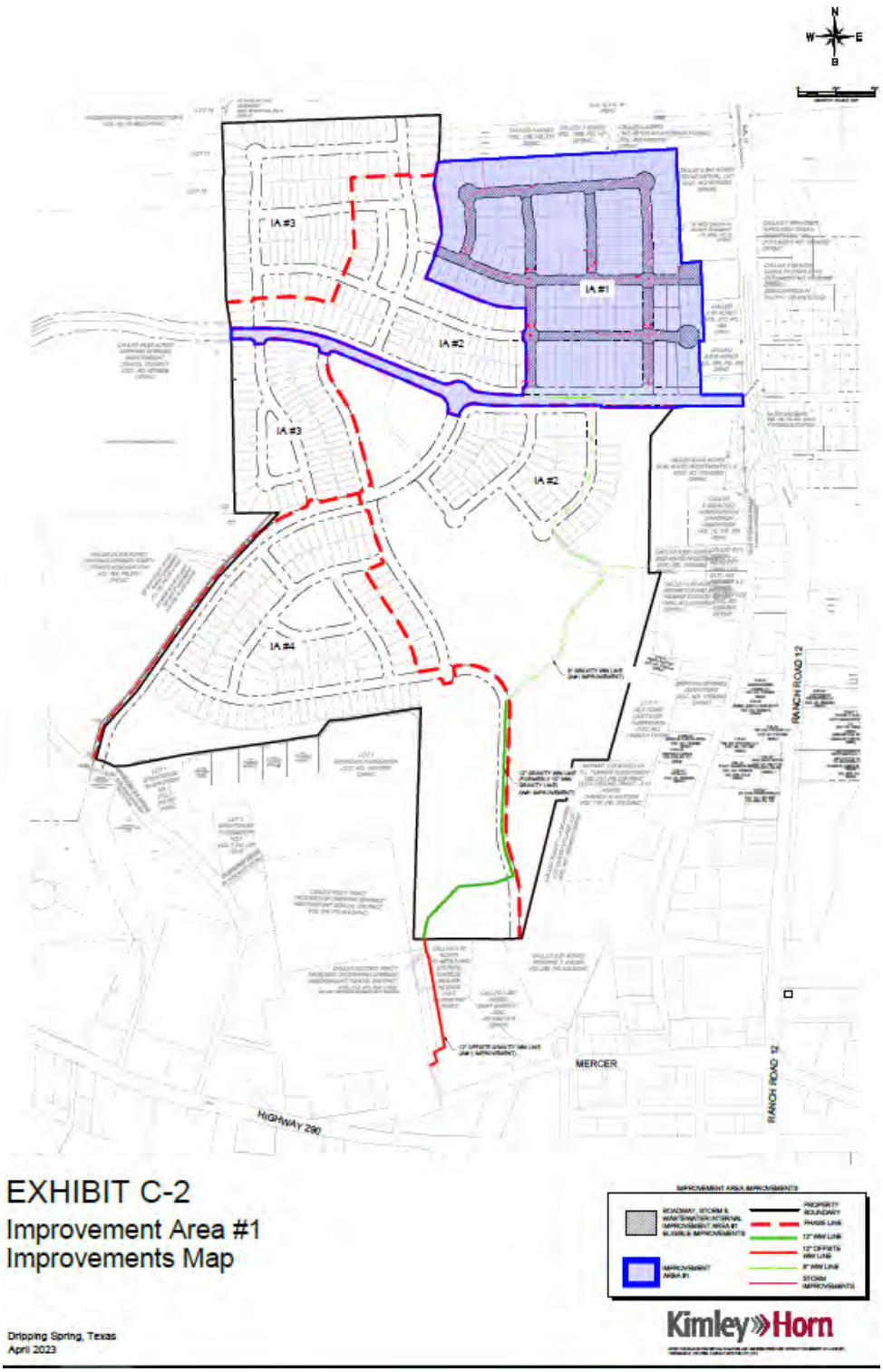


EXHIBIT U – MAP OF IMPROVEMENT AREA #2 IMPROVEMENTS

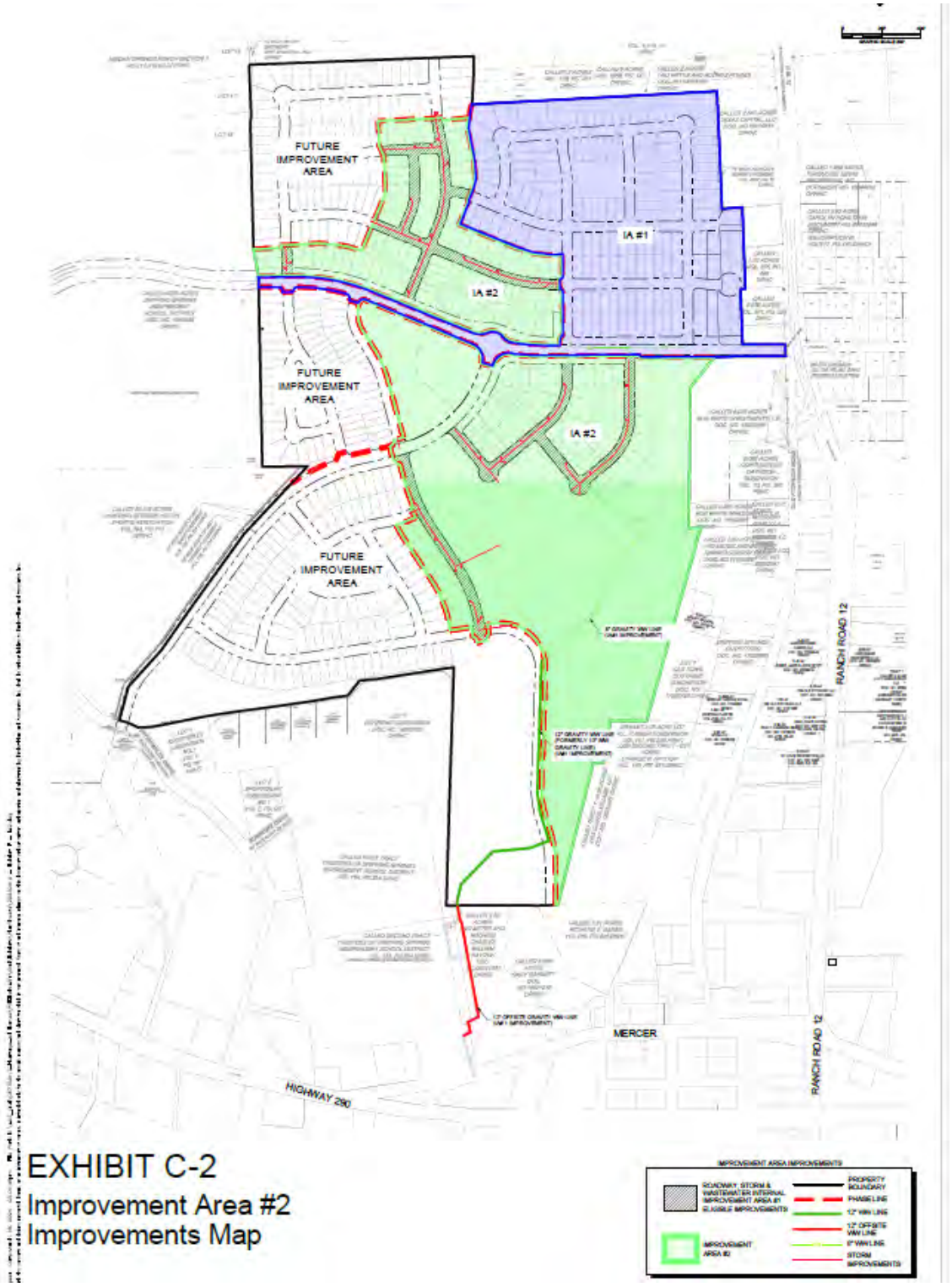


EXHIBIT V – MAP OF IMPROVEMENT AREA #3A IMPROVEMENTS AND IMPROVEMENT AREA #3B IMPROVEMENTS

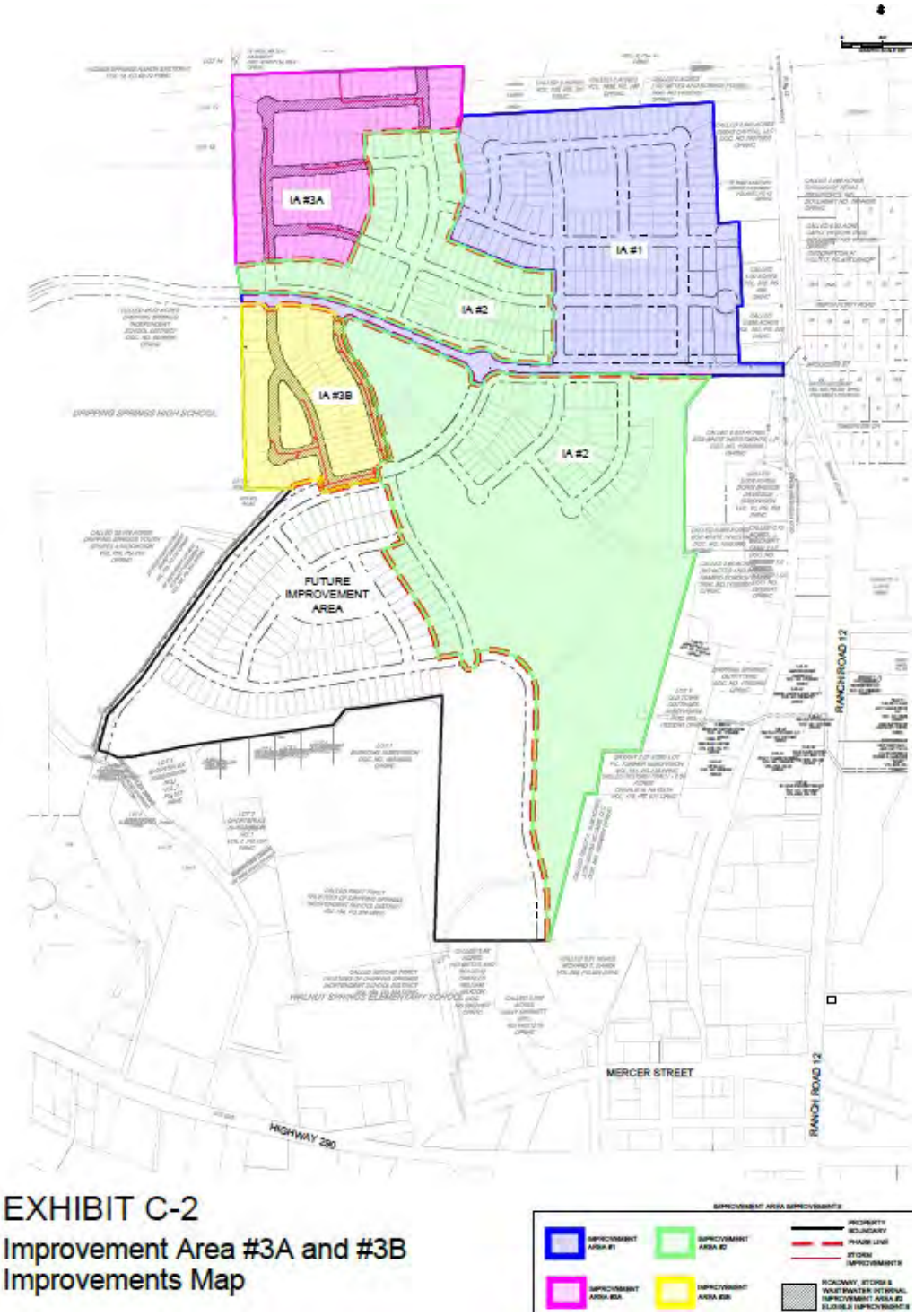


EXHIBIT C-2

Improvement Area #3A and #3B Improvements Map

EXHIBIT W – NOTICE OF PID ASSESSMENT TERMINATION

P3Works, LLC
9284 Huntington Square, Suite 100
North Richland Hills, TX 76182

[Date]
Hays County Clerk's Office
Honorable [County Clerk Name]
712 S Stagecoach Trail #2008
San Marcos, Texas 78666

Re: **City of Dripping Springs Lien Release documents for filing**

Dear Ms./Mr. [County Clerk Name],

Enclosed is a lien release that the City of Dripping Springs is requesting to be filed in your office. Lien release for [insert legal description]. Recording Numbers: [Plat]. Please forward copies of the filed documents below:

City of Dripping Springs
Attn: [City Secretary]
511 W Mercer St
Dripping Springs, TX 78620

Please contact me if you have any questions or need additional information.

Sincerely,
[Signature]

P3Works, LLC
P: (817) 393-0353
admin@p3-works.com

AFTER RECORDING RETURN TO:

[City Secretary Name]
511 W Mercer St
Dripping Springs, TX 78620

NOTICE OF CONFIDENTIALITY RIGHTS: IF YOU ARE A NATURAL PERSON, YOU MAY REMOVE OR STRIKE ANY OR ALL OF THE FOLLOWING INFORMATION FROM ANY INSTRUMENT THAT TRANSFERS AN INTEREST IN REAL PROPERTY BEFORE IT IS FILED FOR RECORD IN THE PUBLIC RECORDS: YOUR SOCIAL SECURITY NUMBER OR YOUR DRIVER'S LICENSE NUMBER.

FULL RELEASE OF PUBLIC IMPROVEMENT DISTRICT LIEN

STATE OF TEXAS	**§**	
	§	**KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF HAYS	**§**	

THIS FULL RELEASE OF PUBLIC IMPROVEMENT DISTRICT LIEN (this "Full Release") is executed and delivered as of the Effective Date by the City of Dripping Springs, Texas.

RECITALS

WHEREAS, the governing body (hereinafter referred to as the "City Council") of the City of Dripping Springs, Texas (hereinafter referred to as the "City "), is authorized by Chapter 372, Texas Local Government Code, as amended (hereinafter referred to as the "Act"), to create public improvement districts within the corporate limits and extraterritorial jurisdiction of the City; and

WHEREAS, on or about November 14, 2017, the City Council for the City, approved Resolution No. 2017-74, creating the Heritage Public Improvement District; and

WHEREAS, the Heritage Public Improvement District consists of approximately 188.943 contiguous acres located within the City; and

WHEREAS, on or about ____, the City Council, approved an ordinance, (hereinafter referred to as the "Assessment Ordinance") approving a service and assessment plan and assessment roll for the Property within the Heritage Public Improvement District; and

WHEREAS, the Assessment Ordinance imposed an assessment in the amount of $_____ (hereinafter referred to as the "Lien Amount") for the following property:

[legal description], a subdivision in Hays County, Texas, according to the map or plat of record in Document/Instrument No. _____ of the Plat Records of Hays County, Texas (hereinafter referred to as the "Property"); and

WHEREAS, the property owners of the Property have paid unto the City the Lien Amount.

RELEASE

NOW THEREFORE, the City, the owner and holder of the Lien, Instrument No. _____, in the Real Property Records of Hays County, Texas, in the amount of the Lien Amount against the Property releases and discharges, and by these presents does hereby release and discharge, the above-described Property from said lien held by the undersigned securing said indebtedness.

EXECUTED to be **EFFECTIVE** this the _____ day of _____, 20__.

CITY OF DRIPPING SPRINGS, TEXAS,

By: _____
[Manager Name], City Manager

ATTEST:

_____
[Secretary Name], City Secretary

STATE OF TEXAS §
§
COUNTY OF HAYS §

This instrument was acknowledged before me on the ____ day of _____, 20__, by [Manager Name], City Manager for the City of Dripping Springs, Texas, on behalf of said municipality.

_____
Notary Public, State of Texas

EXHIBIT X – HOMEBUYER DISCLOSURES

Homebuyer disclosures for the following lot types are contained in this Exhibit:

- Lot Type 1
- Lot Type 2
- Lot Type 3
- Lot Type 4
- Lot Type 5
- Lot Type 6
- Lot Type 7
- Improvement Area #3A Initial Parcel
- Lot Type 8
- Lot Type 9
- Lot Type 10
- Lot Type 11
- Lot Type 12
- Lot Type 13
- Improvement Area #3B Initial Parcel

LOT TYPE 1 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 1 PRINCIPAL ASSESSMENT: $40,789.45

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____
SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 1

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	$ 687.13	$ 2,186.71	$ 357.35	$ 203.95	$ 3,435.14
2027	716.75	2,155.79	200.03	200.51	3,273.08
2028	746.37	2,123.53	204.03	196.93	3,270.86
2029	781.91	2,089.95	208.12	193.20	3,273.17
2030	817.45	2,054.76	212.28	189.29	3,273.77
2031	852.99	2,017.98	216.52	185.20	3,272.69
2032	894.45	1,972.13	220.85	180.93	3,268.37
2033	941.84	1,924.05	225.27	176.46	3,267.63
2034	995.15	1,873.43	229.78	171.75	3,270.11
2035	1,042.54	1,819.94	234.37	166.78	3,263.63
2036	1,101.78	1,763.90	239.06	161.56	3,266.30
2037	1,161.01	1,704.68	243.84	156.06	3,265.59
2038	1,220.25	1,642.28	248.72	150.25	3,261.49
2039	1,285.41	1,576.69	253.69	144.15	3,259.94
2040	1,356.49	1,507.60	258.77	137.72	3,260.57
2041	1,427.57	1,434.69	263.94	130.94	3,257.14
2042	1,504.58	1,357.96	269.22	123.80	3,255.55
2043	1,587.51	1,277.08	274.60	116.28	3,255.47
2044	1,676.36	1,191.76	280.10	108.34	3,256.55
2045	1,765.21	1,099.56	285.70	99.96	3,250.43
2046	1,865.91	1,002.47	291.41	91.13	3,250.93
2047	1,972.54	899.84	297.24	81.80	3,251.42
2048	2,079.16	791.35	303.18	71.94	3,245.64
2049	2,197.63	677.00	309.25	61.55	3,245.42
2050	2,322.02	556.13	315.43	50.56	3,244.15
2051	2,452.34	428.42	321.74	38.95	3,241.45
2052	2,594.51	293.54	328.18	26.69	3,242.91
2053	2,742.60	150.84	334.74	13.71	3,241.89
Total	**$ 40,789.45**	**$ 39,574.06**	**$ 7,427.41**	**$ 3,630.39**	**$ 91,421.30**

Footnotes:

[a] Interest rate on Improvement Area #1 Bonds is 4.500% for term bonds due September 1, 2030, and 5.500% for term bonds due September 1, 2053.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 2 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 2 PRINCIPAL ASSESSMENT: $42,643.51

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____
SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 2

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	$ 718.36	$ 2,286.11	$ 373.59	$ 213.22	$ 3,591.28
2027	749.33	2,253.78	209.13	209.63	3,421.86
2028	780.29	2,220.06	213.31	205.88	3,419.54
2029	817.45	2,184.95	217.58	201.98	3,421.95
2030	854.60	2,148.16	221.93	197.89	3,422.58
2031	891.76	2,109.70	226.37	193.62	3,421.45
2032	935.11	2,061.77	230.89	189.16	3,416.93
2033	984.65	2,011.51	235.51	184.48	3,416.16
2034	1,040.39	1,958.58	240.22	179.56	3,418.75
2035	1,089.93	1,902.66	245.02	174.36	3,411.98
2036	1,151.86	1,844.08	249.93	168.91	3,414.77
2037	1,213.79	1,782.17	254.92	163.15	3,414.03
2038	1,275.71	1,716.93	260.02	157.08	3,409.74
2039	1,343.83	1,648.36	265.22	150.70	3,408.11
2040	1,418.15	1,576.13	270.53	143.98	3,408.78
2041	1,492.46	1,499.90	275.94	136.89	3,405.19
2042	1,572.97	1,419.68	281.46	129.43	3,403.53
2043	1,659.67	1,335.13	287.09	121.56	3,403.45
2044	1,752.56	1,245.93	292.83	113.27	3,404.58
2045	1,845.45	1,149.54	298.68	104.50	3,398.17
2046	1,950.73	1,048.04	304.66	95.28	3,398.70
2047	2,062.20	940.75	310.75	85.52	3,399.22
2048	2,173.67	827.32	316.97	75.21	3,393.17
2049	2,297.52	707.77	323.31	64.34	3,392.94
2050	2,427.57	581.41	329.77	52.86	3,391.61
2051	2,563.81	447.89	336.37	40.72	3,388.79
2052	2,712.44	306.88	343.09	27.90	3,390.32
2053	2,867.26	157.70	349.96	14.34	3,389.25
Total	**$ 42,643.51**	**$ 41,372.88**	**$ 7,765.02**	**$ 3,795.40**	**$ 95,576.81**

Footnotes:

[a] Interest rate on Improvement Area #1 Bonds is 4.500% for term bonds due September 1, 2030, and 5.500% for term bonds due September 1, 2053.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 3 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 3 PRINCIPAL ASSESSMENT: $46,351.64

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 3

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	$ 780.83	$ 2,484.90	$ 406.08	$ 231.76	$ 3,903.56
2027	814.49	2,449.76	227.31	227.85	3,719.41
2028	848.14	2,413.11	231.86	223.78	3,716.89
2029	888.53	2,374.94	236.49	219.54	3,719.51
2030	928.92	2,334.96	241.22	215.10	3,720.20
2031	969.31	2,293.16	246.05	210.45	3,718.96
2032	1,016.42	2,241.06	250.97	205.61	3,714.06
2033	1,070.27	2,186.42	255.99	200.53	3,713.21
2034	1,130.86	2,128.90	261.11	195.17	3,716.03
2035	1,184.71	2,068.11	266.33	189.52	3,708.67
2036	1,252.02	2,004.43	271.66	183.60	3,711.71
2037	1,319.33	1,937.14	277.09	177.34	3,710.90
2038	1,386.65	1,866.22	282.63	170.74	3,706.24
2039	1,460.69	1,791.69	288.29	163.81	3,704.47
2040	1,541.46	1,713.18	294.05	156.50	3,705.20
2041	1,622.24	1,630.33	299.93	148.80	3,701.29
2042	1,709.75	1,543.13	305.93	140.68	3,699.49
2043	1,803.98	1,451.23	312.05	132.14	3,699.40
2044	1,904.95	1,354.27	318.29	123.12	3,700.63
2045	2,005.92	1,249.50	324.66	113.59	3,693.67
2046	2,120.36	1,139.17	331.15	103.56	3,694.24
2047	2,241.52	1,022.55	337.77	92.96	3,694.80
2048	2,362.68	899.27	344.53	81.75	3,688.23
2049	2,497.31	769.32	351.42	69.94	3,687.98
2050	2,638.66	631.97	358.45	57.45	3,686.53
2051	2,786.75	486.84	365.62	44.26	3,683.47
2052	2,948.30	333.57	372.93	30.32	3,685.13
2053	3,116.59	171.41	380.39	15.58	3,683.97
Total	**$ 46,351.64**	**$ 44,970.52**	**$ 8,440.24**	**$ 4,125.44**	**$ 103,887.84**

Footnotes:

[a] Interest rate on Improvement Area #1 Bonds is 4.500% for term bonds due September 1, 2030, and 5.500% for term bonds due September 1, 2053.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 4 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 4 PRINCIPAL ASSESSMENT: $39,826.99

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____
SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 4

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	$ 666.39	$ 2,009.05	$ 197.66	$ 199.13	$ 3,072.23
2027	695.36	1,980.73	251.85	195.80	3,123.75
2028	724.34	1,951.18	256.89	192.33	3,124.73
2029	753.31	1,920.39	262.02	188.70	3,124.43
2030	782.28	1,888.38	267.26	184.94	3,122.86
2031	817.05	1,855.13	272.61	181.03	3,125.82
2032	851.82	1,820.41	278.06	176.94	3,127.23
2033	892.38	1,777.81	283.62	172.68	3,126.50
2034	932.95	1,733.20	289.30	168.22	3,123.66
2035	979.30	1,686.55	295.08	163.56	3,124.49
2036	1,031.46	1,637.58	300.98	158.66	3,128.68
2037	1,077.81	1,586.01	307.00	153.50	3,124.33
2038	1,135.76	1,532.12	313.14	148.11	3,129.14
2039	1,187.91	1,475.33	319.41	142.43	3,125.08
2040	1,245.86	1,415.94	325.79	136.49	3,124.08
2041	1,309.60	1,353.64	332.31	130.26	3,125.82
2042	1,379.14	1,288.16	338.96	123.72	3,129.97
2043	1,448.68	1,219.21	345.74	116.82	3,130.44
2044	1,518.21	1,146.77	352.65	109.58	3,127.21
2045	1,593.54	1,070.86	359.70	101.99	3,126.09
2046	1,680.46	987.20	366.90	94.02	3,128.58
2047	1,767.38	898.98	374.23	85.62	3,126.21
2048	1,865.89	806.19	381.72	76.78	3,130.58
2049	1,964.40	708.23	389.35	67.45	3,129.44
2050	2,068.71	605.10	397.14	57.63	3,128.58
2051	2,178.81	496.49	405.08	47.28	3,127.67
2052	2,300.50	382.10	413.19	36.39	3,132.18
2053	2,422.19	261.33	421.45	24.89	3,129.85
2054	2,555.46	134.16	429.88	12.78	3,132.28
Total	**$ 39,826.99**	**$ 37,628.22**	**$ 9,528.98**	**$ 3,647.74**	**$ 90,631.92**

Footnotes:

[a] Interest rate on Improvement Area #2 Bonds is 4.250% for term bonds due September 1, 2031, and 5.250% for term bonds due September 1, 2054.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 5 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO CITY OF DRIPPING SPRINGS, TEXAS CONCERNING THE FOLLOWING PROPERTY

_____

STREET ADDRESS

LOT TYPE 5 PRINCIPAL ASSESSMENT: $41,723.51

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 5

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	$ 698.12	$ 2,104.72	$ 207.07	$ 208.62	$ 3,218.53
2027	728.48	2,075.05	263.84	205.13	3,272.50
2028	758.83	2,044.09	269.12	201.48	3,273.52
2029	789.18	2,011.84	274.50	197.69	3,273.22
2030	819.54	1,978.30	279.99	193.74	3,271.57
2031	855.96	1,943.47	285.59	189.65	3,274.67
2032	892.38	1,907.09	291.30	185.37	3,276.15
2033	934.88	1,862.47	297.13	180.91	3,275.39
2034	977.37	1,815.73	303.07	176.23	3,272.40
2035	1,025.94	1,766.86	309.13	171.34	3,273.28
2036	1,080.57	1,715.56	315.32	166.21	3,277.67
2037	1,129.14	1,661.53	321.62	160.81	3,273.11
2038	1,189.85	1,605.08	328.05	155.17	3,278.14
2039	1,244.48	1,545.58	334.62	149.22	3,273.90
2040	1,305.19	1,483.36	341.31	142.99	3,272.85
2041	1,371.96	1,418.10	348.13	136.47	3,274.67
2042	1,444.81	1,349.50	355.10	129.61	3,279.02
2043	1,517.66	1,277.26	362.20	122.38	3,279.51
2044	1,590.51	1,201.38	369.44	114.80	3,276.13
2045	1,669.43	1,121.85	376.83	106.84	3,274.96
2046	1,760.49	1,034.21	384.37	98.50	3,277.56
2047	1,851.55	941.78	392.06	89.69	3,275.08
2048	1,954.75	844.58	399.90	80.44	3,279.66
2049	2,057.95	741.95	407.89	70.66	3,278.46
2050	2,167.22	633.91	416.05	60.37	3,277.56
2051	2,282.56	520.13	424.37	49.54	3,276.60
2052	2,410.04	400.30	432.86	38.12	3,281.33
2053	2,537.53	273.77	441.52	26.07	3,278.89
2054	2,677.15	140.55	450.35	13.39	3,281.44
Total	**$ 41,723.51**	**$ 39,420.04**	**$ 9,982.74**	**$ 3,821.44**	**$ 94,947.73**

Footnotes:

[a] Interest rate on Improvement Area #2 Bonds is 4.250% for term bonds due September 1, 2031, and 5.250% for term bonds due September 1, 2054.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 6 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 6 PRINCIPAL ASSESSMENT: $43,620.03

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____
SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____
SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 6

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	$ 729.86	$ 2,200.39	$ 216.48	$ 218.10	$ 3,364.83
2027	761.59	2,169.37	275.84	214.45	3,421.25
2028	793.32	2,137.00	281.35	210.64	3,422.32
2029	825.06	2,103.29	286.98	206.68	3,422.00
2030	856.79	2,068.22	292.72	202.55	3,420.28
2031	894.87	2,031.81	298.57	198.27	3,423.52
2032	932.95	1,993.78	304.54	193.79	3,425.06
2033	977.37	1,947.13	310.64	189.13	3,424.27
2034	1,021.80	1,898.26	316.85	184.24	3,421.15
2035	1,072.57	1,847.17	323.18	179.13	3,422.06
2036	1,129.69	1,793.54	329.65	173.77	3,426.65
2037	1,180.46	1,737.06	336.24	168.12	3,421.88
2038	1,243.93	1,678.04	342.97	162.22	3,427.15
2039	1,301.05	1,615.84	349.83	156.00	3,422.71
2040	1,364.51	1,550.79	356.82	149.49	3,421.62
2041	1,434.33	1,482.56	363.96	142.67	3,423.52
2042	1,510.49	1,410.84	371.24	135.50	3,428.07
2043	1,586.64	1,335.32	378.66	127.95	3,428.57
2044	1,662.80	1,255.99	386.24	120.01	3,425.04
2045	1,745.31	1,172.85	393.96	111.70	3,423.82
2046	1,840.51	1,081.22	401.84	102.97	3,426.54
2047	1,935.71	984.59	409.88	93.77	3,423.95
2048	2,043.60	882.97	418.07	84.09	3,428.73
2049	2,151.49	775.68	426.44	73.87	3,427.48
2050	2,265.73	662.73	434.96	63.12	3,426.53
2051	2,386.31	543.77	443.66	51.79	3,425.54
2052	2,519.59	418.49	452.54	39.86	3,430.48
2053	2,652.87	286.21	461.59	27.26	3,427.93
2054	2,798.84	146.94	470.82	13.99	3,430.59
Total	**$ 43,620.03**	**$ 41,211.86**	**$ 10,436.50**	**$ 3,995.14**	**$ 99,263.53**

Footnotes:

[a] Interest rate on Improvement Area #2 Bonds is 4.250% for term bonds due September 1, 2031, and 5.250% for term bonds due September 1, 2054.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 7 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 7 PRINCIPAL ASSESSMENT: $47,413.08

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____
SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 7

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs	Additional Interest	Total Annual Installment[b]
2026	$ 793.32	$ 2,391.73	$ 235.31	$ 237.07	$ 3,657.42
2027	827.81	2,358.01	299.82	233.10	3,718.75
2028	862.31	2,322.83	305.82	228.96	3,719.91
2029	896.80	2,286.18	311.93	224.65	3,719.56
2030	931.29	2,248.07	318.17	220.16	3,717.70
2031	972.68	2,208.49	324.54	215.51	3,721.21
2032	1,014.07	2,167.15	331.03	210.64	3,722.89
2033	1,062.36	2,116.45	337.65	205.57	3,722.03
2034	1,110.65	2,063.33	344.40	200.26	3,718.64
2035	1,165.84	2,007.80	351.29	194.71	3,719.63
2036	1,227.92	1,949.50	358.31	188.88	3,724.62
2037	1,283.11	1,888.11	365.48	182.74	3,719.44
2038	1,352.10	1,823.95	372.79	176.32	3,725.16
2039	1,414.18	1,756.35	380.25	169.56	3,720.34
2040	1,483.17	1,685.64	387.85	162.49	3,719.15
2041	1,559.05	1,611.48	395.61	155.08	3,721.21
2042	1,641.83	1,533.53	403.52	147.28	3,726.16
2043	1,724.61	1,451.43	411.59	139.07	3,726.71
2044	1,807.40	1,365.20	419.82	130.45	3,722.87
2045	1,897.08	1,274.83	428.22	121.41	3,721.54
2046	2,000.55	1,175.24	436.78	111.93	3,724.50
2047	2,104.03	1,070.21	445.52	101.92	3,721.68
2048	2,221.30	959.75	454.43	91.40	3,726.88
2049	2,338.58	843.13	463.52	80.30	3,725.52
2050	2,462.75	720.35	472.79	68.61	3,724.49
2051	2,593.82	591.06	482.24	56.29	3,723.41
2052	2,738.69	454.88	491.89	43.32	3,728.78
2053	2,883.55	311.10	501.73	29.63	3,726.01
2054	3,042.22	159.72	511.76	15.21	3,728.91
Total	**$ 47,413.08**	**$ 44,795.50**	**$ 11,344.03**	**$ 4,342.54**	**$ 107,895.14**

Footnotes:

[a] Interest rate on Improvement Area #2 Bonds is 4.250% for term bonds due September 1, 2031, and 5.250% for term bonds due September 1, 2054.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

IMPROVEMENT AREA #3A INITIAL PARCEL DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO CITY OF DRIPPING SPRINGS, TEXAS CONCERNING THE FOLLOWING PROPERTY

_____

STREET ADDRESS

IMPROVEMENT AREA #3A INITIAL PARCEL PRINCIPAL ASSESSMENT: $4,262,000.00

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by _____and _____ , known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this_____ , 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - IMPROVEMENT AREA #3A INITIAL PARCEL

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	201,024.33	-	-	(201,024.33)	-
2027	59,000.00	255,720.00	24,281.44	21,310.00	-	360,311.44
2028	62,000.00	252,180.00	24,767.07	21,015.00	-	359,962.07
2029	66,000.00	248,460.00	25,262.41	20,705.00	-	360,427.41
2030	69,000.00	244,500.00	25,767.66	20,375.00	-	359,642.66
2031	73,000.00	240,360.00	26,283.01	20,030.00	-	359,673.01
2032	78,000.00	235,980.00	26,808.67	19,665.00	-	360,453.67
2033	82,000.00	231,300.00	27,344.84	19,275.00	-	359,919.84
2034	87,000.00	226,380.00	27,891.74	18,865.00	-	360,136.74
2035	92,000.00	221,160.00	28,449.57	18,430.00	-	360,039.57
2036	98,000.00	215,640.00	29,018.56	17,970.00	-	360,628.56
2037	103,000.00	209,760.00	29,598.93	17,480.00	-	359,838.93
2038	109,000.00	203,580.00	30,190.91	16,965.00	-	359,735.91
2039	116,000.00	197,040.00	30,794.73	16,420.00	-	360,254.73
2040	123,000.00	190,080.00	31,410.62	15,840.00	-	360,330.62
2041	130,000.00	182,700.00	32,038.83	15,225.00	-	359,963.83
2042	138,000.00	174,900.00	32,679.61	14,575.00	-	360,154.61
2043	146,000.00	166,620.00	33,333.20	13,885.00	-	359,838.20
2044	155,000.00	157,860.00	33,999.86	13,155.00	-	360,014.86
2045	164,000.00	148,560.00	34,679.86	12,380.00	-	359,619.86
2046	174,000.00	138,720.00	35,373.46	11,560.00	-	359,653.46
2047	185,000.00	128,280.00	36,080.93	10,690.00	-	360,050.93
2048	196,000.00	117,180.00	36,802.55	9,765.00	-	359,747.55
2049	208,000.00	105,420.00	37,538.60	8,785.00	-	359,743.60
2050	221,000.00	92,940.00	38,289.37	7,745.00	-	359,974.37
2051	235,000.00	79,680.00	39,055.16	6,640.00	-	360,375.16
2052	249,000.00	65,580.00	39,836.26	5,465.00	-	359,881.26
2053	265,000.00	50,640.00	40,632.99	4,220.00	-	360,492.99
2054	281,000.00	34,740.00	41,445.65	2,895.00	-	360,080.65
2055	298,000.00	17,880.00	42,274.56	1,490.00	-	359,644.56
Total	**$ 4,262,000.00**	**$ 5,034,864.33**	**$ 941,931.05**	**$ 402,820.00**	**$ (201,024.33)**	**$ 10,440,591.05**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 8 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 8 PRINCIPAL ASSESSMENT: $41,728.53

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information
of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by _____and _____ , known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this_____ , 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 8

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	1,968.20	-	-	(1,968.20)	-
2027	577.66	2,503.71	237.74	208.64	-	3,527.75
2028	607.03	2,469.05	242.49	205.75	-	3,524.33
2029	646.19	2,432.63	247.34	202.72	-	3,528.88
2030	675.57	2,393.86	252.29	199.49	-	3,521.20
2031	714.73	2,353.32	257.33	196.11	-	3,521.50
2032	763.68	2,310.44	262.48	192.54	-	3,529.14
2033	802.85	2,264.62	267.73	188.72	-	3,523.91
2034	851.80	2,216.45	273.08	184.70	-	3,526.04
2035	900.76	2,165.34	278.54	180.45	-	3,525.09
2036	959.50	2,111.30	284.12	175.94	-	3,530.85
2037	1,008.46	2,053.72	289.80	171.14	-	3,523.12
2038	1,067.20	1,993.22	295.59	166.10	-	3,522.11
2039	1,135.74	1,929.19	301.51	160.77	-	3,527.19
2040	1,204.27	1,861.04	307.54	155.09	-	3,527.94
2041	1,272.81	1,788.79	313.69	149.07	-	3,524.35
2042	1,351.13	1,712.42	319.96	142.70	-	3,526.21
2043	1,429.46	1,631.35	326.36	135.95	-	3,523.12
2044	1,517.58	1,545.58	332.89	128.80	-	3,524.85
2045	1,605.70	1,454.53	339.54	121.21	-	3,520.98
2046	1,703.60	1,358.18	346.34	113.18	-	3,521.31
2047	1,811.30	1,255.97	353.26	104.66	-	3,525.20
2048	1,919.00	1,147.29	360.33	95.61	-	3,522.23
2049	2,036.49	1,032.15	367.53	86.01	-	3,522.19
2050	2,163.77	909.96	374.88	75.83	-	3,524.45
2051	2,300.85	780.13	382.38	65.01	-	3,528.37
2052	2,437.92	642.08	390.03	53.51	-	3,523.54
2053	2,594.57	495.81	397.83	41.32	-	3,529.53
2054	2,751.22	340.13	405.79	28.34	-	3,525.49
2055	2,917.67	175.06	413.90	14.59	-	3,521.22
Total	**$ 41,728.53**	**$ 49,295.51**	**$ 9,222.29**	**$ 3,943.94**	**$ (1,968.20)**	**$ 102,222.08**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 9 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 9 PRINCIPAL ASSESSMENT: $43,625.28

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information
of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by _____and _____ , known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this_____ , 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 9

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	2,057.66	-	-	(2,057.66)	-
2027	603.92	2,617.52	248.54	218.13	-	3,688.10
2028	634.62	2,581.28	253.51	215.11	-	3,684.52
2029	675.57	2,543.20	258.58	211.93	-	3,689.29
2030	706.28	2,502.67	263.75	208.56	-	3,681.26
2031	747.22	2,460.29	269.03	205.02	-	3,681.57
2032	798.40	2,415.46	274.41	201.29	-	3,689.56
2033	839.34	2,367.56	279.90	197.30	-	3,684.09
2034	890.52	2,317.20	285.50	193.10	-	3,686.31
2035	941.70	2,263.77	291.21	188.65	-	3,685.32
2036	1,003.12	2,207.26	297.03	183.94	-	3,691.35
2037	1,054.29	2,147.08	302.97	178.92	-	3,683.26
2038	1,115.71	2,083.82	309.03	173.65	-	3,682.21
2039	1,187.36	2,016.88	315.21	168.07	-	3,687.52
2040	1,259.01	1,945.63	321.52	162.14	-	3,688.30
2041	1,330.66	1,870.09	327.95	155.84	-	3,684.54
2042	1,412.55	1,790.25	334.50	149.19	-	3,686.50
2043	1,494.44	1,705.50	341.19	142.13	-	3,683.26
2044	1,586.56	1,615.83	348.02	134.65	-	3,685.07
2045	1,678.68	1,520.64	354.98	126.72	-	3,681.02
2046	1,781.04	1,419.92	362.08	118.33	-	3,681.37
2047	1,893.64	1,313.06	369.32	109.42	-	3,685.43
2048	2,006.23	1,199.44	376.71	99.95	-	3,682.33
2049	2,129.06	1,079.07	384.24	89.92	-	3,682.29
2050	2,262.13	951.32	391.93	79.28	-	3,684.65
2051	2,405.43	815.59	399.76	67.97	-	3,688.75
2052	2,548.73	671.27	407.76	55.94	-	3,683.70
2053	2,712.51	518.34	415.91	43.20	-	3,689.96
2054	2,876.28	355.59	424.23	29.63	-	3,685.74
2055	3,050.29	183.02	432.72	15.25	-	3,681.27
Total	**$ 43,625.28**	**$ 51,536.22**	**$ 9,641.48**	**$ 4,123.21**	**$ (2,057.66)**	**$ 106,868.53**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 10 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 10 PRINCIPAL ASSESSMENT: $47,418.78

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information
of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by _____and _____ , known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this_____ , 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 10

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	2,236.59	-	-	(2,236.59)	-
2027	656.43	2,845.13	270.15	237.09	-	4,008.81
2028	689.81	2,805.74	275.56	233.81	-	4,004.92
2029	734.31	2,764.35	281.07	230.36	-	4,010.10
2030	767.69	2,720.29	286.69	226.69	-	4,001.36
2031	812.19	2,674.23	292.42	222.85	-	4,001.70
2032	867.82	2,625.50	298.27	218.79	-	4,010.39
2033	912.33	2,573.43	304.24	214.45	-	4,004.45
2034	967.96	2,518.69	310.32	209.89	-	4,006.86
2035	1,023.59	2,460.61	316.53	205.05	-	4,005.78
2036	1,090.34	2,399.20	322.86	199.93	-	4,012.33
2037	1,145.97	2,333.78	329.32	194.48	-	4,003.55
2038	1,212.73	2,265.02	335.90	188.75	-	4,002.40
2039	1,290.61	2,192.26	342.62	182.69	-	4,008.17
2040	1,368.49	2,114.82	349.47	176.23	-	4,009.02
2041	1,446.37	2,032.71	356.46	169.39	-	4,004.94
2042	1,535.38	1,945.93	363.59	162.16	-	4,007.06
2043	1,624.39	1,853.81	370.86	154.48	-	4,003.54
2044	1,724.52	1,756.34	378.28	146.36	-	4,005.51
2045	1,824.66	1,652.87	385.85	137.74	-	4,001.11
2046	1,935.91	1,543.39	393.56	128.62	-	4,001.48
2047	2,058.30	1,427.24	401.43	118.94	-	4,005.91
2048	2,180.69	1,303.74	409.46	108.64	-	4,002.53
2049	2,314.20	1,172.90	417.65	97.74	-	4,002.49
2050	2,458.83	1,034.05	426.01	86.17	-	4,005.06
2051	2,614.60	886.52	434.53	73.88	-	4,009.51
2052	2,770.36	729.64	443.22	60.80	-	4,004.02
2053	2,948.38	563.42	452.08	46.95	-	4,010.83
2054	3,126.39	386.52	461.12	32.21	-	4,006.24
2055	3,315.53	198.93	470.34	16.58	-	4,001.39
Total	**$ 47,418.78**	**$ 56,017.63**	**$ 10,479.87**	**$ 4,481.75**	**$ (2,236.59)**	**$ 116,161.45**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 11 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 11 PRINCIPAL ASSESSMENT: $39,820.62

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information
of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by _____and _____ , known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this_____ , 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____
SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 11

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	1,878.21	-	-	(1,878.21)	-
2027	548.45	2,389.24	226.87	199.10	-	3,363.66
2028	577.32	2,356.33	231.40	196.36	-	3,361.41
2029	620.62	2,321.69	236.03	193.47	-	3,371.81
2030	649.48	2,284.45	240.75	190.37	-	3,365.06
2031	692.78	2,245.48	245.57	187.12	-	3,370.96
2032	721.65	2,203.92	250.48	183.66	-	3,359.70
2033	764.95	2,160.62	255.49	180.05	-	3,361.11
2034	808.25	2,114.72	260.60	176.23	-	3,359.79
2035	865.98	2,066.23	265.81	172.19	-	3,370.20
2036	909.28	2,014.27	271.13	167.86	-	3,362.53
2037	967.01	1,959.71	276.55	163.31	-	3,366.58
2038	1,024.74	1,901.69	282.08	158.47	-	3,366.99
2039	1,082.47	1,840.21	287.72	153.35	-	3,363.75
2040	1,140.21	1,775.26	293.48	147.94	-	3,356.88
2041	1,212.37	1,706.85	299.34	142.24	-	3,360.80
2042	1,284.54	1,634.10	305.33	136.18	-	3,360.15
2043	1,371.13	1,557.03	311.44	129.75	-	3,369.36
2044	1,443.30	1,474.76	317.67	122.90	-	3,358.63
2045	1,529.90	1,388.16	324.02	115.68	-	3,357.76
2046	1,630.93	1,296.37	330.50	108.03	-	3,365.83
2047	1,731.96	1,198.52	337.11	99.88	-	3,367.46
2048	1,832.99	1,094.60	343.85	91.22	-	3,362.66
2049	1,948.45	984.62	350.73	82.05	-	3,365.85
2050	2,063.92	867.71	357.74	72.31	-	3,361.68
2051	2,193.81	743.88	364.90	61.99	-	3,364.58
2052	2,323.71	612.25	372.20	51.02	-	3,359.18
2053	2,468.04	472.82	379.64	39.40	-	3,359.91
2054	2,626.80	324.74	387.23	27.06	-	3,365.84
2055	2,785.57	167.13	394.98	13.93	-	3,361.61
Total	**$ 39,820.62**	**$ 47,035.57**	**$ 8,800.63**	**$ 3,763.11**	**$ (1,878.21)**	**$ 97,541.72**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 12 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 12 PRINCIPAL ASSESSMENT: $43,613.06

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information
of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by _____and _____ , known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this_____ , 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 12

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	2,057.08	-	-	(2,057.08)	-
2027	600.69	2,616.78	248.47	218.07	-	3,684.01
2028	632.30	2,580.74	253.44	215.06	-	3,681.55
2029	679.73	2,542.80	258.51	211.90	-	3,692.94
2030	711.34	2,502.02	263.68	208.50	-	3,685.54
2031	758.76	2,459.34	268.95	204.95	-	3,692.00
2032	790.38	2,413.81	274.33	201.15	-	3,679.68
2033	837.80	2,366.39	279.82	197.20	-	3,681.21
2034	885.22	2,316.12	285.42	193.01	-	3,679.77
2035	948.45	2,263.01	291.12	188.58	-	3,691.17
2036	995.88	2,206.10	296.95	183.84	-	3,682.77
2037	1,059.11	2,146.35	302.89	178.86	-	3,687.21
2038	1,122.34	2,082.80	308.94	173.57	-	3,687.65
2039	1,185.57	2,015.46	315.12	167.96	-	3,684.11
2040	1,248.80	1,944.33	321.43	162.03	-	3,676.58
2041	1,327.84	1,869.40	327.85	155.78	-	3,680.87
2042	1,406.87	1,789.73	334.41	149.14	-	3,680.16
2043	1,501.72	1,705.32	341.10	142.11	-	3,690.25
2044	1,580.76	1,615.22	347.92	134.60	-	3,678.49
2045	1,675.60	1,520.37	354.88	126.70	-	3,677.55
2046	1,786.25	1,419.84	361.98	118.32	-	3,686.39
2047	1,896.91	1,312.66	369.22	109.39	-	3,688.17
2048	2,007.56	1,198.85	376.60	99.90	-	3,682.91
2049	2,134.02	1,078.39	384.13	89.87	-	3,686.41
2050	2,260.48	950.35	391.82	79.20	-	3,681.84
2051	2,402.75	814.72	399.65	67.89	-	3,685.02
2052	2,545.02	670.56	407.64	55.88	-	3,679.10
2053	2,703.09	517.86	415.80	43.15	-	3,679.90
2054	2,876.98	355.67	424.11	29.64	-	3,686.40
2055	3,050.86	183.05	432.60	15.25	-	3,681.76
Total	**$ 43,613.06**	**$ 51,515.14**	**$ 9,638.79**	**$ 4,121.51**	**$ (2,057.08)**	**$ 106,831.41**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

LOT TYPE 13 DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF DRIPPING SPRINGS, TEXAS
CONCERNING THE FOLLOWING PROPERTY

_____
STREET ADDRESS

LOT TYPE 13 PRINCIPAL ASSESSMENT: $47,405.50

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information
of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by _____and _____ , known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this_____ , 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____

SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - LOT TYPE 13

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	2,235.96	-	-	(2,235.96)	-
2027	652.92	2,844.33	270.08	237.03	-	4,004.36
2028	687.29	2,805.15	275.48	233.76	-	4,001.68
2029	738.83	2,763.92	280.99	230.33	-	4,014.07
2030	773.20	2,719.59	286.61	226.63	-	4,006.03
2031	824.74	2,673.20	292.34	222.77	-	4,013.05
2032	859.11	2,623.71	298.19	218.64	-	3,999.65
2033	910.65	2,572.16	304.15	214.35	-	4,001.32
2034	962.20	2,517.53	310.24	209.79	-	3,999.75
2035	1,030.93	2,459.79	316.44	204.98	-	4,012.14
2036	1,082.47	2,397.94	322.77	199.83	-	4,003.01
2037	1,151.20	2,332.99	329.22	194.42	-	4,007.83
2038	1,219.93	2,263.92	335.81	188.66	-	4,008.32
2039	1,288.66	2,190.72	342.52	182.56	-	4,004.47
2040	1,357.39	2,113.40	349.38	176.12	-	3,996.28
2041	1,443.30	2,031.96	356.36	169.33	-	4,000.95
2042	1,529.21	1,945.36	363.49	162.11	-	4,000.17
2043	1,632.30	1,853.61	370.76	154.47	-	4,011.14
2044	1,718.21	1,755.67	378.17	146.31	-	3,998.36
2045	1,821.31	1,652.58	385.74	137.71	-	3,997.34
2046	1,941.58	1,543.30	393.45	128.61	-	4,006.94
2047	2,061.86	1,426.80	401.32	118.90	-	4,008.88
2048	2,182.13	1,303.09	409.35	108.59	-	4,003.16
2049	2,319.59	1,172.16	417.54	97.68	-	4,006.97
2050	2,457.04	1,032.99	425.89	86.08	-	4,002.00
2051	2,611.68	885.57	434.40	73.80	-	4,005.45
2052	2,766.32	728.87	443.09	60.74	-	3,999.02
2053	2,938.14	562.89	451.95	46.91	-	3,999.89
2054	3,127.15	386.60	460.99	32.22	-	4,006.96
2055	3,316.15	198.97	470.21	16.58	-	4,001.91
Total	**$ 47,405.50**	**$ 55,994.72**	**$ 10,476.94**	**$ 4,479.90**	**$ (2,235.96)**	**$ 116,121.10**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

IMPROVEMENT AREA #3B INITIAL PARCEL DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

1) under a court order or foreclosure sale;
2) by a trustee in bankruptcy;
3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
6) from one co-owner to another co-owner of an undivided interest in the real property;
7) to a spouse or a person in the lineal line of consanguinity of the seller;
8) to or from a governmental entity; or
9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING[1] RETURN TO:

_____
_____
_____
_____
_____

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO CITY OF DRIPPING SPRINGS, TEXAS CONCERNING THE FOLLOWING PROPERTY

_____

STREET ADDRESS

IMPROVEMENT AREA #3B INITIAL PARCEL PRINCIPAL ASSESSMENT: $2,759,000.00

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Dripping Springs, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Heritage Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Dripping Springs. The exact amount of each annual installment will be approved each year by the City of Dripping Springs City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Dripping Springs.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

[1] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County when updating for the Current Information
of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE: DATE:

SIGNATURE OF SELLER SIGNATURE OF SELLER][2]

[2] To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE: DATE:

_____ _____

SIGNATURE OF PURCHASER SIGNATURE OF PURCHASER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by _____and _____ , known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this_____ , 20__.

Notary Public, State of Texas][3]

[3] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE: DATE:

_____ _____
SIGNATURE OF SELLER SIGNATURE OF SELLER

STATE OF TEXAS §
§
COUNTY OF _____ §

The foregoing instrument was acknowledged before me by_____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas][4]

[4] To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Hays County.

ANNUAL INSTALLMENTS - IMPROVEMENT AREA #3B INITIAL PARCEL

Installment Due 1/31	Principal	Interest [a]	Annual Collection Costs[b]	Additional Interest	Capitalized Interest	Total Annual Installment[b]
2026	-	130,132.83	-	-	(130,132.83)	-
2027	38,000.00	165,540.00	15,718.56	13,795.00	-	233,053.56
2028	40,000.00	163,260.00	16,032.93	13,605.00	-	232,897.93
2029	43,000.00	160,860.00	16,353.59	13,405.00	-	233,618.59
2030	45,000.00	158,280.00	16,680.66	13,190.00	-	233,150.66
2031	48,000.00	155,580.00	17,014.27	12,965.00	-	233,559.27
2032	50,000.00	152,700.00	17,354.56	12,725.00	-	232,779.56
2033	53,000.00	149,700.00	17,701.65	12,475.00	-	232,876.65
2034	56,000.00	146,520.00	18,055.68	12,210.00	-	232,785.68
2035	60,000.00	143,160.00	18,416.79	11,930.00	-	233,506.79
2036	63,000.00	139,560.00	18,785.13	11,630.00	-	232,975.13
2037	67,000.00	135,780.00	19,160.83	11,315.00	-	233,255.83
2038	71,000.00	131,760.00	19,544.05	10,980.00	-	233,284.05
2039	75,000.00	127,500.00	19,934.93	10,625.00	-	233,059.93
2040	79,000.00	123,000.00	20,333.63	10,250.00	-	232,583.63
2041	84,000.00	118,260.00	20,740.30	9,855.00	-	232,855.30
2042	89,000.00	113,220.00	21,155.11	9,435.00	-	232,810.11
2043	95,000.00	107,880.00	21,578.21	8,990.00	-	233,448.21
2044	100,000.00	102,180.00	22,009.77	8,515.00	-	232,704.77
2045	106,000.00	96,180.00	22,449.97	8,015.00	-	232,644.97
2046	113,000.00	89,820.00	22,898.97	7,485.00	-	233,203.97
2047	120,000.00	83,040.00	23,356.95	6,920.00	-	233,316.95
2048	127,000.00	75,840.00	23,824.09	6,320.00	-	232,984.09
2049	135,000.00	68,220.00	24,300.57	5,685.00	-	233,205.57
2050	143,000.00	60,120.00	24,786.58	5,010.00	-	232,916.58
2051	152,000.00	51,540.00	25,282.31	4,295.00	-	233,117.31
2052	161,000.00	42,420.00	25,787.96	3,535.00	-	232,742.96
2053	171,000.00	32,760.00	26,303.72	2,730.00	-	232,793.72
2054	182,000.00	22,500.00	26,829.79	1,875.00	-	233,204.79
2055	193,000.00	11,580.00	27,366.39	965.00	-	232,911.39
Total	**$ 2,759,000.00**	**$ 3,258,892.83**	**$ 609,757.95**	**$ 260,730.00**	**$ (130,132.83)**	**$ 6,758,247.95**

Footnotes:

[a] Interest is calculated at a 6.00% rate for illustrative purposes.

[b] The figures shown above are estimates only and subject to change in annual service plan updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

APPENDIX A – ENGINEER'S REPORT

ENGINEERING REPORT

Heritage
Public Improvement District
IA #3A and IA #3B

Dripping Springs, Texas

August 25, 2025

Prepared for:
City of Dripping Springs

Prepared by:

Kimley»Horn

501 S. Austin Ave.
Suite 1310
Georgetown, Texas 78626

Job No. 069291601
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TBPE Firm #928

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II. **Development Costs**

III. **Development Improvements**

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- b. **Improvement Area #3A Improvements**
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IV. **Development Schedule**

- a. **Design Stage**
- b. **Construction Stage**

APPENDICES

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Exhibit B – Property

Exhibit B-2 – Improvement Area #3A and #3B

Exhibit B-3 – Improvement Area Boundary Map

Exhibit C-1 –Major Improvements Map

Exhibit C-2 – Improvement Area #3A and #3B Improvements Map

Exhibit D – Engineers' OPC

Exhibit E – Lot Mix Exhibit

I. Introduction

Heritage is being developed on approximately ±188.943 acres of undeveloped land in the City of Dripping Springs. The subject property is located west of Ranch Road 12 and North of Sportsplex Drive, in Dripping Springs, Hays County, Texas. The project encompasses the construction of 597 detached single-family lots and 103 attached high-density residential units. A site location map is included in the appendix as ***Exhibit A.*** The overall lot mix map is included in the appendix as ***Exhibit E.***

This report includes supporting documentation for the issuance of bonds by the City. The bonds are anticipated to be used to finance public infrastructure projects vital for the development within the PID.

II. Development Costs

An Engineers' Opinion of Probable Cost (OPC) has been prepared for all PID eligible offsite and onsite infrastructure. The Engineer's OPC is included as ***Exhibit D***.

III. Development Improvements

Improvement Area #3A and #3B internal improvements are included in this report and defined in Section III.B. and shown in ***Exhibit C-2***. Improvement Area #1, #2, and #4 internal improvements are excluded from this report. The Improvement Area #3A and #3B area is shown in ***Exhibit B-2.*** Major PID reimbursable improvements are shown in ***Exhibit C-1***. PID eligible improvements descriptions are as follows:

A. Major Improvements

- *Roadway*

  Improvements including mobilization, grading, erosion control, subgrade stabilization (including lime treatment and compaction), curb and gutter, road base construction, hot mix asphalt, curb ramps, sidewalk, roundabout improvements, street lights, striping, concrete, signalization at the intersection of Ranch Road 12 and North Roger Hanks Parkway, and reinforcing steel for collector roadways and slip streets. 30% of the North Roger Hanks Parkway Offsite Extension cost shall be included as an eligible PID reimbursable cost.

- *Drainage*

  Improvements including storm pipe, storm manholes, junction boxes, headwalls, area inlets, curb inlets, manhole casting adjustments, wet pond improvements, and trench safety program associated with drainage improvements.

- *Trails*

  Includes improvements necessary to construct the 10' hike and bike trail that runs East to West along North Roger Hanks Parkway and improvements necessary to construct the 8' hike and bike trail that runs from the Northern overall property boundary to the Southern overall property boundary.

- *Landscaping*

  Primary Entry Monumentation improvements at the intersection of Ranch Road 12 and North Roger Hanks Parkway is included.

- *Soft Costs*

  Estimated to be 12% of hard costs, plus an additional 4% for construction management fee.

B. Improvement Area #3A Improvements

- *Roadway*

  Improvements including mobilization, erosion control, grading, subgrade stabilization (including lime treatment and compaction), curb and gutter, road base construction, hot mix asphalt, curb ramps, sidewalk, roundabout improvements, street lights, striping, concrete, and reinforcing steel for internal roadways. The internal roadways are located within improvement area #3A, and direct frontage is provided to the single family lots in improvement area #3A to these internal roadways.

- *Drainage*

  Improvements including trench excavation and embedment, trench safety, reinforced concrete pipe, manholes, storm outfalls, storm drain inlets, testing, trenching and all other necessary appurtenances required to ensure proper drainage of the internal public roadways within improvement area #3A.

- *Wastewater*

  Improvements including trench excavation and embedment, trench safety, PVC piping, manholes, service connections, testing, and all other necessary appurtenances required to provide wastewater service to each parcel within improvement area #3A.

- *Landscaping*

  Landscaping improvements including plantings.

- *Soft Costs*

  Estimated to be 12% of hard costs, plus an additional 4% for construction management fee.

C. Improvement Area #3B Improvements

- *Roadway*

  Improvements including mobilization, erosion control, grading, subgrade stabilization (including lime treatment and compaction), curb and gutter, road base construction, hot mix asphalt, curb ramps, sidewalk, roundabout improvements, street lights, striping, concrete, and reinforcing steel for internal roadways. The internal roadways are located

within improvement area #3B, and direct frontage is provided to the single family lots in improvement area #3B to these internal roadways.

- *Drainage*

  Improvements including trench excavation and embedment, trench safety, reinforced concrete pipe, manholes, storm outfalls, storm drain inlets, testing, trenching and all other necessary appurtenances required to ensure proper drainage of the internal public roadways within improvement area #3B.

- *Wastewater*

  Improvements including trench excavation and embedment, trench safety, PVC piping, manholes, service connections, testing, and all other necessary appurtenances required to provide wastewater service to each parcel within improvement area #3B.

- *Landscaping*

  Landscaping improvements including plantings.

- *Soft Costs*

  Estimated to be 12% of hard costs, plus an additional 4% for construction management fee.

IV. DEVELOPMENT SCHEDULE

a. Design Stage

The preliminary plan for the entire PID district is approved by the City of Dripping Springs. The construction drawings for improvement area #3A and #3B are approved by the City of Dripping Springs and TCEQ. Improvement area #3A includes 97 single family lots. Improvement area #3B includes 67 single family lots and a section of Great Sequoia Lane.

b. Construction Stage

Improvement Area #3A and #3B internal improvements are complete and were accepted by city council on July 15, 2025. All PID eligible improvements within the district are scheduled to be complete within 3 years of the date of this engineer's report.

Exhibit A

Heritage Location Map



Plotted By:Erfurth, Kara Date:August 25, 2025 11:19:20am File Path:K:\AUS_Civil\067783117-Heritage-MI Homes\PRELIMINARY\Cad\Exhibits\PlanSheets\A#3 Exhibits\20250825 - PID EXHIBITS.dwg
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EXHIBIT A - THE PROPERTY
Heritage
Location Map

Dripping Springs, Texas
August 2025

THE PROPERTY

NOTE: THIS PLAN IS CONCEPTUAL IN NATURE AND HAS BEEN PRODUCED WITHOUT THE BENEFIT OF A SURVEY, TOPOGRAPHY, UTILITIES, CONTACT WITH THE CITY, ETC.

Exhibit B

Property

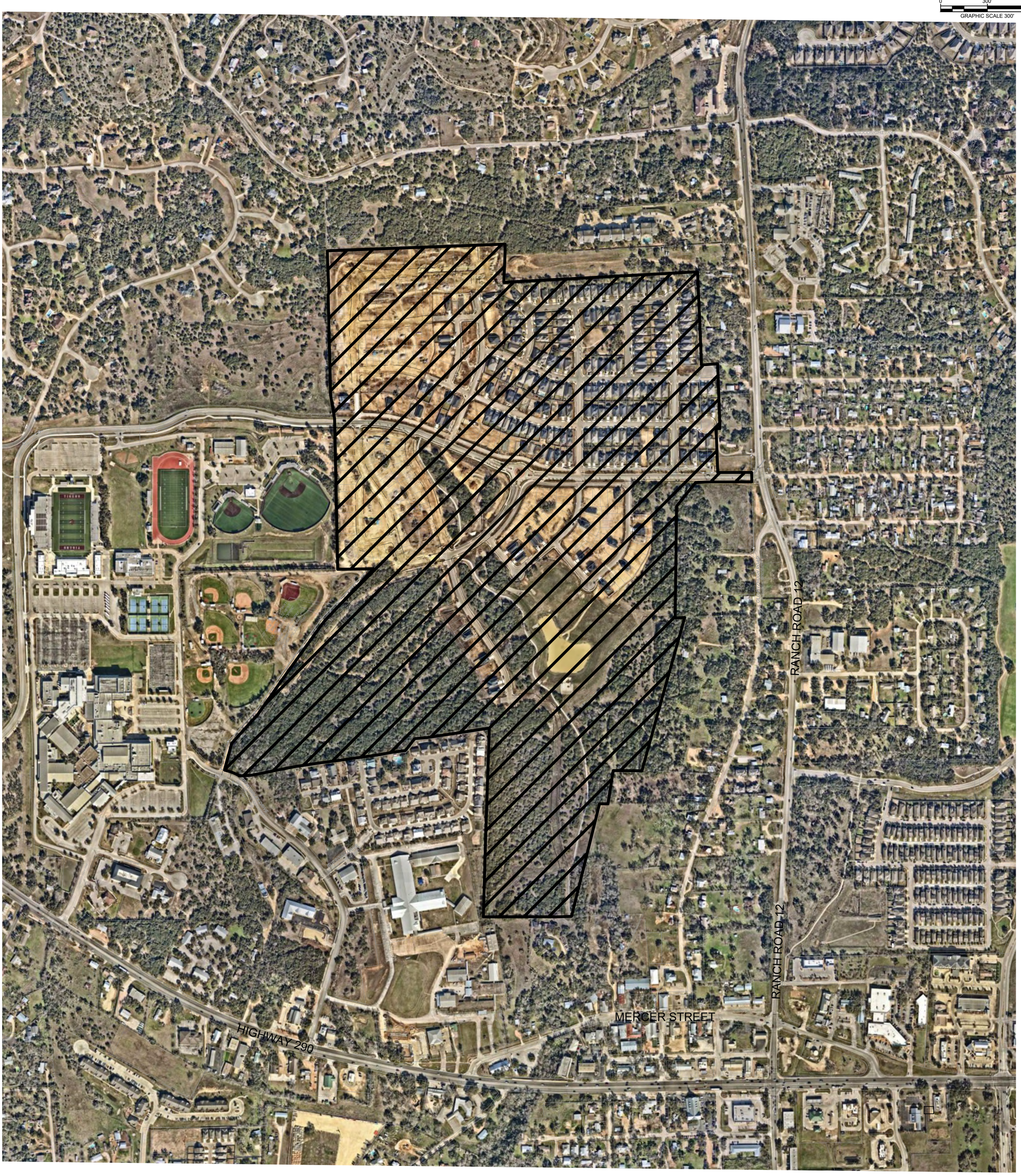


EXHIBIT B - THE PROPERTY

Heritage
PID Boundary

Dripping Spring, Texas
August 2025

THE PROPERTY

NOTE: THIS PLAN IS CONCEPTUAL IN NATURE AND HAS BEEN PRODUCED WITHOUT THE BENEFIT OF A SURVEY, TOPOGRAPHY, UTILITIES, CONTACT WITH THE CITY, ETC.

Plotted By:Erfurth, Kara Date:August 25, 2025 11:07:59am File Path:K:\AUS_Civil\067783117-Heritage-MI Homes\PRELIMINARY\Cad\Exhibits\PlanSheets\IA#3 Exhibits\20250421 - PID EXHIBITS-EX-B-2 - IA3.dwg
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Exhibit B-2

Improvement Area #3A and #3B

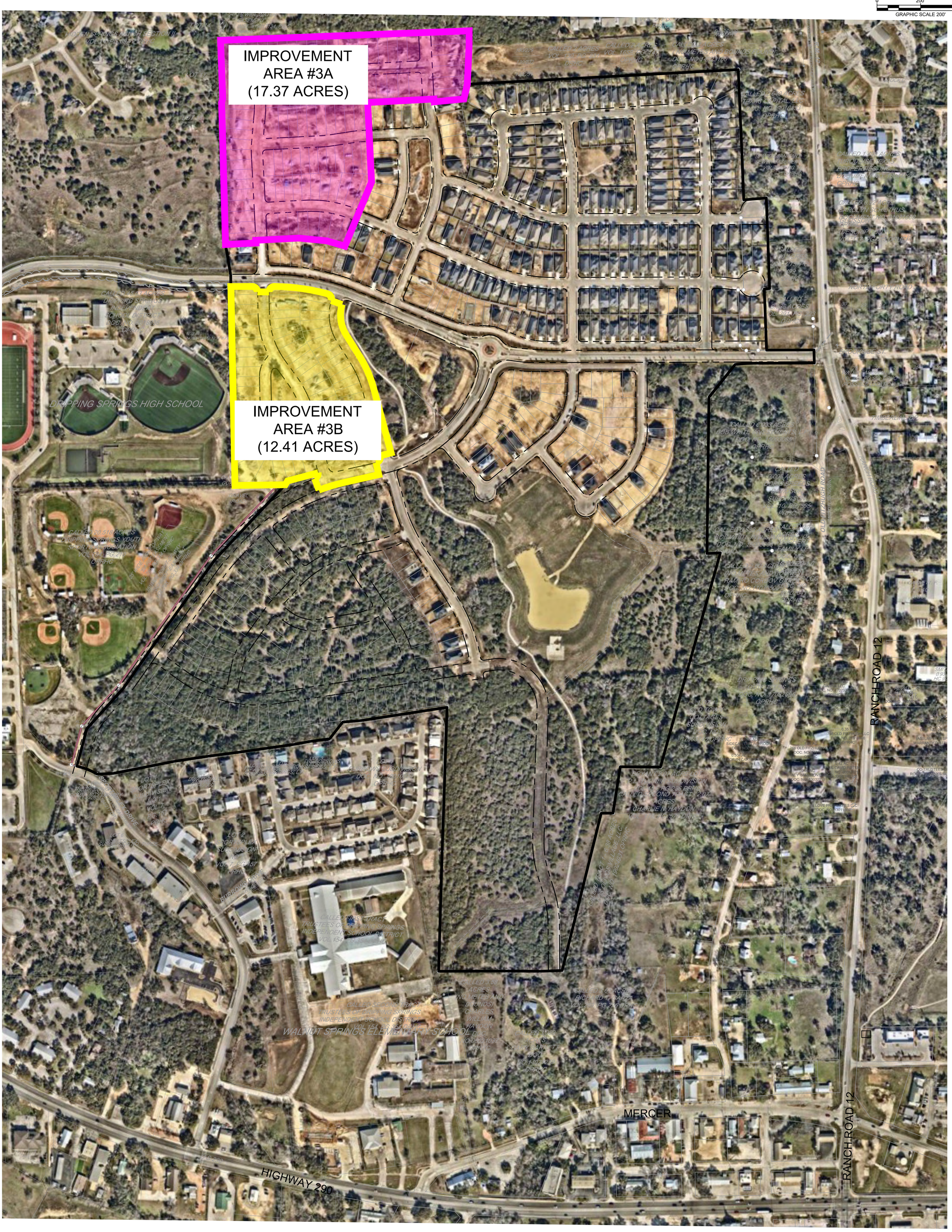

IMPROVEMENT AREA #3A (17.37 ACRES)
IMPROVEMENT AREA #3B (12.41 ACRES)
HIDDEN SPRINGS RANCH SECTION III VOL. 15, PG. 69-72, PRHC
DRIPPING SPRINGS HIGH SCHOOL
CALLED 20.515 ACRES DRIPPING SPRINGS YOUTH SPORTS ASSOCIATION VOL. 1514, PG. 274 OPRHC
CALLED 15.38 ACRES DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT DOC. NO. 17-8660 OPRHC
CALLED 6.703 ACRES BOB WHITE INVESTMENTS, LLC DOC. NO. 17003085 OPRHC
CALLED 9.003 ACRES DORIS BROWN SCHULTZ SUBDIVISION VOL. 10, PG. 395 PRHC
CALLED 2.00 ACRES INTERSTATE ROAD 3 RAMIRO CORTEZ GUTIERREZ, LLC DOC. NO. 17006004 OPRHC
CALLED 2.07 ACRES CHARLIE N. HAYDON VOL. 2011, PG. 67 DRHC
CALLED 6.38 ACRES OLD TOWN COTTAGES, LLC DOC. NO. 18024931 OPRHC
CALLED 3.68 ACRES (NO METES AND BOUNDS) CHARLES WILLIAM HAYDON DOC. NO. 00024037 OPRHC
CALLED 3.66 ACRES RICHARD T. GARZA VOL. 2011, PG. 226 DRHC
CALLED 1.993 ACRES TEXAS CAPITAL, LLC DOC. NO. 9070838 OPRHC
CALLED 1.435 ACRES AURORA TEXAS PROPERTIES, INC. DOCUMENT NO. 20-8041 OPRHC
CALLED 0.824 ACRES CAROLYN SCHULTHUS DOCUMENT NO. 20031608 OPRHC
CALLED 0.98 ACRES DOC. NO. 19007138 OPRHC
CALLED 0.504 ACRES DEBORAH CARY DOC. NO. 17006005 OPRHC
CALLED 0.35 ACRES 765 OLD FITZHUGH, LLC DOC. NO. 17006006 OPRHC
CALLED 0.42 ACRES DOUGLAS DAVID ROTER DOC. NO. 13032018 OPRHC
LOVE PROPERTIES LLC DOC. NO. 13011080 OPRHC
CALLED 0.42 ACRES TRACY CAMPBELL DOC. NO. 13032018 OPRHC
CALLED 1.00 ACRES DOC. NO. 19007138 OPRHC
CALLED 0.98 ACRES DOC. NO. 19007138 OPRHC
CALLED 0.504 ACRES DEBORAH CARY DOC. NO. 17006005 OPRHC
CALLED 0.35 ACRES 765 OLD FITZHUGH, LLC DOC. NO. 17006006 OPRHC
CALLED 0.42 ACRES DOUGLAS DAVID ROTER DOC. NO. 13032018 OPRHC
LOVE PROPERTIES LLC DOC. NO. 13011080

Exhibit B-3

Improvement Area Boundary Map

N
W E
S

0 200' 400'
GRAPHIC SCALE 200'

IA #3A
IA #2
IA #1
IA #3B
IA #2
FUTURE IMPROVEMENT AREA

HIDDEN SPRINGS RANCH SECTION II VOL.14, PG.69-72 PRHC
LOT 14
LOT 17
LOT 18
15' WIDE WATER EASEMENT INST. #19017134, PG.5 OPRHC
CALLED 2 ACRES VOL. 130, PG. 231 DRHC
CALLED 2 ACRES VOL. 1658, PG. 147 OPRHC
CALLED 2 ACRES (NO METES AND BOUNDS FOUND) DOC. NO.14023160 OPRHC
VOL. 9, PG. 47 PRHC
DRIPPING WATER
130/229
130/232
130/231
10' WIDE PUBLIC RIGHT-OF-WAY
R.M. 12
CALLED 2.640 ACRES TEXAS CAPITAL, LLC DOC. NO.19010833 OPRHC
15' WIDE SANITARY SEWER EASEMENT VOL.4687, PG.12 OPRHC
BLOCK C
CALLED 1.499 ACRES TURQUOISE TEXAS PROPERTIES, INC. DOCUMENT NO. 18044292 OPRHC
CALLED 0.92 ACRE CAROLYN SCHILTHUS DAVIDSON DOCUMENT NO. 01031668 OPRHC
(DESCRIPTION IN VOL.117, PG.415 DRHC)
CALLED 1.00 ACRES VOL. 275, PG. 499 DRHC
CALLED 0.938 ACRES VOL. 391, PG. 223 DRHC
NORTH FORTY ROAD
BROOKSIDE ST.
WATER EASEMENT VOL.199, PG.562 DRHC (POSSIBLE LOCATION)
TIMBERLINE DR.
CALLED 45.53 ACRES DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT DOC. NO. 6018836 OPRHC
DRIPPING SPRINGS HIGH SCHOOL
CALLED 6.033 ACRES BOB WHITE INVESTMENTS, L.P. DOC. NO. 15003085 OPRHC
CALLED 9.008 ACRES DORIS BREEDS DAVIDSON SUBDIVISON VOL. 10, PG. 395 PRHC
OLD FITZHUGH ROAD (WIDTH UNKNOWN)
RANCH ROAD 12
CALLED 0.883 ACRES BOB WHITE INVESTMENTS, L.P. DOC. NO. 15003085 OPRHC
CALLED 0.75 ACRES WEICHERT FAMILY LP DOC. NO. 16015020 OPRHC
CALLED 2.60 ACRES (NO METES AND BOUNDS) RAMIRO CORDOV GARZA DOC. NO.11030500 OPRHC
CALLED 1.0 ACRES SARTAR LCC DOC. NO. 16002041 OPRHC
GARNETT, F. 1.73 AC. 876/81
CALLED 20.518 ACRES DRIPPING SPRINGS YOUTH SPORTS ASSOCIATION VOL.784, PG.210 OPRHC
25' WIDE RIGHT-OF-WAY "BAIRD" EASEMENT VOL.785, PG.334 OPRHC
35' WIDE RIGHT-OF-WAY "SCHMIDT" EASEMENT VOL.785, PG.334 OPRHC
GRAVEL ROAD
CATTLE GUARD
2.60 AC HENRY BROOKS DOC. NO. 21022144 OPRHC
DRIPPING SPRINGS OUTFITTERS DOC. NO. 17032696 OPRHC
LOT 1 OLD TOWN COTTAGES SUBDIVISION DOC. NO. 17003745 OPRHC
0.46 AC NAPIORKOWSKI CARRIE LLC DOC. NO. 17023340 OPRHC
0.46 AC JESSIE, JANIE & JOHN SCOTT DOC. NO. 20026613 OPRHC
0.35 AC 766 OLD FITZHUGH LLC DOC. NO. 21011666 OPRHC
0.4866 AC SIDECAR TASTING ROOM DOC. NO. 17034805 OPRHC
1.00 AC 766 OLD FITZHUGH LLC DOC. NO. 21011867 OPRHC
0.504 AC DEBORAH CARTER VOL.4183, PG. 711 OPRHC
0.42 AC PAUL DAVID ROTEN DOC NO. 80011175 VOL.3376, PG.706 OPRHC
0.95 AC STACY CAMERON BERG DOC. NO. 13032018 VOL.4755, PG.40 OPRHC
0.84 AC WYSA LLC DOC. NO. 22009252 OPRHC
0.32 AC BY LOVE PROPERTIES LLC DOC. NO. 13011669 VOL.4605, PG. 109
BRYANT 2.07 ACRE LOT P.L. TURNER SUBDIVISION VOL.151, PG.236 PRHC
CALLED SECOND TRACT - 2.07 ACRES CHARLIE N. HAYDON VOL. 178, PG. 571 DRHC
CALLED TRACT 1 - 6.38 ACRES LOS OLIVOS VILLAGE, LLC DOC. NO. 19024931 OPRHC
LOT 1 SPORTSPLEX SUBDIVISION NO.1 VOL.7, PG.157 PRHC
2.107 AC DWAYNE ALEIN AND WIFE (2840/300)
LOT 1 THE BURROWS OF DRIPPING SPRINGS, L.P.
LOT 2 THE BURROWS OF DRIPPING SPRINGS, L.P.
LOT 3 THE BURROWS OF DRIPPING SPRINGS, L.P.
LOT 1 BURROWS SUBDIVISION DOC. NO. 18010020 OPRHC
SPORTSPLEX DRIVE
LOT 6 SPORTSPLEX SUBDIVISION NO. THREE (12/59)
LOT 2 SPORTSPLEX SUBDIVISION NO.1 VOL.7, PG.157 PRHC
BURROWS DRIVE (60' WIDE RIGHT-OF-WAY)
LOT 5
LOT 4
3-A
4
5
CALLED FIRST TRACT TRUSTEES OF DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT VOL.154, PG.354 DRHC
CALLED SECOND TRACT TRUSTEES OF DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT VOL.154, PG.354 DRHC
WALNUT SPRINGS ELEMENTARY SCHOOL
CALLED 3.58 ACRES (NO METES AND BOUNDS) CHARLES WILLIAM HAYDON DOC. NO.06021037 OPRTC
CALLED 3.089 ACRES GARY GARNETT DOC. NO:14021219 OPRHC
CALLED 3.61 ACRES RICHARD T. GARZA VOL.269, PG.226 DRHC
MERCER STREET
US 290
HIGHWAY 290
RANCH ROAD 12
WW

EXHIBIT B-3

Improvement Area Boundary Map

Dripping Spring, Texas
August 2025

IMPROVEMENT AREA IMPROVEMENTS

- IMPROVEMENT AREA #1
- IMPROVEMENT AREA #2
- IMPROVEMENT AREA #3A
- IMPROVEMENT AREA #3B
- PROPERTY BOUNDARY
- IMPROVEMENT AREA BOUNDARY

Kimley»Horn

NOTE: THIS PLAN IS CONCEPTUAL IN NATURE AND HAS BEEN PRODUCED WITHOUT THE BENEFIT OF A SURVEY, TOPOGRAPHY, UTILITIES, CONTACT WITH THE CITY, ETC.

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Exhibit C-1

Major Improvements Map

N
W E
S

0 200' 400'
GRAPHIC SCALE 200'

IA #3A
IA #1
IA #2
IA #3B
FUTURE IMPROVEMENT AREA

8' WIDE HIKE AND BIKE TRAIL (IA#2 MAJOR IMPROVEMENT)
ROGER HANKS PARKWAY OFFSITE 30% OF COST IS PID ELIGIBLE (IA#1 MAJOR IMPROVEMENT)
ROGER HANKS PARKWAY SLIP STREET (IA#2 MAJOR IMPROVEMENT)
10' WIDE HIKE AND BIKE TRAIL (IA#1 MAJOR IMPROVEMENT)
ROGER HANKS & RR12 PAVING AND SIGNALIZATION IMPROVEMENTS (IA#1 MAJOR IMPROVEMENT)
GREAT SEQUOIA DRIVE (FORMERLY BAIRD LANE) (IA#2 MAJOR IMPROVEMENT)
ROGER HANKS PARKWAY (FORMERLY BROOKSIDE DRIVE) (IA#1 MAJOR IMPROVEMENT)
FUTURE SLIP STREET (IA#2 MAJOR IMPROVEMENT)
DETENTION AND WATER QUALITY POND 1 (IA#1 MAJOR IMPROVEMENT)
8' WIDE HIKE AND BIKE TRAIL (IA#2 MAJOR IMPROVEMENT)

HIDDEN SPRINGS RANCH SECTION II VOL.14, PG.69-72 PRHC
LOT 14
LOT 17
LOT 18
15' WIDE WATER EASEMENT INST. #19017134, PG.5 OPRHC
CALLED 2 ACRES VOL. 130, PG. 231 DRHC
CALLED 2 ACRES VOL. 1658, PG. 147 OPRHC
CALLED 2 ACRES (NO METES AND BOUNDS FOUND) DOC. NO.14023160 OPRHC
VOL. 9, PG. 47 PRHC
DRIPPING SPRINGS WATER
30' WIDE PUBLIC RIGHT-OF-WAY
R.M. 12
CALLED 2.640 ACRES TEXAS CAPITAL, LLC DOC. NO.19010833 OPRHC
15' WIDE SANITARY SEWER EASEMENT VOL.4687, PG.12 OPRHC
CALLED 1.499 ACRES TURQUOISE TEXAS PROPERTIES, INC. DOCUMENT NO. 18044292 OPRHC
CALLED 0.92 ACRE CAROLYN SCHILTHUS DOCUMENT NO. 01031668 OPRHC (DESCRIPTION IN VOL.717, PG.415 DRHC)
CALLED 1.00 ACRES VOL. 275, PG. 499 DRHC
CALLED 0.938 ACRES VOL. 391, PG. 223 DRHC
BROOKSIDE ST.
WATER EASEMENT VOL.199, PG.562 DRHC (POSSIBLE LOCATION)
TIMBERLINE DR.
CALLED 6.033 ACRES BOB WHITE INVESTMENTS L.P. DOC. NO. 15003085 OPRHC
CALLED 9.008 ACRES DORIS BREEDS DAVIDSON SUBDIVISON VOL. 10, PG. 395 PRHC
OLD FITZHUGH ROAD (WIDTH UNKNOWN)
RANCH ROAD 12
CALLED 0.883 ACRES BOB WHITE INVESTMENTS L.P. DOC. NO. 15003085 OPRHC
CALLED 0.75 ACRES, WEICHERT FAMILY LP DOC. NO. 16025120
CALLED 2.60 ACRES (NO METES AND BOUNDS) RAMIRO CORDOV GARZA DOC. NO.11030500 OPRHC
1.0 ACRES CARTER LCC DOC. NO. 16002041 OPRHC
GARNETT, F. 1.73 AC. 876/81
2.60 AC HENRY BROOKS DOC. NO. 21022144 OPRHC
DRIPPING SPRINGS OUTFITTERS DOC. NO. 17032696 OPRHC
0.46 AC NAPIORKOWSKI CARRIE LLC DOC. NO. 17023340 OPRHC
0.46 AC JESSIE, JANIE & JOHN SCOTT DOC. NO. 20026613 OPRHC
LOT 1 OLD TOWN COTTAGES SUBDIVISION DOC. NO. 17003745 OPRHC
0.4866 AC SIDECAR TASTING ROOM DOC. NO. 17034805 OPRHC
0.504 AC DEBORAH CARTER VOL.4183, PG. 711 OPRHC
0.84 AC WYSA LLC DOC. NO. 22009252 OPRHC
0.35 AC 766 OLD FITZHUGH LLC DOC. NO. 21011866 OPRHC
1.00 AC 766 OLD FITZHUGH LLC DOC. NO. 21011867 OPRHC
0.42 AC PAUL DAVID ROTEN DOC. NO. 80011175 VOL.3376, PG.706 OPRHC
0.95 AC STACY CAMERON BERRY DOC. NO. 13032018 VOL.4755, PG.40 OPRHC
0.32 AC BY LOVE PROPERTIES LLC DOC. NO. 13011669 VOL.4605, PG. 109
BRYANT 2.07 ACRE LOT P.L. TURNER SUBDIVISION VOL.151, PG.236 PRHC
CALLED SECOND TRACT - 2.07 ACRES CHARLIE N. HAYDON VOL. 178, PG. 571 DRHC
CALLED TRACT 1 - 6.38 ACRES LOS OLIVOS VILLAGE, LLC DOC. NO. 19024831 OPRHC
CALLED 3.61 ACRES RICHARD T. GARZA VOL.269, PG.226 DRHC
CALLED 3.58 ACRES (NO METES AND BOUNDS) CHARLES WILLIAM HAYDON DOC. NO.06021037 OPRTC
CALLED 3.089 ACRES GARY GARNETT DOC. NO.14021219 OPRHC
CALLED FIRST TRACT TRUSTEES OF DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT VOL.154, PG.354 DRHC
CALLED SECOND TRACT TRUSTEES OF DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT VOL.154, PG.354 DRHC
CALLED 45.53 ACRES DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT DOC. NO. 6018836 OPRHC
DRIPPING SPRINGS HIGH SCHOOL
CALLED 20.518 ACRES DRIPPING SPRINGS YOUTH SPORTS ASSOCIATION VOL.784, PG.210 OPRHC
25' WIDE RIGHT-OF-WAY "BAIRD" EASEMENT VOL.785, PG.334 OPRHC
35' WIDE RIGHT-OF-WAY "SCHMIDT" EASEMENT VOL.785, PG.334 OPRHC
GRAVEL ROAD
CATTLE GUARD
FL 1/2" FLUSH
SPORTSPLEX DRIVE
BURROWS DRIVE (60' WIDE RIGHT-OF-WAY)
LOT 1 SPORTSPLEX SUBDIVISION NO.1 VOL.7, PG.157 PRHC
LOT 2 SPORTSPLEX SUBDIVISION NO.1 VOL.7, PG.157 PRHC
LOT 6 SPORTSPLEX SUBDIVISION NO. THREE (11259)
LOT 5
LOT 4
3-A
4
5
LOT 1 BURROWS SUBDIVISION DOC. NO. 18010020 OPRHC
2.107 AC DIANNE KLEIN AND WIFE (2840/300)
LOT 1 THE BURROWS AT DRIPPING SPRINGS, L.P.
LOT 2 THE BURROWS AT DRIPPING SPRINGS, L.P.
WALNUT SPRINGS ELEMENTARY SCHOOL
US 290
HIGHWAY 290
MERCER
RANCH ROAD 12

EXHIBIT C-1
Major Improvements Map

MAJOR IMPROVEMENTS LEGEND

- IMPROVEMENT AREA #1
- IMPROVEMENT AREA #2
- IMPROVEMENT AREA #3A
- IMPROVEMENT AREA #3B
- ROADWAY INTERSECTION IMPROVEMENTS
- MAJOR STORM IMPROVEMENTS
- MAJOR ROADWAY & STORM IMPROVEMENTS
- PONDS/DRAINAGE (MAJOR IMPROVEMENTS)
- 8' HIKE AND BIKE TRAIL

Kimley»Horn

NOTE: THIS PLAN IS CONCEPTUAL IN NATURE AND HAS BEEN PRODUCED WITHOUT THE BENEFIT OF A SURVEY, TOPOGRAPHY, UTILITIES, CONTACT WITH THE CITY, ETC.

Dripping Spring, Texas
August 2025

Plotted By:Erfurth, Kara Date:August 25, 2025 11:24:53am File Path:K:\AUS_Civil\067783117-Heritage-MI Homes\PRELIMINARY\Cad\Exhibits\PlanSheets\IA#3 Exhibits\20250425 Exhibit C1 IA3.dwg
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Exhibit C-2

Improvement Area #3A and #3B Improvements Map

N
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S

0 200' 400'
GRAPHIC SCALE 200'

IA #3A
IA #1
IA #2
IA #3B
IA #2
FUTURE IMPROVEMENT AREA

HIDDEN SPRINGS RANCH SECTION II VOL.14, PG.69-72 PRHC
LOT 14
LOT 17
LOT 18
15' WIDE WATER EASEMENT INST. #19017134, PG.5 OPRHC
CALLED 2 ACRES VOL. 130, PG. 231 DRHC
CALLED 2 ACRES VOL. 1658, PG. 147 OPRHC
CALLED 2 ACRES (NO METES AND BOUNDS FOUND) DOC. NO.14023160 OPRHC
DRIPPING WATER
30' WIDE PUBLIC RIGHT-OF-WAY
R.M. 12
CALLED 2.640 ACRES TEXAS CAPITAL, LLC DOC. NO.19010833 OPRHC
15' WIDE SANITARY SEWER EASEMENT VOL.4687, PG.12 OPRHC
CALLED 1.499 ACRES TURQUOISE TEXAS PROPERTIES, INC. DOCUMENT NO. 18044292 OPRHC
CALLED 0.92 ACRE CAROLYN SCHILTHUS DOCUMENT NO. 01031668 OPRHC
(DESCRIPTION IN VOL.717, PG.415 DRHC)
CALLED 1.00 ACRES VOL. 275, PG. 499 DRHC
CALLED 0.938 ACRES VOL. 391, PG. 223 DRHC
NORTH FORTY ROAD
BROOKSIDE ST.
WATER EASEMENT VOL.199, PG.562 DRHC (POSSIBLE LOCATION)
TIMBERLINE DR.
CALLED 45.53 ACRES DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT DOC. NO. 6018836 OPRHC
DRIPPING SPRINGS HIGH SCHOOL
CALLED 6.033 ACRES BOB WHITE INVESTMENTS L.P. DOC. NO. 15003085 OPRHC
CALLED 9.008 ACRES DORIS BREEDS DAVIDSON SUBDIVISON VOL. 10, PG. 395 PRHC
OLD FITZHUGH ROAD (WIDTH UNKNOWN)
RANCH ROAD 12
CALLED 0.883 ACRES BOB WHITE INVESTMENTS L.P. DOC. NO. 15003085 OPRHC
CALLED 0.75 ACRES, WEICHERT FAMILY LP DOC. NO. 16002120 OPRHC
CALLED 2.60 ACRES (NO METES AND BOUNDS) RAMIRO CORDOV GARZA DOC. NO 11030500 OPRHC
CALLED 1.0 ACRES KARTAR LLC DOC. NO. 16002041 OPRHC
GARNETT, F. 1.73 AC. 876/81
CALLED 20.518 ACRES DRIPPING SPRINGS YOUTH SPORTS ASSOCIATION VOL.784, PG.210 OPRHC
25' WIDE RIGHT-OF-WAY "BAIRD" EASEMENT VOL.788, PG.334 OPRHC
35' WIDE RIGHT-OF-WAY "SCHMIDT" EASEMENT VOL.788, PG.334 OPRHC
GRAVEL ROAD
CATTLE GUARD
LOT 1 SPORTSPLEX SUBDIVISION NO.1 VOL.7, PG.157 PRHC
LOT 1 BURROWS SUBDIVISION DOC. NO. 18010020 OPRHC
SPORTSPLEX DRIVE
BURROWS DRIVE (60' WIDE RIGHT-OF-WAY)
LOT 6 SPORTSPLEX SUBDIVISION NO. THREE (12/59)
LOT 2 SPORTSPLEX SUBDIVISION NO.1 VOL.7, PG.157 PRHC
LOT 5
LOT 4
CALLED FIRST TRACT TRUSTEES OF DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT VOL.154, PG.354 DRHC
CALLED SECOND TRACT TRUSTEES OF DRIPPING SPRINGS INDEPENDENT SCHOOL DISTRICT VOL.154, PG.354 DRHC
WALNUT SPRINGS ELEMENTARY SCHOOL
CALLED 3.58 ACRES (NO METES AND BOUNDS) CHARLES WILLIAM HAYDON DOC. NO.06021037 OPRTC
CALLED 3.089 ACRES GARY GARNETT DOC. NO.14021219 OPRHC
CALLED 3.61 ACRES RICHARD T. GARZA VOL.269, PG.226 DRHC
CALLED TRACT 1 - 6.38 ACRES LOS OLIVOS VILLAGE, LLC DOC. NO. 19024931 OPRHC
LOT 1 OLD TOWN COTTAGES SUBDIVISION DOC. NO 17003745 OPRHC
DRIPPING SPRINGS OUTFITTERS DOC. NO. 17032696 OPRHC
BRYANT 2.07 ACRE LOT P.L. TURNER SUBDIVISION VOL.151, PG.236 PRHC
CALLED SECOND TRACT - 2.07 ACRES CHARLIE N. HAYDON VOL. 178, PG. 571 DRHC
MERCER STREET
US 290
HIGHWAY 290

EXHIBIT C-2

Improvement Area #3A and #3B Improvements Map

IMPROVEMENT AREA IMPROVEMENTS

- IMPROVEMENT AREA #1
- IMPROVEMENT AREA #2
- IMPROVEMENT AREA #3A
- IMPROVEMENT AREA #3B
- PROPERTY BOUNDARY
- PHASE LINE
- STORM IMPROVEMENTS
- ROADWAY, STORM & WASTEWATER INTERNAL IMPROVEMENT AREA #3 ELIGIBLE IMPROVEMENTS

Kimley»Horn

NOTE: THIS PLAN IS CONCEPTUAL IN NATURE AND HAS BEEN PRODUCED WITHOUT THE BENEFIT OF A SURVEY, TOPOGRAPHY, UTILITIES, CONTACT WITH THE CITY, ETC.

Dripping Spring, Texas
August 2025

Plotted By:Erfurth, Kara Date:August 25, 2025 11:26:12am File Path:K:\AUS_Civil\067783117-Heritage-MI Homes\PRELIMINARY\Cad\Exhibits\PlanSheets\IA#3 Exhibits\20250421 - Exhibit F - IA3.dwg
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Exhibit D

Engineer's OPC

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COST - HERITAGE DRIPPING SPRINGS										
KIMLEY-HORN AND ASSOCIATES										
25-Aug-25										
	TOTAL ACREAGE	**ESTIMATED LOTS**	**ROADWAY**	**DRAINAGE**	**WASTEWATER**	**TRAILS AND LANDSCAPING**	**SUBTOTAL**	**PROJECT MANAGEMENT (4%)**	**ENGINEERING DESIGN & SURVEY (12%)**	**TOTAL COST**
IMPROVEMENT AREA #1 IMPROVEMENTS	37.07	158	$1,220,991	$645,408	$1,644,140	$833,737	**$4,344,277**	$173,771	$521,313	**$5,039,361**
IMPROVEMENT AREA #2 IMPROVEMENTS	75.57	160	$1,898,122	$1,604,672	$1,317,125	$624,657	**$5,444,575**	$217,783	$653,349	**$6,315,707**
IMPROVEMENT AREA #3A	17.37	97	$1,288,791	$452,103	$591,668	$61,043	**$2,393,605**	$95,744	$287,233	**$2,776,581**
IMPROVEMENT AREA #3B	12.41	67	$1,275,136	$229,400	$502,835	$44,204	**$2,051,575**	$82,063	$246,189	**$2,379,827**
TOTAL MAJOR IMPROVEMENTS (IA#1, IA#2, IA#3, IA#4)	188.94	700	$6,136,773	$3,184,075		$482,499	**$9,803,346**	$392,134	$1,176,402	**$11,371,882**

1. Review all notes and assumptions. These OPC's are not intended for basing financial decisions, or securing funding. Since Kimley-Horn & Associates, Inc. has no control over the cost of labor, materials, equipment, or services furnished by others, or over methods of determining price, or over competitive bidding or market conditions, any and all opinions as to the cost including but not limited to opinions as to the costs of construction materials, shall be made on the basis of experience and best available data. Kimley-Horn & Associates, Inc. cannot and does not guarantee that proposals, bids, or actual costs will not vary from the opinions on costs shown herein. The total costs and other numbers in this Opinion of Probable Cost have n rounded. This practice of not rounding is not intended to reflect or imply a level of certainty with respect to accuracy of the amount.

2. Water and wastewater service is available at the site.

3. A pocket park in Improvement Area #3 is included in this OPC.

4.Cost for primary entry features are included in this OPC as a Major Improvement. All other entry signage were included in Improvement Area #1 Improvements.

5. Legal, marketing, financing, closing costs, cost of sales, HOA funding, overhead, maintenance, insurance, etc. are not included.

6. This OPC is preliminary and is prepared without the benefit of all record drawings, franchise utility communication, city communication, etc.

7. Soft Cost Included in this OPC:

Project Management fee of 4% of the hard costs.

Engineering Design & Survey fee of 12% of the hard costs.

8. Majority of unit prices are based on similar single family development in the area.

9. This OPC assumes that 30% of the cost to construct "Roger Hanks Parkway Extension (Offsite)" is PID eligible. The PID eligible portion of the cost for Roger Hanks Parkway Extension was included in the Improvement Area #1 Major Roadway improvements.

10. Questions regarding this OPC should be directed to Kimley-Horn and Associates, Alex Granados, (512) 782-0602.

11. The "Authorized Cost" of Major Improvements in Improvement Area #2 shall be 25.6129099% of the total cost of construction of all Major Improvements in the district.

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COSTS

Improvement Area #3A

Date Prepared: 08/25/2025
Date Exhibit: 04/2025
Project: Heritage Dripping Springs
Client: M/I Homes of Austin
KHA Job Number: 067783142
Prepared By: Sarah Starkey
Reviewed By: Alex Granados

Total Acreage:	**17.37**
Total Disturbed:	**17.37**
Lots:	**97**
LF Internal Residential:	**2,808**
LF of Alley Roadway:	**0**
LF PID Eligible Slip Street:	**0**
LF PID Eligible Residential	**2,808**

INTERNAL PID

A. MOBILZATION AND CLEARING (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
1	MOBILIZATION	0.58	LS	$ 262,467.07	$ 152,230.90
2	SITE PREPARATION TO REMOVE TREES, STUMPS, VEGETATION, RUBBISH, DEBRIS, ORGANIC MATTER, AND OTHER OBJECTIONABLE MATERIAL PER THE SPECIFICATIONS AND MAINTAIN POSITIVE DRAINAGE FOR THE ENTIRE SITE, TO INCLUDE DISPOSAL OF CLEARED MATERIAL	12	AC	$ 3,190.00	$ 39,587.90
3	DEMOLITION OF ALL EXISTING STRUCTURES AND INFRASTRUCTURE AS SHOWN ON DEMOLITION SHEETS OF CONSTRUCTION PLANS, TO INCLUDE MAINTENANCE ACCESS PATH, DRAINAGE STRUCTURES AND POWER POLES	0.58	LS	$ 19,834.10	$ 11,503.78
				Subtotal	**$ 203,322.58**

B. EROSION AND SEDIMENTATION CONTROL (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
4	PHASE 1 SILT FENCE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,254	LF	$ 2.35	$ 5,296.00
5	PHASE 2 SILT FENCE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,954	LF	$ 3.34	$ 9,866.83
6	REVEGETATION OF RIGHT-OF-WAY WITH HYDROMULCH SEEDING, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	12,203	SY	$ 2.59	$ 31,606.29
7	TREE PROTECTION, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,399	LF	$ 4.33	$ 10,387.67
8	STAGING AND TEMPORARY SPOILS AREA, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 1,138.50	$ 1,138.50
9	CONCRETE TRUCK WASHOUT, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 495.00	$ 495.00
10	CURB INLET PROTECTION, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	20	EA	$ 115.50	$ 2,310.00
				Subtotal	**$ 61,100.29**

C. STORM WATER & DRAINAGE (INCLUDED IN DRAINAGE IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
11	18” DIA. RCP CL III STM (ALL DEPTHS), INCLUDING EXCAVATION AND BACKFILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1,312	LF	$ 83.70	$ 109,814.40
12	24” DIA. RCP CL III STM (ALL DEPTHS), INCLUDING EXCAVATION AND BACKFILL, COMPLETE IN PLACE AS DETAILED AND	398	LF	$ 101.24	$ 40,293.52
13	30" DIA. RCP CL III STM (ALL DEPTHS), INCLUDING EXCAVATION AND BACKFILL, COMPLETE IN PLACE AS DETAILED AND	142	LF	$ 134.49	$ 19,097.58
14	36" DIA. RCP CL III STM (ALL DEPTHS), INCLUDING EXCAVATION AND BACKFILL, COMPLETE IN PLACE AS DETAILED AND	557	LF	$ 174.85	$ 97,391.45
15	STANDARD STORM MANHOLE, 4' DIA., COMPLETE IN PLACE AS DETAILED AND SPECIFIED	6	EA	$ 4,663.18	$ 27,979.08
16	STANDARD STORM MANHOLE, 5' DIA., COMPLETE IN PLACE AS DETAILED AND SPECIFIED	3	EA	$ 5,464.86	$ 16,394.58
17	STANDARD STORM MANHOLE, 6' DIA., COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2	EA	$ 6,733.23	$ 13,466.46
18	REMOVE PLUG AND CONNECT TO EXISTING 24" RCP	3	EA	$ 1,904.51	$ 5,713.53
20	REMOVE PLUG AND CONNECT TO EXISTING 36" RCP	1	EA	$ 1,680.65	$ 1,680.65
21	END AND PLUG FOR FUTURE CONNECTION	1	EA	$ 1,494.70	$ 1,494.70
22	5’ CURB INLET, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2	EA	$ 4,638.26	$ 9,276.52
23	10’ CURB INLET, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	15	EA	$ 6,344.27	$ 95,164.05
24	4'x4' AREA INLET, COMPLETE AND IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 5,496.45	$ 5,496.45
25	5'x5' AREA INLET, COMPLETE AND IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 6,189.74	$ 6,189.74
26	TRENCH SAFETY SYSTEM, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,409	LF	$ 1.10	$ 2,649.90
				Subtotal	**$ 452,102.61**

D. WASTEWATER (INCLUDED IN WASTEWATER IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
27	8" SDR 26 ASTM D3034 PVC GRAVITY WASTEWATER (ALL DEPTHS),COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,585	LF	$ 74.46	$ 192,479.10
28	4' DIAMETER PRECAST CONCRETE WASTEWATER MANHOLE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	13	EA	$ 4,715.08	$ 61,296.04
29	4' DIAMETER PRECAST CONCRETE WASTEWATER EXTERNAL DROP MANHOLE, COMPLETE IN PLACE AS DETAILED AND	1	EA	$ 7,508.90	$ 7,508.90
30	WASTEWATER MANHOLE STANDARD RING AND COVER, INCLUDING ADJUSTMENT TO FINISHED GRADE COMPLETE IN PLACE	14	EA	$ 1,724.86	$ 24,148.04
31	8" WASTEWATER PLUG, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 980.90	$ 980.90
32	CORE INTO EXISTING MANHOLE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 6,431.76	$ 6,431.76
33	REMOVE PLUG AND CONNECT TO EXISTING WASTEWATER LINE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	3	EA	$ 1,263.66	$ 3,790.98
34	COATING FOR WASTEWATER MANHOLES, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	14	EA	$ 1,532.23	$ 21,451.22
35	DOUBLE GRAVITY SEWER LATERAL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	40	EA	$ 5,018.37	$ 200,734.80
36	SINGLE GRAVITY SEWER LATERAL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	17	EA	$ 3,644.92	$ 61,963.64
37	TESTING	2,585	LF	$ 3.11	$ 8,039.35
38	TRENCH SAFETY ALL DEPTHS, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,585	LF	$ 1.10	$ 2,843.50
				Subtotal	**$ 591,668.23**

E. EARTHWORK/GRADING (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
39	EXCAVATION, COMPLETE IN PLACE AS DETAILED AND SPECIFIED WITHIN ROW*	8412.9	CY	$ 6.05	$ 50,898.05
40	EMBANKMENT, INCLUDING SPREADING AND COMPACTION OF FILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED WITHIN ROW*	4530.96	CY	$ 4.90	$ 22,201.70
41	EXCAVATION, COMPLETE IN PLACE AS DETAILED AND SPECIFIED OUTSIDE OF ROW*	17467.86	CY	$ 6.05	$ 105,680.55
42	EMBANKMENT, INCLUDING SPREADING AND COMPACTION OF FILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED OUTSIDE OF ROW*	25184.76	CY	$ 4.90	$ 123,405.32
43	IMPORT OF FILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	0	CY	$ -	$ -
44	EXPORT OF EXCESS MATERIAL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	0	CY	$ -	$ -
				Subtotal	**$ 302,185.63**

F. PAVING (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
45	SUB GRADE PREPARATION – COMPLETE IN PLACE AS DETAILED AND SPECIFIED	11,627	SY	$ 2.21	$ 25,695.67
46	GEOGRID - A SINGLE LAYER OF TEXAR TX-130S OR EQUIVALENT, COMPLETE IN PLACE AS REQUIRED BY GEOTECHNICAL	11,627	SY	$ 2.40	$ 27,904.80
47	LIME STABILIZATION A MINIMUM OF 8" BELOW SUBGRADE, COMPLETE IN PLACE AS REQUIRED BY GEOTECHNICAL REPORT	11,627	SY	$ 10.82	$ 125,804.14
48	8" CRUSHED LIMESTONE BASE , COMPLETE IN PLACE AS DETAILED AND SPECIFIED	11,769	SY	$ 15.64	$ 184,067.16
49	HOT MIX ASPHALT CONCRETE PAVEMENT, 2.0 INCH , COMPLETE IN PLACE AS DETAILED AND SPECIFIED	8,739	SY	$ 17.70	$ 154,680.30
50	2' CONCRETE CURB AND GUTTER, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	5,405	LF	$ 22.51	$ 121,666.55
51	CONCRETE SIDEWALKS, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	245	SY	$ 71.56	$ 17,532.20
52	SIDEWALK CURB RAMP, TXDOT TYPE 1, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2	EA	$ 1,420.95	$ 2,841.90
53	SIDEWALK CURB RAMP, TYPE 1B, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	4	EA	$ 1,468.24	$ 5,872.96
				Subtotal	**$ 666,065.68**

G. MISCELLANEOUS (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
54	NOVARA ML 450 LVC 3000K TYPE II STREET LIGHT	7	EA	$ 6,042.77	$ 42,299.39
55	STREET END BARRICADE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 1,182.50	$ 1,182.50
56	MISCELLANEOUS THERMOPLASTIC STRIPING (CROSSWALKS, STOP BARS), COMPLETE IN PLACE AS DETAILED AND SPECIFIED	0.58	LS	$ 15,838.35	$ 9,186.24
57	TRAFFIC SIGNS, (STOP SIGN W/ STREET NAME SIGNS), COMPLETE IN PLACE AS DETAILED AND SPECIFIED	0.58	LS	$ 5,945.50	$ 3,448.39
				Subtotal	**$ 56,116.52**

H. LANDSCAPING/AMENITIES PID ELIGIBLE (INCLUDED IN TRAILS/LANDSCAPING IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
58	PERFECT CUTS LANDSCAPING	0.58	LS	$ 105,246.56	$ 61,043.00
				Subtotal	**61,043.00**

SUMMARY OF ESTIMATED PROJECT COSTS

	DESCRIPTION	TOTAL COST
A.	**MOBILZATION AND CLEARING (INCLUDED IN ROADWAY IN SUMMARY)**	$ 203,322.58
B.	**EROSION AND SEDIMENTATION CONTROL (INCLUDED IN ROADWAY IN SUMMARY)**	$ 61,100.29
C.	**STORM WATER & DRAINAGE (INCLUDED IN DRAINAGE IN SUMMARY)**	$ 452,102.61
D.	**WASTEWATER (INCLUDED IN WASTEWATER IN SUMMARY)**	$ 591,668.23
E.	**EARTHWORK/GRADING (INCLUDED IN ROADWAY IN SUMMARY)**	$ 302,185.63
F.	**PAVING (INCLUDED IN ROADWAY IN SUMMARY)**	$ 666,065.68
G.	**MISCELLANEOUS (INCLUDED IN ROADWAY IN SUMMARY)**	$ 56,116.52
H.	**LANDSCAPING/AMENITIES PID ELIGIBLE (INCLUDED IN TRAILS/LANDSCAPING IN SUMMARY)**	$ 61,043.00
	Project Subtotal	**$ 2,393,604.54**
	Cost per lot	24,676.34

PRELIMINARY OPINION OF PROBABLE CONSTRUCTION COSTS

Improvement Area #3B

Date Prepared: 08/25/2025
Date Exhibit: 04/2025
Project: Heritage Dripping Springs
Client: M/I Homes of Austin
KHA Job Number: 067783142
Prepared By: Sarah Starkey
Reviewed By: Alex Granados

Total Acreage:	**12.41**
Total Disturbed:	**12.41**
Lots:	**67**
LF Internal Residential:	**2,349**
LF of Alley Roadway:	**0**
LF PID Eligible Slip Street:	**0**
LF PID Eligible Residential	**2,349**
LF PID Eligible Collector Roadway:	**288**

INTERNAL PID

A. MOBILZATION AND CLEARING (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
1	MOBILIZATION	0.42	LS	$ 262,467.07	$ 110,236.17
2	SITE PREPARATION TO REMOVE TREES, STUMPS, VEGETATION, RUBBISH, DEBRIS, ORGANIC MATTER, AND OTHER OBJECTIONABLE MATERIAL PER THE SPECIFICATIONS AND MAINTAIN POSITIVE DRAINAGE FOR THE ENTIRE SITE, TO INCLUDE DISPOSAL OF CLEARED MATERIAL	18	AC	$ 3,190.00	$ 56,877.70
3	DEMOLITION OF ALL EXISTING STRUCTURES AND INFRASTRUCTURE AS SHOWN ON DEMOLITION SHEETS OF CONSTRUCTION PLANS, TO INCLUDE MAINTENANCE ACCESS PATH, DRAINAGE STRUCTURES AND POWER POLES	0.42	LS	$ 19,834.10	$ 8,330.32
				Subtotal	**$ 175,444.19**

B. EROSION AND SEDIMENTATION CONTROL (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
4	PHASE 1 SILT FENCE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	652	LF	$ 2.35	$ 1,532.20
5	PHASE 2 SILT FENCE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,732	LF	$ 3.34	$ 9,124.88
6	REVEGETATION OF RIGHT-OF-WAY WITH HYDROMULCH SEEDING, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	8,837	SY	$ 2.59	$ 22,887.31
7	TREE PROTECTION, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1,691	LF	$ 4.33	$ 7,322.03
8	CURLEX MATTING, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,570	SY	$ 36.30	$ 93,291.00
9	STAGING AND TEMPORARY SPOILS AREA, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 1,138.50	$ 1,138.50
10	CONCRETE TRUCK WASHOUT, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 495.00	$ 495.00
11	CURB INLET PROTECTION, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	9	EA	$ 115.50	$ 1,039.50
				Subtotal	**$ 136,830.42**

C. STORM WATER & DRAINAGE (INCLUDED IN DRAINAGE IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
12	18” DIA. RCP CL III STM (ALL DEPTHS), INCLUDING EXCAVATION AND BACKFILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	888	LF	$ 83.70	$ 74,325.60
13	30" DIA. RCP CL III STM (ALL DEPTHS), INCLUDING EXCAVATION AND BACKFILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	417	LF	$ 134.49	$ 56,082.33
14	STANDARD STORM MANHOLE, 4' DIA., COMPLETE IN PLACE AS DETAILED AND SPECIFIED	4	EA	$ 4,663.18	$ 18,652.72
15	STANDARD STORM MANHOLE, 5' DIA., COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2	EA	$ 5,464.86	$ 10,929.72
16	REMOVE PLUG AND CONNECT TO EXISTING 18" RCP	1	EA	$ 1,510.94	$ 1,510.94
17	REMOVE PLUG AND CONNECT TO EXISTING 30" RCP	1	EA	$ 1,680.65	$ 1,680.65
18	END AND PLUG FOR FUTURE CONNECTION	1	EA	$ 1,494.70	$ 1,494.70
19	10’ CURB INLET, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	9	EA	$ 6,344.27	$ 57,098.43
20	5'x5' AREA INLET, COMPLETE AND IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 6,189.74	$ 6,189.74
21	TRENCH SAFETY SYSTEM, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1,305	LF	$ 1.10	$ 1,435.50
				Subtotal	**$ 229,400.33**

D. WASTEWATER (INCLUDED IN WASTEWATER IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
22	8" SDR 26 ASTM D3034 PVC GRAVITY WASTEWATER (ALL DEPTHS),COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,477	LF	$ 74.46	$ 184,437.42
23	4' DIAMETER PRECAST CONCRETE WASTEWATER MANHOLE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	13	EA	$ 4,715.08	$ 61,296.04
24	4' DIAMETER PRECAST CONCRETE WASTEWATER EXTERNAL DROP MANHOLE, COMPLETE IN PLACE AS DETAILED AND	3	EA	$ 7,508.90	$ 22,526.70
25	WASTEWATER MANHOLE STANDARD RING AND COVER, INCLUDING ADJUSTMENT TO FINISHED GRADE COMPLETE IN PLACE AS D	14	EA	$ 1,724.86	$ 24,148.04
26	WASTEWATER MANHOLE BOLTED RING AND COVER, INCLUDING 1' ABOVE FINISHED GRADE COMPLETE IN PLACE AS DETAILED	2	EA	$ 1,851.89	$ 3,703.78
27	REMOVE PLUG AND CONNECT TO EXISTING WASTEWATER LINE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2	EA	$ 1,263.66	$ 2,527.32
28	COATING FOR WASTEWATER MANHOLES, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	16	EA	$ 1,532.23	$ 24,515.68
29	DOUBLE GRAVITY SEWER LATERAL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	33	EA	$ 5,018.37	$ 165,606.21
30	SINGLE GRAVITY SEWER LATERAL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 3,644.92	$ 3,644.92
31	TESTING	2,477	LF	$ 3.11	$ 7,703.47
32	TRENCH SAFETY ALL DEPTHS, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	2,477	LF	$ 1.10	$ 2,724.70
				Subtotal	**$ 502,834.28**

E. EARTHWORK/GRADING (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
33	EXCAVATION, COMPLETE IN PLACE AS DETAILED AND SPECIFIED WITHIN ROW*	6092	CY	$ 6.05	$ 36,857.21
34	EMBANKMENT, INCLUDING SPREADING AND COMPACTION OF FILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED WITHIN ROW*	3281	CY	$ 4.90	$ 16,077.10
35	EXCAVATION, COMPLETE IN PLACE AS DETAILED AND SPECIFIED OUTSIDE OF ROW*	12649	CY	$ 6.05	$ 76,527.30
36	EMBANKMENT, INCLUDING SPREADING AND COMPACTION OF FILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED OUTSIDE OF ROW*	18237	CY	$ 4.90	$ 89,362.48
37	IMPORT OF FILL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	0	CY	$ -	$ -
38	EXPORT OF EXCESS MATERIAL, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	0	CY	$ -	$ -
				Subtotal	**$ 218,824.07**

F. PAVING (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
39	SUB GRADE PREPARATION – COMPLETE IN PLACE AS DETAILED AND SPECIFIED	11,010	SY	$ 2.21	$ 24,332.10
40	GEOGRID - A SINGLE LAYER OF TEXAR TX-130S OR EQUIVALENT, COMPLETE IN PLACE AS REQUIRED BY GEOTECHNICAL	11,010	SY	$ 2.40	$ 26,424.00
41	LIME STABILIZATION A MINIMUM OF 8" BELOW SUBGRADE, COMPLETE IN PLACE AS REQUIRED BY GEOTECHNICAL REPORT	11,010	SY	$ 10.82	$ 119,128.20
42	8" CRUSHED LIMESTONE BASE , COMPLETE IN PLACE AS DETAILED AND SPECIFIED	9,626	SY	$ 15.64	$ 150,550.64
43	16" CRUSHED LIMESTONE BASE , COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1,242	SY	$ 29.90	$ 37,135.80
44	HOT MIX ASPHALT CONCRETE PAVEMENT, 2.0 INCH , COMPLETE IN PLACE AS DETAILED AND SPECIFIED	7,157	SY	$ 17.70	$ 126,678.90
45	HOT MIX ASPHALT CONCRETE PAVEMENT, 2.5 INCH , COMPLETE IN PLACE AS DETAILED AND SPECIFIED	922	SY	$ 22.14	$ 20,413.08
46	2' CONCRETE CURB AND GUTTER, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	4,328	LF	$ 22.51	$ 97,423.28
47	2' NOTCHED CONCRETE CURB AND GUTTER, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	750	LF	$ 29.22	$ 21,915.00
48	CONCRETE SIDEWALKS, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	526	SY	$ 71.56	$ 37,640.56
49	SIDEWALK CURB RAMP, TXDOT TYPE 7, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 1,528.82	$ 1,528.82
50	SIDEWALK CURB RAMP, TYPE 1B, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	11	EA	$ 1,468.24	$ 16,150.64
				Subtotal	**$ 679,321.02**

G. MISCELLANEOUS (INCLUDED IN ROADWAY IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
51	NOVARA ML 450 LVC 3000K TYPE II STREET LIGHT	9	EA	$ 6,042.77	$ 54,384.93
52	STREET END BARRICADE, COMPLETE IN PLACE AS DETAILED AND SPECIFIED	1	EA	$ 1,182.50	$ 1,182.50
53	MISCELLANEOUS THERMOPLASTIC STRIPING (CROSSWALKS, STOP BARS), COMPLETE IN PLACE AS DETAILED AND SPECIFIED	0.42	LS	$ 15,838.35	$ 6,652.11
54	TRAFFIC SIGNS, (STOP SIGN W/ STREET NAME SIGNS), COMPLETE IN PLACE AS DETAILED AND SPECIFIED	0.42	LS	$ 5,945.50	$ 2,497.11
				Subtotal	**$ 64,716.65**

H. LANDSCAPING/AMENITIES PID ELIGIBLE (INCLUDED IN TRAILS/LANDSCAPING IN SUMMARY)

	DESCRIPTION	QUANTITY	UNIT	COST / UNIT	TOTAL COST
55	PERFECT CUTS LANDSCAPING	0.42	LS	$ 105,246.56	$ 44,203.56
				Subtotal	**44,203.56**

SUMMARY OF ESTIMATED PROJECT COSTS

	DESCRIPTION	TOTAL COST
A.	**MOBILZATION AND CLEARING (INCLUDED IN ROADWAY IN SUMMARY)**	$ 175,444.19
B.	**EROSION AND SEDIMENTATION CONTROL (INCLUDED IN ROADWAY IN SUMMARY)**	$ 136,830.42
C.	**STORM WATER & DRAINAGE (INCLUDED IN DRAINAGE IN SUMMARY)**	$ 229,400.33
D.	**WASTEWATER (INCLUDED IN WASTEWATER IN SUMMARY)**	$ 502,834.28
E.	**EARTHWORK/GRADING (INCLUDED IN ROADWAY IN SUMMARY)**	$ 218,824.07
F.	**PAVING (INCLUDED IN ROADWAY IN SUMMARY)**	$ 679,321.02
G.	**MISCELLANEOUS (INCLUDED IN ROADWAY IN SUMMARY)**	$ 64,716.65
H.	**LANDSCAPING/AMENITIES PID ELIGIBLE (INCLUDED IN TRAILS/LANDSCAPING IN SUMMARY)**	$ 44,203.56
	Project Subtotal	**$ 2,051,574.52**
	Cost per lot	30,620.52

Exhibit E

Lot Mix Exhibit

HERITAGE

PDD Compliant Overall Residential Lot Size Exhibit

Dripping Spring, Texas
August 2025

HERITAGE PDD COMPLIANT RESIDENTIAL LOT MIX								
Medium Density Detached								
Product	**Phase 1**	**Phase 2**	**Phase 3A**	**Phase 3B**	**Phase 4A**	**Phase 4B**	**Lots**	**Percent**
40's	12	14	34				60	9%
45's	100	74	38	20	76		308	44%
50's	46	12	25	2	39		124	18%
Subtotal MDD	158	100	97	22	115	0	492	70%
High Density Detached								
Product							**Lots**	**Percent**
35's		6		45			51	7%
40's		54					54	8%
Subtotal HDD	0	60	0	45	0	0	105	15%
High Density Attached								
Product							**Lots**	**Percent**
MF						103	103	15%
Total Lots	158	160	97	67	115	103	700	

IMPROVEMENT AREA #3A

IMPROVEMENT AREA #3B

PROPERTY BOUNDARY

PHASE LINE

NOTE: THIS PLAN IS CONCEPTUAL IN NATURE AND HAS BEEN PRODUCED WITHOUT THE BENEFIT OF A SURVEY, TOPOGRAPHY, UTILITIES, CONTACT WITH THE CITY, ETC.

Plotted By:Erfurth, Kara Date:August 25, 2025 11:30:29am File Path:K:\AUS_Civil\067783117-Heritage-MI Homes\PRELIMINARY\Cad\Exhibits\PlanSheets\20250424 - Overall Lotting Exhibit.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

EXHIBIT B

CITY OF DRIPPING SPRINGS, TEXAS
NOTICE OF PUBLIC HEARING

TO CONSIDER PROPOSED ASSESSMENTS TO BE LEVIED AGAINST PROPERTY IN IMPROVEMENT AREA #3A AND IMPROVEMENT AREA #3B OF THE HERITAGE PUBLIC IMPROVEMENT DISTRICT

Notice is given that the City Council of Dripping Springs, Texas will conduct a public hearing on Tuesday, October 21, 2025, during the regular City Council meeting beginning at 6:00 P.M. Information about how to participate in the public hearing is provided below. The purpose of the public hearing is to hear and pass on any objections to the assessments proposed to be levied against assessable property located within Improvement Area #3A ("Improvement Area #3A") and Improvement Area #3B (Improvement Area #3B") of the Heritage Public Improvement District (the "District") pursuant to Chapter 372 of the Texas Local Government Code. Written and oral objections will be considered at the hearing.

1. General Nature of Improvements – The public improvements for the District (the "Authorized Improvements") may consist of one or more of the public improvements included in Section 372.003(b) of the Act. The general nature of the Authorized Improvements are: (i) the establishment of parks and open space, and the design and construction of ancillary structures, features, or amenities such as trails, pavilions, irrigation, walkways, lighting, benches, trash receptacles and other similar items; (ii) landscaping; (iii) acquisition, construction, and improvement of water (if any of the water infrastructure serving the property becomes eligible to be a public improvement because the water service provider becomes a governmental entity), wastewater and drainage, detention and water quality facilities; (iv) acquisition, construction, and improvement of streets, roadways, rights-of-way, signalization and related facilities; (v) entry monumentation and features; (vi) signage; (vii) projects similar to those listed in subsections (i)-(vi) above; and (viii) payment of costs associated with constructing and financing the public improvements listed in subparagraphs (i)-(vii) above, including costs of establishing, administering, and operating the District.

The property within the District is expected to be developed in multiple phases, with certain improvements that will benefit and serve all of the property within the District, and certain improvements that will benefit and serve only the property within each phase (an "Improvement Area"). Improvement Area #3A is anticipated to include (i) acquisition, construction, and/or improvement of streets, roadways, rights-of-way and related facilities; (ii) acquisition, construction, and/or improvement of wastewater and drainage facilities; (iii) landscaping improvements, including plantings, parks and open space, fencing and signage; and (iv) the payment of costs associated with the public improvements described herein (collectively, the "Improvement Area #3A Improvements"). Improvement Area #3B is anticipated to include (i) acquisition, construction, and/or improvement of streets, roadways, rights-of-way and related facilities; (ii) acquisition, construction, and/or improvement of wastewater and drainage facilities; (iii) landscaping improvements, including plantings, parks and open space, fencing and signage; and (iv) the payment of costs associated with the public improvements described herein

(collectively, the "Improvement Area #3B Improvements" and together with the Improvement Area #3A Improvements, the "Improvement Area #3 Improvements"). Assessments are only presently proposed for Improvement Area #3A and Improvement Area #3B, and no assessments will be considered at the public hearing for future Improvements Areas.

2. Estimated Costs of the Improvement Area #3A Improvements – The estimated costs of the proposed Improvement Area #3A Improvements are approximately $5,491,000 (including issuance and other financing costs). The exact amount will be provided in the approved Service and Assessment Plan.

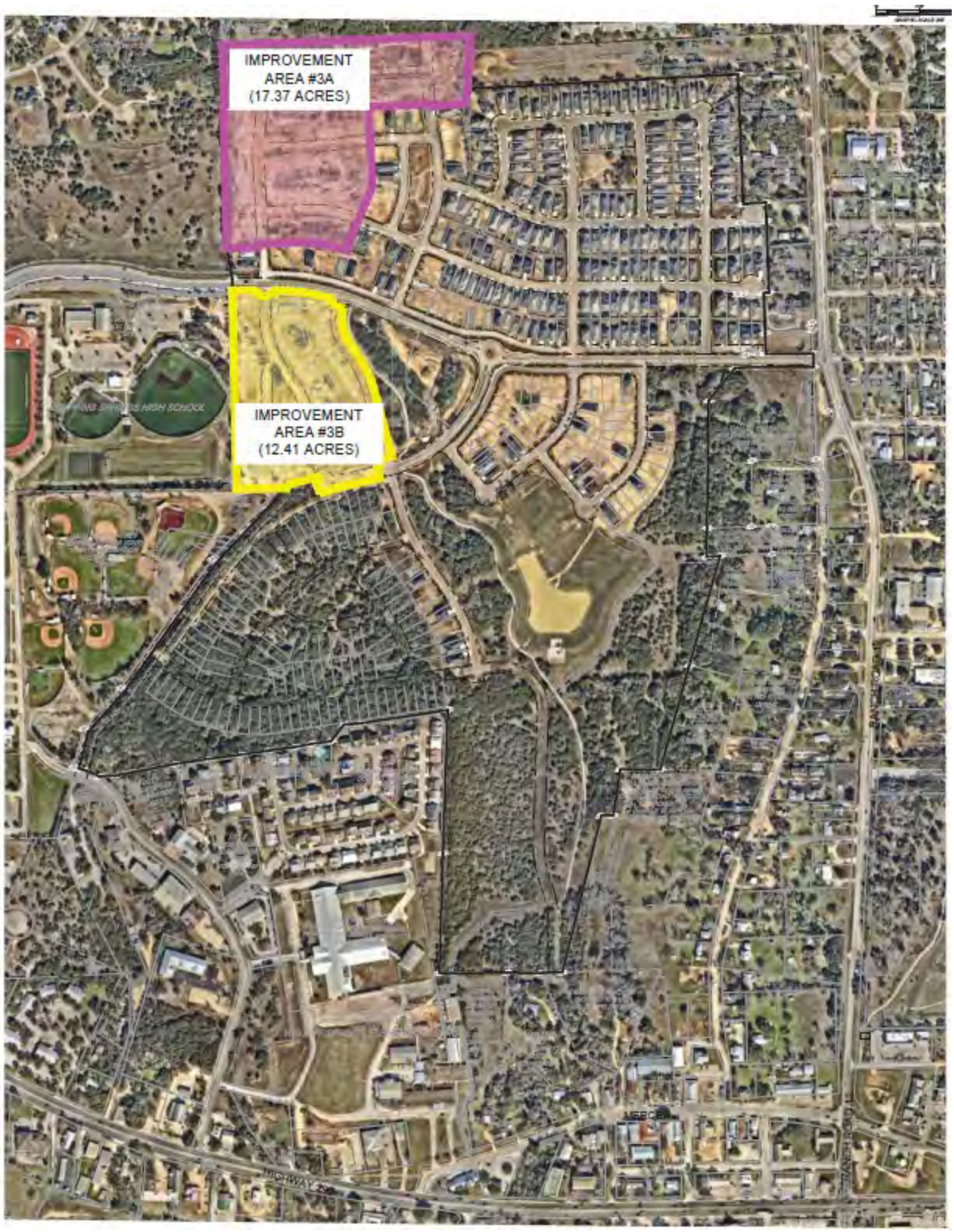
3. Estimated Costs of the Improvement Area #3B Improvements – The estimated costs of the proposed Improvement Area #3B Improvements are approximately $4,137,000 (including issuance and other financing costs). The exact amount will be provided in the approved Service and Assessment Plan.

4. Proposed Estimated Improvement Area #3A Assessments – The proposed estimated assessments on property within Improvement Area #3A of the District is approximately the amount of $4,262,000.

5. Proposed Estimated Improvement Area #3B Assessments The proposed estimated assessments on property within Improvement Area #3B of the District is approximately the amount of $2,759,000.

6. Boundaries of the District. The District includes approximately 188.943 acres of land generally located west of Ranch Road 12, northeast of Sportsplex Drive and approximately one mile north of Highway 290. Improvement Area #3A is comprised of approximately 17.37 acres and is located within the boundaries of the District as shown below. Improvement Area #3B is comprised of approximately 12.41 areas and is located within the boundaries of the District as shown below.

7. How to Participate in the Public Hearing – The public hearing will be held during the regular City Council meeting on the date and commencing at the time stated above, at the City Council Chambers, 511 Mercer Street, Dripping Springs, Texas 78620. The agenda for the City Council meeting and information regarding how to participate in the public hearing is available at https://www.cityofdrippingsprings.com/site-home/pages/minutes-and-agendas or by calling the City Secretary's Office at 512-858-4725. The proposed Service and Assessment Plan and Assessment Roll are available for public inspection at the Office of the City Secretary, 511 Mercer Street, Dripping Springs, Texas 78620, and online by selecting the agenda item for this matter from the link provided above. During the public hearing, any interested person may raise objections to the assessments proposed to be levied against assessable property located in the District.


IMPROVEMENT
AREA #3A
(17.37 ACRES)
IMPROVEMENT
AREA #3B
(12.41 ACRES)

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78620

Submitted By: Johnna Krantz, Community Events Coordinator

Council Meeting Date: October 7, 2025

Agenda Item Wording: **Approval of a Temporary Street Closure Permit Request from the Dripping Springs Lions Club to close portions of Mercer Street, College Street, San Marcos Street, and Old Fitzhugh Road on December 6, 2025 for the 2025 Christmas on Mercer event.**

Agenda Item Sponsor: Council Member Sherrie Parks

Summary/Background: The 2025 Christmas on Mercer event is scheduled for December 6, 2025. This year's Traffic Control Plan (TCP) has been prepared to promote safety and convenience for the public and downtown businesses during the event.

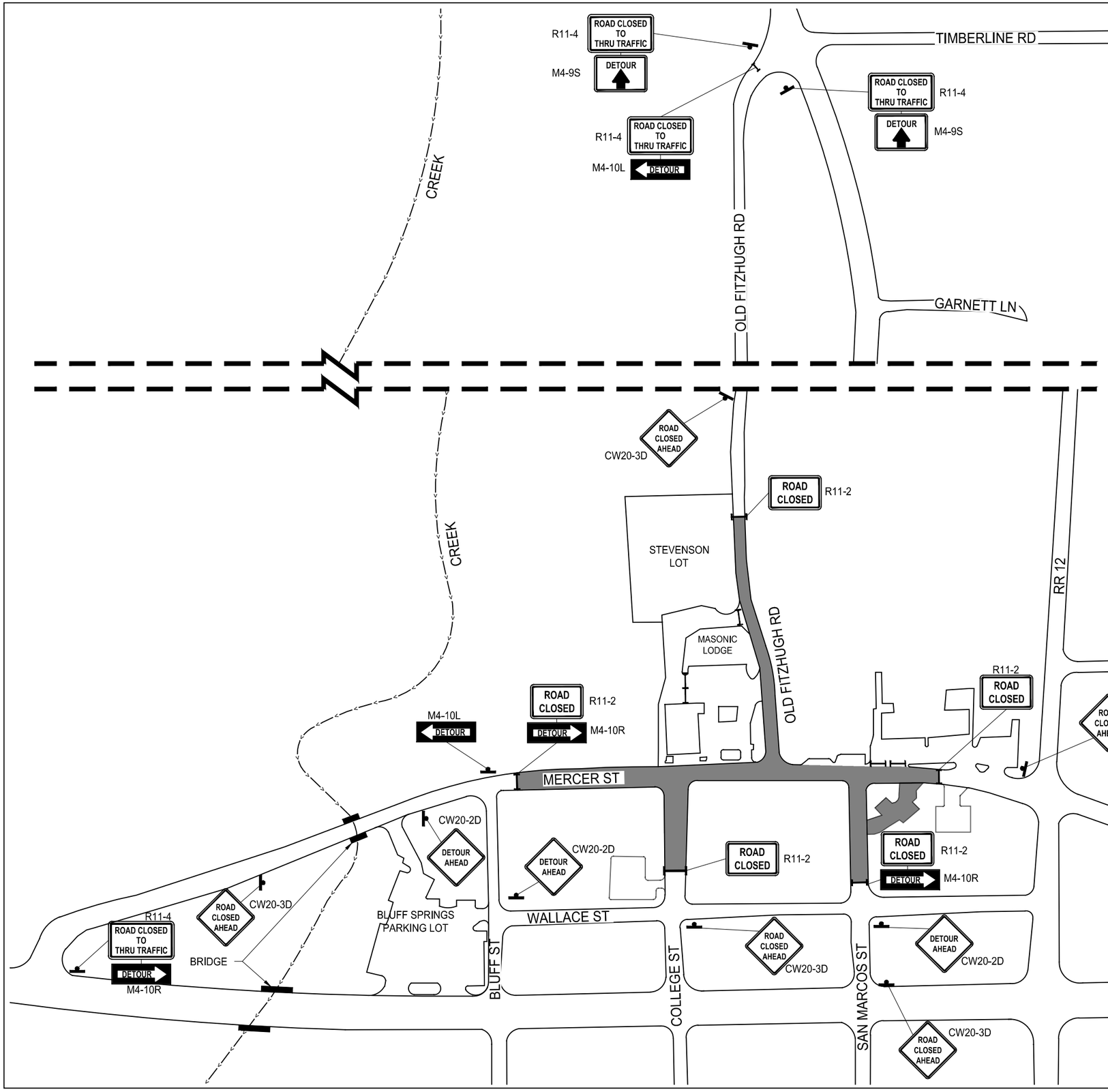
Beginning at 5:00AM on December 6 the City will temporarily close portions of the downtown area to through-traffic for public safety: Mercer Street will close from Bluff Street up to and including Wells Fargo Bank. San Marcos Street will close from Mercer to Wallace Street. A portion of College Street will close between the rear parking lot entrance of Mazama Coffee up to Mercer Street. Old Fitzhugh Road will be closed to through-traffic at Ranch Road 12, and fully closed to event traffic from 101 Old Fitzhugh Rd., also known as the Stephenson lot, to Mercer Street.

The 2025 Christmas on Mercer TCP is based on the previously successful plans utilized by the City in 2023 and 2024. Additional safety barricades are indicated at the 101 and 103 Old Fitzhugh lot in order to secure the Stephenson Building construction project, which is expected to be underway during the time of this event.

Staff Recommendation: Approval of the Temporary Street Closure request for the 2025 Christmas on Mercer event to be held on December 6, 2025.

Attachments: XMAS_TCP-2025.pdf

Next Steps/Schedule: Issue the Temporary Road Closure Permit and execute the event.



LEGEND

- SIGN
- TYPE III BARRICADE
- EVENT AREA
- CREEK CENTERLINE

CODE	DESCRIPTION	SIZE	QTY
R11-2	ROAD CLOSED	48" X 30"	5
R11-4	ROAD CLOSED TO THRU TRAFFIC	60" X 30"	4
M4-10L	DETOUR (LEFT)	48" X 18"	2
M4-10R	DETOUR (RIGHT)	48" X 18"	3
M4-9S	DETOUR (STRAIGHT AHEAD)	48" X 36"	2
CW20-3D	ROAD CLOSED AHEAD	36" X 36"	5
CW20-2D	DETOUR AHEAD	36" X 36"	3

Item # 11.

GILPIN ENGINEERING
T.B.P.E. Firm Registration # F-27501
9701 BRODIE LANE #203
AUSTIN, TX 78748
PH: 512.220.8100

ENGINEER'S SEAL:

STATE OF TEXAS
CHAD GILPIN
91800
LICENSED PROFESSIONAL ENGINEER
8/29/2025

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REVISIONS:

NO.	REVISION	DATE

DATE: 8/29/2025
DESIGNED BY: RP
CHECKED BY: CG
PROJ #:

DRIPPING SPRINGS
Texas

PROJECT:

CHRISTMAS ON MERCER
2025

SHEET TITLE:

TRAFFIC CONTROL PLAN

DRAFT 9.25.2025



City of Dripping Springs

PERSONNEL MANUAL

The Handbook Of
Benefits, Policies & Procedures
For Employees of the
City of Dripping Springs

DRIPPING SPRINGS
Texas

DRAFT 9.25.2025

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SECTION 1: INTRODUCTION

1.01 Policies Established

These policies and all amendments hereto shall be the official personnel policies of the City. The City retains the right to unilaterally change policies in this Manual and will advise employees of those changes. All prior policies are hereby repealed.

1.02 Purpose

This Manual is adopted by the City Council as a guidance document, not a contract. Through this Manual, the City Council strives to bring uniformity, consistency, and fairness to its employment practices.

1.03 Applicability

These policies apply to all City employees, except where inconsistent with state law, federal law, City ordinance, or the particular agreement hiring a specific employee. In the event of such inconsistency, the state or federal law, ordinance, or agreement shall prevail.

1.04 Objectives

The City seeks to achieve these objectives through the systematic, uniform application of modern personnel practices. The City's personnel policies strive to:

(a) promote and increase productivity, efficiency, and responsiveness to the public, and economy in the City service;

(b) provide fair and equal opportunity for qualified persons to enter and progress in the City's service in a manner based on merit and fitness;

(c) maintain recruitment, advancement, and other practices to enhance the attractiveness of a City career;

(d) develop and maintain consistent, up-to-date position classifications and compensation plans;

(e) develop high morale among City employees by fostering good working relationships, and by providing uniform personnel policies, opportunity for advancement, and consideration of employee needs and desires;

(f) retain employees on the basis of the adequacy of their performance, correct inadequate performance, and separate employees whose inadequate performance cannot be corrected; and

(g) assure that employees are protected against coercion for partisan political purposes and are prohibited from using their positions with the City for the purpose of interfering with or affecting the results of any kind of official election.

1.05 At-Will

(a) All employees of the City serve at-will except those who are a party to a City Council approved employment agreement. Any City Council approved employment agreement preempts any provision of these policies where there is any conflict.

(b) These policies and the benefits described herein do not constitute a contract of employment or a contract between the City and any employee to provide any benefit. Nothing contained herein shall create an entitlement to, or property interest in, continued employment with the City.

(c) The City may alter, modify, amend, or terminate any of the policies or benefits set forth herein at any time, with or without notice. Notwithstanding any statement contained in these policies, or in any other document or statement issued by the City or any of its representatives to the contrary, the City shall have the right to terminate any employee from employment with the City, at any time, with or without cause, subject to state and federal law.

1.06 Dissemination

The City shall make every effort to thoroughly acquaint employees with the materials in these personnel policies and any subsequent revision. Copies of these policies and all amendments shall be furnished to each employee. Notwithstanding the foregoing, it is each employee's responsibility to become familiar with the contents of these policies, and to ask questions when necessary, for a full understanding.

1.07 City Administrator

The term "City Administrator" as used in this Manual includes the City Administrator, a Deputy City Administrator, and others specifically designated by the City Administrator to act as agents.

1.08 Chain of Command

Each employee has a supervisor who should be consulted should any work issue arise. If the supervisor is unavailable, or a response is determined by the employee to be inadequate, the employee may discuss the issue with the Department Director, Human Resources Director, a Deputy City Administrator, or City Administrator, unless a different procedure is described herein. The supervisory chain of command for each employee shall be listed in the employee's job description. Engaging in activity outside the chain of command as relates to employment matters is detrimental to the employment relationship and harms the ability of the City to react effectively and consistently when presented with employee issues. Each month the City Administrator shall prepare a report for the mayor that lists the hiring, termination, staffing levels, and significant employee actions.

DRAFT 9.25.2025

1.09 Core Values

City of Dripping Springs (COD) Texas



Core Values - **C O D S T X**

- **Community** - support, connection, value through relationships
- **Openness** - open and accepting, transparency, communication
- **Dependability** - trust, teamwork, honesty, responsive, available
- **Service** - safety, sincerity, smiles, self-respect
- **Teamwork** - working together for common goals
- **Excellence** - quality, commitment, professional, greatness, brilliance

SECTION 2: CLASSIFICATIONS

2.01 Classifications Listed

There are 5 classifications of employees with the City:
(1) Full-Time—Exempt;
(2) Full Time—Non-exempt;
(3) Part-Time—Regular;
(4) Temporary;
(5) Seasonal; and
(6) Event/Intermittent.

While not considered an "employee" under this Manual, a sixth classification is Contract Services. Volunteers who are not employed by the City in any capacity are not generally governed by this Personnel Manual but will be reviewed in the same manner as an employee as it relates to conduct and ethics as applicable. Employees who volunteer for the City in a capacity other than their normal job functions will be governed by this Manual.

2.02 Full-Time—Exempt

Employees who work a regular schedule of more than ~~30~~ 60 hours every fourteen (14) day work period~~a week~~ and meet the federal law requirements of an employee exempt from overtime shall be considered full-time— exempt if approved by the City through a job description. The employee's average of hours worked per week is not considered when determining whether an employee is full-time— exempt.

Pursuant to the Fair Labor Standards Act, as may be amended (FLSA) and applicable state laws, exempt employees are those who qualify as such under the statute because they fall into one of the exempt categories. Exempt employees are not entitled to overtime compensation pay~~ (but are entitled to compensatory time, as explained elsewhere)~~. Employees are only considered exempt if: (1) they meet the federal requirement; and (2) the approved job description designates the employee as exempt.

2.03 Full-Time—Non-exempt

Employees who work a regular schedule of more than 30 hours a week and who are not exempt employees based on their job duties or compensation shall be considered full-time—non-exempt. The employee's average of hours worked per week is not considered when determining whether an employee is full-time—nonexempt. Non-exempt employees are eligible for overtime pay if the employee works more than forty (40) hours in a 7-day work period. The 7-day work period runs from Monday to Sunday.

2.04 Part-Time—Regular

Employees who work a regular schedule of less than 30 hours a week shall be considered part-time.

2.05 Regular

Any employee who works for an indefinite period of time (not temporary, seasonal, or event/intermittent) shall be considered regular employees.

2.06 Temporary

Employees who work for a short period of time shall be considered temporary employees.

2.07 Seasonal

Employees who work solely for a specific time of year shall be considered seasonal employees. Seasonal employees may not be employed more than three months in any one year and should start and end employment around the same time every year except when also employed as an event/intermittent employee.

2.08 Event/Intermittent

Employees who work at special events or intermittently at any time of the year on an occasional basis. Seasonal and temporary employees may work as event/intermittent employees.

2.09 Contract Services

At the discretion of the City Council, officer or employee positions may be staffed by professional services providers on a contract basis.

SECTION 3: HIRING

3.01 Hiring Authority

The City Council is the hiring authority for all City officers as described in Local Government Code Chapter 22 or as otherwise designated by the City Council. These officers include City Administrator, Deputy City Administrators, City Secretary, City Attorney, People & Communications Director, Human Resources Director, Parks and Community Services Director, City Treasurer/Finance Director, Maintenance Director, Utilities Director, Building Official, Planning Director, Director of Emergency Preparedness and Homeland Security, and others designated by City Council.

The City Administrator has the authority to hire any position if such hiring is not required

to be authorized by the City Council pursuant to this provision or other resolution or ordinance. The City Administrator may delegate hiring positions to a Dd~~e~~epartment H~~h~~ead. For exempt employees of Dripping Springs Ranch Park, the Chair of the Dripping Springs Ranch Park Board of Directors may be involved in the hiring process as described by city ordinance and park rules and policies. The City Administrator has the authority to hire any Dripping Springs Ranch Park position, other than those listed above as hired by the City Council but may consider the input of the Chair of the Dripping Springs Ranch Park Board, if any, in making the hiring determination.

3.02 Interim Appointment

When an emergency exists that requires the services of personnel who are not otherwise available, such employees may be immediately hired by the Mayor or City Administrator for a period not to exceed 90 days without regard to normal recruitment and selection requirements. If the hiring of the interim employee is not confirmed by the primary hiring authority for that position or the City Council within the 90-day period, the employee is considered to be automatically discharged as of the 91st day. Any interim appointment of a position for which the City Council is the primary hiring authority shall be brought to the City Council at the next regular City Council Meeting.

3.03 Background Checks

(a) Background Processing. Some or all of the following background checks may be conducted for applicants for employment and certain volunteers:

(1) Social Security Verification. Validates the applicant's Social Security number, date of birth, and former addresses.

(2) Prior Employment Verification. Confirms the applicant's employment with the listed employers, including dates of employment, the position held, and additional information available about performance rating, the reason for departure, and eligibility for rehire.

(3) Personal and Professional References. Correspondence or in-person contact will be made to individuals listed as references by the applicant.

(4) Educational Verification. Confirms the applicant's educational institution, including the years attended and the degree/diploma received.

(5) Criminal History. Includes a review of criminal convictions and probation. The existence of criminal convictions is not an automatic prohibition on City employment. The following factors will be considered for applicants with a criminal history:

(A) The nature of the crime and its relationship to the position.

(B) The time since the conviction.

(C) The number (if more than one) of convictions.

(D) Whether hiring, transferring, or promoting the applicant would pose an unreasonable risk to the city, its employees, or its citizens and vendors.

(6) Motor Vehicle Records: provides a report on an individual's driving history in the state requested. This search will be conducted when driving is an essential requirement of the position.

(b) The Human Resources Director will notify the Ddepartment Hhead/supervisor regarding the findings of the background check. The Ddepartment Hhead will assess the potential risks and liabilities related to the job's requirements and determine whether the individual should be hired. If a decision not to hire an individual is made based on the results of a background check, the Human Resources Director will make notification to the applicant.

3.04 Notice

(a) The Human Resources Director or the Director's Designee shall provide, by appropriate means, public notification of vacancies to be filled within the City service and shall maintain a list of current announced vacancies for public inspection. Notice is not required for those vacancies to be filled internally via promotion, transfer, temporary promotion, or reinstatement.

(b) Each job announcement, insofar as practicable, shall specify the title, nature of the job, required minimum qualifications, proposed rate of pay, and the deadline for and method of application.

(c) All job openings shall be posted on the City Website and any other location as deemed appropriate and best designed to hire the most qualified candidate. The City Administrator and the Human Resources Director may post any existing position regardless of hiring authority as soon as a vacancy exists. The City Administrator and the Human Resources Director may post for a new position as soon as the job description and creation of the position is approved by City Council.

3.05 Evaluation

The City Administrator and Human Resources Director shall determine the most appropriate means of evaluating applications against job requirements to identify the best qualified applicants. Interviews, background checks (criminal and credit), written tests, and/or other screening procedures may be used as appropriate. Applicants shall be required to provide any job-related information necessary to demonstrate compliance with prescribed minimum qualification requirements for the positions involved.

3.06 Residence

There shall be no residence requirement for City employment, except as may be provided by law. Employees likely to be called to work in cases of emergency may be required to reside within reasonable commuting ranges of their places of work as may be specified in their job description.

3.07 Orientation and Introductory Period

The Human Resources Director shall provide orientation to all city employees, in coordination with the Finance Department, IT Department, and the employee's supervisor, including required benefit and financial paperwork, review of job description and duties, required training, core values, department specific policies, disclosure of personal information, and personnel manual.

All employees shall serve in an introductory capacity for the first 90 days of employment, promotion, or reassignment. During this introductory period, new employees shall be subject to close evaluation. New employees shall not be entitled to standard employee benefits, including paid leave, except to the extent specifically authorized by this Manual. However, (1) health benefits begin the first day of the month following the start date or as designated by the health coverage provider; and (2) TMRS benefits begin immediately upon full-time eligible employment with the City. Completion of the introductory period does not alter the at-will relationship, create a property interest in employment for any duration, or obligate the City to retain the employee for any certain duration. If this policy conflicts with a separate employment agreement with an employee or an employment benefits provider, the employment agreement prevails over the personnel policy.

3.08 Youth Employment

It is the policy of the City of Dripping Springs that no individual under the age of fifteen (15) shall be hired. Applicants between the ages of fifteen (15) and eighteen (18) shall be required to show proof of age to the satisfaction of the City Administrator or the Administrator's designee. Employees under the age of eighteen (18) shall not have duties or perform work that is prohibited by state or federal law.

3.09 Job Descriptions

The City Council shall be the approving authority for all new positions. All positions shall have a job description which includes exempt or non-exempt status of employee. The City Council shall be the approving authority for all job descriptions for new positions and for all positions hired by the City Council. The City Administrator may make minor amendments to any job description in consultation with the Human Resources Director, the City Attorney, and the Mayor.

3.10 Nepotism

(a) No person who is related within the second degree of affinity or within the third degree by consanguinity to any elected officer of the city is eligible for any office, position, clerkship or other service of the city. This prohibition does not affect an officer or employee within the named degree, who has already served at least two years of employment with the city at the time when the elected officer takes office.

(b) No employee may work in a position which is in the line of supervision of a person who is related within the second degree of affinity or third degree of consanguinity or anyone living in the same household as the employee.

(c) In the case of a marriage of two (2) existing employees, or other situation giving rise to a relationship prohibited by this policy, the individuals concerned will decide who will terminate or modify employment. If no decision can be made within 30 calendar days, the City Administrator, or their designee, will decide. At any time, either employee is free to apply for a different position with the city for which they are qualified, and that would eliminate a violation of this policy.

(d) Affinity (Marriage Relationships): First Degree/Second Degree Spouse Spouse's Grandparents Father-in-law Spouse's Grandchildren Mother-in-law Brother-in-law Son-in-law Sister-in-Law Daughter-in-law

(e) Consanguinity (Blood Relationships): First Degree/Second Degree/Third Degree Mother Grandmother Great-Grandmother Father Grandfather Great-Grandfather Daughter Granddaughter Great-Granddaughter Son Grandson Great-Grandson Brother Uncle Sister Aunt Niece Nephew Half-blood relationships fall within the same degree as those of full blood. Step relationships by affinity (marriage) fall within the same degree as those by consanguinity (blood). For example, a stepson would be considered the same as a son. An adopted child is considered the child of the adoptive parents.

SECTION 4: COMPENSATION

4.01 Appropriations

Wages, salaries, and working schedules for all employees shall be in accordance with the provisions of the City budget currently in effect, including amendments, and within the limitations of the financial provisions of each department, as approved by the City Council for each fiscal year.

4.02 Timesheets and Time Clock

(a) **Timesheets:** Each exempt employee as defined in Section 2.02 of this Manual is required to turn in the employee's timesheet by the final day of each pay period (see 4.03(a)) to the ~~Department Head~~direct supervisor

~~(a)~~(b) . Each Department Head must approve and submit the approved timesheets to the ~~City Treasurer~~ Finance Director by 9:00 a.m. the next business day following the final day of each pay period. Absences for the pay period must be submitted with each time sheet. Exempt employees' hours shall be considered in a fourteen (14) day work period.

~~(b)~~(c) **Time Clock:** Each non-exempt employee as defined in Section 2.03 of this Manual is required to use the Time Clock to clock in and out each day with the employee's timecard if the employee works at the site where a time clock is located and accessible. Each employee is required to sign the employee's timecard agreeing that the time card accurately and completely reflects all time worked during the period in question and that no hours were worked that do not appear on the card. It is a violation of city policy to:

(1) allow another to clock in or out for the employee;
(2) fail to clock in when the employee arrives;

(3) fail to clock out when the employee takes a lunch break or leaves work;
(4) fail to submit all hours worked; or
(5) fail to follow time clock policies or procedures issued by the City Administrator.

Any failure of this policy may result in disciplinary action.

A non-exempt employee may use a time sheet if approved by the employee's supervisor and/or whose primary work location is at a location that does not have a time clock shall use a time sheet.

Any discrepancy between the timecard and the employee's work hours requires notification to the employee's supervisor within seventy-two (72) hours whether the discrepancy is based on employee error or time clock malfunction. Only an employee's supervisor, the City Administrator, or a Deputy City Administrator may make manual changes to an employee's timecard or time sheet. Time recorded will be the work-time paid or employees will be paid from time sheets verified by actual recorded times. Any adjustments to the recorded time on a timecard or time sheet must be approved by the employee's supervisor. Supervisors will be accountable to the City Administrator for any manual changes submitted.

4.03 Payment Procedures

(a) Employees will be paid every other Friday. Approved timesheets must be turned in by 9 a.m. on the first business day following the end of each pay period. If a payday is scheduled for a City holiday, the payday will be processed the day before the City holiday or holidays.

(b) Paychecks shall not be given to third parties without the express written authorization of the affected employee or as required by state law.

(c) If an employee receives a paper paycheck and is absent on a scheduled payday, the employee's paycheck shall be held until the employee returns, unless a written request for other arrangements has been delivered to the City Administrator prior to such payday.

(d) Direct deposit for employee paychecks is encouraged. To enroll in direct deposit, an employee shall complete the form provided by the Finance~~Accounting~~ Department and the form must be signed in ink and the original must be submitted to Finance~~Accounting~~.

4.04 Overtime

(a) Overtime commences for each hour a non-exempt employee works beyond the standard 40-hour week in the seven-day work period. Overtime shall not be calculated to include vacation, sick leave, or any other paid leave taken during the same seven-day work period as "hours worked." Hours worked for purposes of overtime are any hours

worked in the seven-day work period and include holiday hours. Special pay for work during non-business hours, nights, or weekends will not be given unless otherwise specified in this manual.

(b) All nonexempt employees are eligible for overtime compensation in accordance with the FLSA.

~~**(c)** Overtime compensation shall be calculated in accordance with Section 5.03(f).~~

~~**(d)**~~**(c)** Each non-exempt employee shall be responsible for notifying the employee's supervisor if an assignment cannot be completed within the employee's regular 40-hour workweek. No employee shall work overtime unless the employee's supervisor has determined that such overtime is required. Any employee who works unapproved overtime shall be paid, but may be subject to discipline.

~~**(e)** All exempt employees are entitled to compensatory time. Compensatory time shall accrue in accordance with §5.03(f) (below).~~

~~**(f)**~~**(d)** An employee who requests the use of accrued compensatory time shall be permitted to take such leave within a reasonable period after making the request unless the employee's absence would unduly disrupt the operations of the City.

4.05 Raises, Merit Increases, and Cost of Living Adjustments

City Council has the sole authority to pass ordinances affecting pay scales. Raises, merit increases, and cost of living adjustments shall be considered at the time of annual employee evaluations or when brought to the City Council by the City Administrator. An employee who desires to request a raise or merit increase at a time other than at the time of annual employee evaluation, may make the request in writing to the employee's supervisor and the City Administrator. The City Administrator, in consultation with the employee's supervisor, shall decide whether to bring a recommendation for a pay raise or merit increase to the City Council.

4.06 Promotions

When possible, job openings within the City are filled by promoting qualified employees. A promotion is based on several criteria which includes, but is not limited to, performance in the employee's current job, attitude, attendance, punctuality, experience and interest in the City and qualifications for the open position. An employee applicant will be considered in a fair and appropriate manner as would any applicant. After considering qualifications, experience, etc., an opening will be filled by the person best qualified for the position. All promotions are made without regard to race, color, religion, sex, age, national origin, disability, or marital status. No supervisor may alter the terms of employment from "at-will" to a contracted relationship due to a promotion of an employee to a different position without approval from City Council.

4.07 On Call Policy

(a) Roles and Responsibilities

(1) Department Directors:

(A) The City Administrator, Deputy City Administrators, the Maintenance Director, Utilities Director, Dripping Springs Ranch Park Manager, Director of Emergency Preparedness and Homeland Security, and the Parks and Community Services Director, will schedule employees for On-Call duty. Priority will be given to employees who volunteer for duty and have the necessary knowledge and skills for On-Call duty.

(B) The City Administrator, Deputy City Administrators, the Maintenance Director, Utilities Director, Dripping Springs Ranch Park Manager, Director of Emergency Preparedness and Homeland Security, and Parks and Community Services Director will oversee the On-Call schedule, duties, and concerns of On-Call Employees at City facilities.

(C) No employee may be scheduled more than three weeks in a row for On Call Duty. In addition, the Director of Emergency Preparedness and Homeland Security or Designee shall ensure that all employees are provided adequate rest time when called to work during emergency situations.

(2) Employees who are On-Call:

(A) Inform Department Director of availability for On-Call duty.

(B) For the week of On-Call duty:

i Obtain the City-Issued Cellphone prior to beginning of week (if available).

ii Answer all inquiries or after-hours emergencies either by phone or on-site.

iii Stay within 30 minutes of the City of Dripping Springs. (Employee is not required to stay on-site when On Call).

iv Are not allowed to be under the influence of alcohol or any other substance when On-Call.

v May use a City Vehicle for their On-Call duties and commuting solely while on On-Call duty in order to benefit the City.

vi On-Call Employees may be issued a City-Issued Cell Phone to respond to all On-Call calls.

(C) Failure to follow these requirements can result in limitations to On-Call duty in the future and other discipline as allowed by the Personnel Manual.

(b) Compensation for On-Call Duty

(1) On-Call Employees will receive a stipend of $200 for each week per month they are On-Call.

(2) On-Call Employees will receive pay for the time they actually work which begins when the Employee responds to an On-Call request.

i Non-exempt: receive hourly wage or overtime. Any hours worked during On Call time by a non-exempt, full-time, regular employee is eligible for Overtime Pay.

ii Exempt: may receive compensatory time off if in the week of On-Call hours worked if the total hours worked are over ~~40~~ 80 hours in the 14~~7~~-day work period.

4.08 Longevity Pay

The City provides regular employees longevity pay, at the budgeted rate for each full year of service, up to a maximum of 20 years. Employees with less than one year of service shall receive a budgeted amount up to an amount equal to one year of service.

4.09 Employee Referral Incentive Program

(a) The City provides new employees retention and sign-on incentives for new and returning seasonal employees. The incentives are paid based on the Employee Referral Incentive Program Policy. Only one retention or sign-on incentive per fiscal year per new or returning employee is authorized.

(b) The City provides current city employees who recruit an individual who starts employment with the City whom the employee recruits. The incentive is for the recruitment of permanent and seasonal employees.

(c) Employees who are a supervisor, hiring authority for the position, or make a recommendation on the hiring for a position, including the Human Resources Director are ineligible. Event or Intermittent employees are also not eligible. Event and Intermittent employees, as defined by Section 2.08 of this manual, are employees who work special events (e.g., City festivals or Winter Wonderland, etc.) or intermittently at any time of the year for the City on an occasional basis.

(d) There is no limitation on the number of employees or employee referral incentives that can be earned by current employees. The incentives are paid based on the Employee Referral Incentive Program Policy. Employees must request a referral incentive from the Human Resources Director in writing. The referred candidate will be reviewed by the Human Resources Director and/or City Attorney. Any disputes or interpretations of a referral will be handled by the City Attorney.

SECTION 5: BENEFITS

5.01 Insurance

The City provides varying types of insurance coverage, which includes hospitalization, major medical, life, long-term disability, and dental for full-time, regular employees only. The types of insurance coverage, and the required employee participation, may vary from year to year. Upon employment, an application for coverage shall be completed on the employee and forwarded to the insurance company. The application must be submitted before coverage will become effective. If an employee is on unpaid leave for longer than thirty consecutive days, the absence may affect the employee's insurance coverage and may result in the loss of paid coverage by the City. If this occurs, the employee will be offered continuation of health coverage at the employee's cost (COBRA) for the time of unpaid leave to the extent required by law.

5.02 Workers' Compensation

(a) Workers' Compensation coverage is provided for all employees.

(b) In the event of a job-related injury, a standard Workers' Compensation claim form must

be completed and submitted to the Human Resources Director~~City Administrator~~ within forty-eight (48) hours of the accident causing the injury, or within forty-eight (48) hours from the time the employee is physically able to do so. Contact the Human Resources Director~~City Administrator~~ to obtain the necessary form(s).

5.03 Leave

(a) Paid holidays are established by City Council. Employees are generally not required to work on City holidays. ~~The City may choose to observe the day preceding or following a holiday's official date. Each year the City Council will adopt the official City Calendar and that shall be the official list of City Holidays for employees for that year.~~ The following days are recognized as City-Paid holidays during each calendar year~~City holidays are as follows~~, but are subject to change pursuant to City Council discretion:

- New Year's Day
- Martin Luther King's Birthday (third Monday in January)
- Washington's Birthday (Presidents Day) (third Monday in February)
- Good Friday
- Memorial Day (last Monday in May)
- Juneteenth
- Fourth of July
- Labor Day (first Monday in September)
- Columbus Day (second Monday in October)
- Veterans Day (November 11)
- Thanksgiving Day and the Day after Thanksgiving
- Christmas Eve
- Christmas Day
- ~~New Year's Eve~~

If the holiday falls on a Saturday, the holiday shall be observed on the preceding Friday. If the holiday falls on a Sunday, the holiday shall be observed the following Monday.

In addition, each employee will be given ~~1~~ eight (8) hours of paid time off as a personal floating day to use as needed. Personal day hours will not carry over to following year. Full-time, exempt employees required by their supervisors to work on a holiday shall be given the same amount of substitute time off as is worked, up to eight (8) hours substitute time off with pay on another date. Regular, part-time employees are eligible for holiday pay on a pro-rated basis. Holiday hours are considered hours worked for the purpose of compensatory time off for exempt employees and for overtime for non-exempt employees. An employee on unpaid leave on a designated holiday, or in a non-pay status on a scheduled workday immediately preceding or immediately following a designated holiday, shall not receive pay for the holiday. An employee on preapproved vacation leave on a designated holiday, or any type of paid leave, shall not have the holiday deducted from his or her leave time.

(b) Religious Observance: Employees desiring to observe religious holidays not coinciding with an officially designated City holiday may be given time off without

pay, or may be authorized to use accrued vacation leave, a floating holiday, or compensatory time.

(c) Vacation: Employees are encouraged to take regular vacations annually. Upon hire, full-time, regular employees shall be given 40 hours of vacation and will additionally commence to accrue paid vacation as follows:

- 0 to less than 1 year of service: 7 hours per month
- 1 to less than 5 years of service: 10 hours per month
- 5 to less than 10 years of service: 12 hours per month
- 10 or more years of service: 14 hours per month

Each regular employee will be eligible to use vacation hours after successfully completing a 90-day introductory period.

~~7 hours each month if employed less than 1 year; 10 hours per month if employed 1 to, but less than 10 years. A full-time regular employee who has been employed more than 10 years shall receive 14 hours per month of vacation leave. Each regular employee will be eligible to use vacation hours after successfully completing a 90-day introductory period.~~

Vacation leave shall accrue on a prorated basis each year of employment. All requests for vacation leave are subject to the City's staffing needs and must be approved in advance by the supervisor or Department Head. On January 1st of each year accrued vacation time will be reviewed for each employee and any accrued vacation hours over 120 hours shall expire. Accrued vacation leave that has not expired will be paid out when an employee leaves service with the city up to 112 hours if an employee has been employed for at least six continuous months with the city. Supervisors shall keep the Department Heads and the Human Resources Director informed of their employees' planned vacation time off.

(d) Sick Leave: Full-time, regular employees shall commence to accrue paid sick leave at the rate of 4 hours per month upon full-time employment with the city. Sick leave may be taken as accrued when an employee is ill, to attend doctor/dentist appointments, or to care for a member of the employee's household. Employees unable to work because of unexpected illnesses shall notify their immediate supervisor as soon as reasonably possible. The City may require a physician's verifying statement for any illness that exceeds 3 working days within a two-week pay period, or in the event of excessive absences or absences of extraordinary duration. Sick leave may be carried over to subsequent fiscal years. Accrued sick leave will not be paid out when an employee leaves service with the city. Any employee who exhausts sick leave due to illness may substitute vacation leave or other appropriate paid leave during the time of the illness.

Leave that is eligible for Family Medical Leave Act is governed by Section 5.07 of this Manual.

(e) **Injury Leave:** An employee injured on-the-job shall receive benefits as provided in the City's Workers' Compensation coverage. Nothing herein shall prevent an employee from using accumulated sick leave, vacation leave, or compensatory time off during an absence due to injury. An employee shall immediately report any injury incurred in the line of duty, however minor, to a supervisor, and take such first aid treatment as may be necessary. In the event of a job-related injury, a standard Workers' Compensation claim form must be completed and submitted to the City Administrator within forty-eight (48) hours of the accident causing the injury, or within forty-eight (48) hours from the time the employee is physically able to do so.

~~(e)~~(f) **Exemptions from FLSA (Overtime Compensation):** Certain executive, administrative, and professional employees are exempt from the overtime provisions of the Fair Labor Standards Act (FLSA) and are expected to render necessary and reasonable overtime services when needed. The salaries of these positions are established with this assumption in mind. Each City job description designates whether persons hired in that classification are exempt from or covered by (non-exempt) the overtime provisions of FLSA. Whenever possible, department directors shall authorize flexible work schedules for exempt employees to address the additional hours worked during the fourteen (14) day work period which would qualify for compensatory time.

Improper deductions from the pay of exempt employees are prohibited. If an exempt employee believes that an improper deduction from the employee's salary has been made, an employee shall file a grievance to the City Administrator as described in Section 12.03.

Compensatory Time: Salaried, exempt employees will receive compensatory time with pay at a rate of one hour comp time for every hour worked over 80 hours in a standard fourteen (14) day work period. (1:1) Compensatory may be taken as accrued. Holiday hours are considered hours worked for purposes of compensatory time off. Compensatory time may be carried over to subsequent fiscal years, but any hours accrued after October 1, 2025 may only be used as paid leave and will not be paid out at any time. Hours accrued prior to October 1, 2025 may be paid out as listed in the August 2025 Personnel Manual, although use of hours is preferred.

~~(f) **Compensatory Time:** Salaried, exempt employees will receive compensatory time with pay at a rate of one hour comp time for every hour worked over 40 in a standard seven day work period **(1:1)**. Compensatory Time may be taken as accrued. Holiday hours are considered hours worked for purposes of compensatory time off. Compensatory time may be carried over to subsequent fiscal years. Compensatory Time of more than 100 hours may not be carried over to the next fiscal year. The City may either: (1) recommend time off for the employee to use Compensatory Time off; or (2) shall exchange pay for Compensatory Time, at the City Administrator's~~

(g) Civic Leave: Each January 1st each full-time, exempt and non-exempt, regular employees shall accrue 8 hours of paid leave toward satisfying civic activities, such as voting, and donating blood. New employees accrue the 8 hours of Civic Leave upon employment. Civic Leave may be taken as accrued. In addition, employees are provided paid civic leave for jury service. Employees granted civic leave for jury service shall retain all juror fees. Employees excused or released from jury service during working hours shall report to their work stations, unless otherwise instructed. Civic leave may not be carried over to subsequent fiscal years.

(h) Bereavement Leave: Bereavement leave shall be available to any full-time or part-time regular employee. Bereavement leave shall not exceed twenty-four work hours within sixty (60) days of the death of a family member or a member of the employee's household and shall be prorated for part-time regular employees. Bereavement Leave may be taken as accrued. Bereavement leave is available upon the death of an immediate family member or a member of the employee's household. Immediate family member includes children, spouse or partner, parent, grandparent, grandchild, or sibling, whether related by blood or marriage. A member of the employee's household includes any individual who resides with the employee. Bereavement leave is available for each death meeting the above criteria.

(i) Parental Leave: Each pregnant employee shall be treated the same as other similarly situated employees regarding requests for sick leave and for accommodations related to performing the essential functions of the job. Pregnant employees and employees with illnesses or disabilities arising from pregnancy or maternity shall be entitled to benefits on the same basis as employees with other types of illnesses or disabilities. The employee will be entitled to resume work following the end of the pregnancy when the employee is able to perform all job duties and has obtained a physician's release to return to duty. Parental Leave intended for the care of a child by a parent or guardian shall be handled as outlined in the Family and Medical Leave Act policy.

(j) Military Leave:

(1) The City complies with the Uniformed Services Employment and Re-employment Rights Act of 1994 (USERRA), as amended. USERRA is a federal statute that protects employees who engage in military duty in the uniformed services. The exception to the "at-will" doctrine contained in USERRA applies only to this section of the Personnel Manual regarding military leave.

(2) Military leave shall be approved leave for regular, full-time employees of the City who are members of the state military forces or members of the reserve components of the Armed Forces of the United States.

(3) The paid military leave period is measured as the fiscal year October 1 through

September 30.

(4) Employees may elect to continue medical benefit coverage under COBRA for the duration of the military leave unless covered under the provisions of FMLA.

(5) All requests for leave should be accompanied by a copy of the order, directive, notice, or other documents requiring absence from scheduled work.

(6) An employee who is a member of the state military forces or a reserve component of the armed forces will be granted up to fifteen days of paid leave per fiscal year for days on which the employee is engaged in authorized training or duty ordered or authorized by the Texas military pursuant to Chapter 437 of the Government Code:

(1) All requests for leave must be accompanied by a copy of the order, directive, notice, or other document requiring absence from scheduled work.

(2) Leave pay will not be granted for hours before or after the regularly scheduled working hours or for overtime hours scheduled.

(3) No employee using Chapter 437 military leave will be discriminated against for use of this leave or lose any work benefit while using this leave.

(k) Administrative Leave: In circumstances not falling within other provisions of these policies, the City Administrator or Mayor may authorize an employee to take leave *without pay* under such terms and conditions as may be mutually agreeable. The City Administrator or Mayor may authorize an employee to take up to eighty (80) hours of leave with pay within a twelve-month period when it is in the best interest of the City and staff. Any request for administrative leave exceeding eighty (80) hours within a twelve-month period must be approved by the City Council.

(l) Unauthorized Absence: Employees who are absent from work without having provided notice, obtained a supervisor's approval, provided a legitimate excuse, or who fail to return from scheduled time off without notice, may be deemed to have abandoned their position. Abandonment of an employment position may lead to disciplinary action or the determination that the employee has resigned.

(m) Donation of Paid Time Off: One or more employee may donate accrued paid time off, including sick leave, vacation leave, or compensatory time off hours to another employee if: (1) the receiving employee has exhausted all paid time off or will exhaust the paid time off during the expected leave time; (2) the receiving employee is requesting leave for a reason listed above where the employee would normally have paid time off but has exhausted the employee's paid leave; and (3) the supervisor of the receiving employee and the city administrator gives their approval. A receiving employee may not: (1) use donated time off for vacation leave; or (2) use donated time off for more than twelve (12) weeks in one twelve (12) month period.

(n) Partial Day Absences:

(1) Partial Day Absences of less than eight (8) hours where an exempt employee, as defined in Section 2.02 of this Manual, is unavailable for work shall:

(a) be charged to accumulated time off such as vacation, compensatory time off, sick leave, or other paid leave as appropriate; or

(b) be taken as leave without pay if all paid leave is exhausted.

(2) An exempt employee requesting an absence of less than eight (8) hours due to unavailability, and who has exhausted all paid leave, shall request approval of unpaid leave from the City Administrator or Mayor pursuant to Section 5.03(1) pursuant to this Manual or request Donation of Paid Leave under certain circumstances as defined in Section 5.03(n).

(3) Partial Day Absence leave is not required where the exempt employee is able to reach 40 or more hours in a 7-day work period and where such daily work periods are approved by the Department Head.

5.04 Retirement

The City participates in the Texas Municipal Retirement System (TMRS), through which retirement benefits are provided to each permanent employee who averages 1000 hours per year or more.

5.05 457 Plan (Optional)

All regular full-time employees have the option of contributing to a 457 plan. Contributions will be deducted from the employees' bi-weekly pay. The City does not contribute to 457 plans.

~~5.05~~5.06 Training

The following educational opportunities are available, at the discretion of the Mayor and/or City Council, and subject to budget appropriations:

(a) Events: Employees are encouraged to attend professional conferences, seminars and workshops reasonably related to municipal activities.

(b) Memberships: The City may fund employee membership in professional development organizations. Membership activities must be related to the employee's position with the City. All memberships funded by the City must be approved by the City Administrator.

(c) Tuition Reimbursement: The City may reimburse employees for the cost of tuition for the employee's continuing education. The degree program must be related to the employee's position with the City and approved by the Mayor and City Administrator in advance. To be eligible for reimbursement, the program must be for: (1) certifications or licenses that are directly related to the employee's core job duties; or

(2) course credit at a college or university accredited by the Texas Higher Education Coordinating Board. To be eligible for reimbursement, the employee must have received a grade of "B" or higher for that semester (or "pass" if the course is only offered "pass/fail"). The Mayor or City Administrator may approve up to three thousand dollars ($3,000) of tuition reimbursement per calendar year. Requests above three thousand dollars ($3,000) per year require approval by City Council. No minimum amount of tuition reimbursement is mandated or required by this policy but is solely at the discretion of the Mayor, City Administrator, and City Council. The approved written reimbursement agreement shall be attached to this Manual as Attachment "A".

(d) Travel Reimbursement: Employees may submit reasonable travel expenses related to educational events, professional conferences, seminars, classes, and workshops that are reasonably related to municipal activities in writing to the City Administrator. These expenses may be reimbursed by the City on a case-by-case basis and travel reimbursement may be given for events whether or not the tuition, seminar, or conference fee is paid for by the City or the Employee.

(e) Employee Reimbursement for Training or Tuition Costs: Each employee who receives training or accepts tuition for continuing education that costs more than $1000 for one class, event, or related travel expenses for such training, or schooling shall sign a written reimbursement agreement that states that they will reimburse the City for the costs related to the training or schooling if the employee separates from the City within two years of the date of the training if a single day, or the last day of the training if a multi-day event, or from the last day of classes for classes reimbursed by the City.

~~5.06~~5.07 Uniform Policy

(a) The City purchases uniform shirts, pants, shoes, and other clothing for certain employees of the City. The purchase of uniforms, amount, and type are set by the budget each year based on each department's budget. When an employee receives a uniform item from the City, the employee is responsible for keeping the item in good repair. If an employee purchases clothing, and the City pays for the logo, the employee may keep the clothing upon separation from employment. For items purchased by the City, the item must be returned to the City unless the item is released to the employee by the City Administrator.

(b) All uniforms bearing a city logo and purchased by the City are considered City property and must be relinquished to the supervisor upon the end of the employee's employment with the city. If items are not returned, the City may pursue reimbursement for the amount spent

on that employee's City-purchased uniforms. Each D~~d~~epartment H~~h~~ead is responsible for maintaining a list of City-purchased uniforms or logoed items and providing that information to the finance department.

effort to ensure the return of City-purchased uniforms upon termination of an employee. This includes keeping accurate records of what uniforms the City has purchased and who is in possession of each item. Such record shall be made available to the City Administrator and the Ff~~f~~inance Dd~~d~~epartment.

(d) No identifiable part of the uniform shall be worn while off duty and not involved in an activity directly related to one's employment and assignments with the City. The uniform may be worn while commuting to and from the workplace. It is a violation of this policy to wear the uniform while in private, employed elsewhere, or when self-employed doing outside employment.

~~5.07~~5.08 Family And Medical Leave Act (FMLA)

(a) Definitions

(1) 12-Month Period: A rolling 12-month period measured backward from the date the leave is taken.
(2) 12-Month Service Member Period: A single 12-month period measured forward from the first day Service Member Family Leave is taken.
(3) Child: A biological, adopted, or foster child, a stepchild, a legal ward; or a child of a person standing in loco parentis, who is standing in the place of a parent, who is either under the age of 18 or age 18 or older and requires active assistance or supervision to provide daily self-care. A biological or legal relationship is necessary. A more detailed definition is provided in the Family and Medical Leave Act which is available from the Human Resources Director's office.
(4) Health Care Provider: A Doctor of Medicine or osteopathy who is authorized to practice medicine or surgery (as appropriate) by the State in which the doctor practices; or any other person determined by the Secretary of Labor to be capable of providing health care services. A more expansive definition is provided in the Family and Medical Leave Act of 1993 which is available in the Human Resources Department.
(5) Next of Kin: The nearest blood relative of a Covered Service member.
(6) Parent: A biological or adoptive parent or an individual who stands or stood in the place of a parent to an employee when the employee was a child. This term does not include parents-in-law.
(7) Serious Health Condition: An illness, injury, impairment, or physical or mental condition that involves:

(A) Any period of incapacity or treatment that results in inpatient care (i.e., an overnight stay) in a hospital, hospice, or residential medical care facility;

~~(A)~~(B) Any period of incapacity requiring absence from work, school, or other regular daily activities, of more than three calendar days, that also involves continuing treatment by (or under the supervision of) a health care

provider; or

for a chronic or long-term health condition so serious that, if not treated, would likely result in a period of incapacity of more than three calendar days; or 4) for prenatal care. Voluntary or cosmetic treatments (such as most treatments for orthodontia or acne) which are not medically necessary are not "serious health conditions," unless inpatient hospital care is required. Restorative dental surgeries after an accident or removal of cancerous growths are serious health conditions provided all the other conditions of this regulation are met.

(8) Spouse: A husband, wife, or domestic partner lawfully married to one other, as defined or recognized under state or federal law for purposes of marriage, including common law marriage.

(b) Policy

An employee may be eligible to take up to twelve (12) weeks of unpaid family and medical leave during a rolling twelve (12) month period. An eligible employee is one who has been employed with the City for at least twelve (12) months, and who has worked at least 1,250 hours during the twelve (12) months preceding the first date leave is to be taken. Leave can be taken for any of the following reasons: birth of a child, placement with the employee of a child for adoption or foster care; when the employee is needed to care for a child, spouse, domestic partner, or parent who has a serious health condition; or when the employee is unable to perform the essential functions of the position because of the employee's own serious health condition.

Generally, employees will be returned to the same or an equivalent position upon their return from FMLA leave. The City complies with all provisions of FMLA in its employment practices and makes available detailed explanations and instructions of FMLA benefits and procedures to all employees who fall within its provisions, should such circumstances arise.

(c) Conditions

All eligible employees shall be granted family or medical leave consisting of unpaid leave, and when requested and appropriate, accrued sick and/or vacation leave, for a combined total of up to twelve (12) weeks during the FMLA leave year for the following reasons:

(1) Family Leave: Any family leave must be taken within twelve months from the date of the birth or placement of a child for adoption or foster care.
(2) The birth and subsequent care of the employee's newborn child and in order to care for the child.~~;~~
(3) The placement of a child with the employee for adoption or foster care, and to care for the child.

(d) Medical Care

condition;

(2) The employee is unable to perform the essential functions of their position due to the employee's own serious health condition;

(3) A "qualifying exigency" as a result of the employee's spouse, child, or parent who is a military member on covered active duty or called to covered active duty (or notified of an impending call to active duty), or in support of a contingency operation for covered members of a Reserve component, or

(4) To care for a covered service member with a serious injury or illness if the employee is the spouse, child, parent, or next of kin of the covered service member (military caregiver leave).

(5) Any other circumstance provided by the FMLA.

(A) Employees are entitled to 12 weeks of FMLA-protected leave for a qualifying reason.

(B) Employees are entitled to 26 weeks of leave if they qualify as military caregivers.

(e) Procedures

(1) Twelve-Month Period

The twelve (12) month period for counting family and medical leave is a "rolling" twelve (12) month period measured backward from the date an employee requests or is placed on FMLA leave. Each time an employee takes FMLA leave, the remaining leave entitlement would be any balance of the 12 weeks that has not been used during the immediately preceding 12 months, or 26 weeks provided in certain circumstances.

Employees are eligible to take medical leave intermittently or on a reduced leave schedule only when medically necessary. Employees are not entitled to take family leave intermittently or on a reduced leave schedule unless approved by their Department Director and the City Administrator.

(2) Employee Request for Leave

An employee must give at least thirty (30) days' advance notice in writing for the need to take foreseeable family or medical leave for planned medical treatment, unless the need is unforeseeable, in which case, as much notice as is practicable should be given. The request must state the reason for the leave, the anticipated duration of the leave, and the starting and ending dates of the leave. When it is not practicable under the circumstances to provide thirty (30) days advance notice, the employee must give notice to the Human Resources Director as soon as possible but no later than two (2) business days after the employee learns of the need for the FMLA leave.

(3) Department Notification

~~(3)~~(4) Human Resources Director Responsibility

Human Resources Director is responsible for the central administration of all requests for family and medical leave. The Human Resources Director reserves the right to automatically place an employee on family and medical leave if it is determined that a qualifying event has occurred. The Human Resources Director may retroactively designate the beginning date of FMLA to the beginning date of the employee's absence for the qualifying event.

~~(4)~~(5) Approval

An employee shall submit a request for family and medical leave through proper channels to the Department Head who will then forward it to the Human Resources Director for approval. Confidential medical information that accompanies the application can be submitted directly to the Human Resources Director.

~~(5)~~(6) Substitution of Paid Leave

An employee utilizing this policy for the placement of a child for adoption or foster care with the employee shall be required to exhaust all accrued vacation, parental, sick, and any other applicable paid leave prior to going on unpaid leave. An employee utilizing this policy for the serious illness of a child, spouse, or parent must exhaust all accrued sick leave, vacation leave, compensatory time off, and any other applicable paid leave prior to going on unpaid leave. If an employee gives birth to a child, sick leave can be utilized until the employee receives a release from the doctor. After being released, the employee may use additional sick leave if permitted in accordance with the sick leave policy. Once all applicable sick leave has been used, the employee shall be required to exhaust all accrued vacation, compensatory time, holiday leave, parental leave, and any other accrued paid leave, prior to going on unpaid leave. An employee utilizing this policy for the employee's own serious health condition shall exhaust all accrued sick leave, vacation leave and personal leave prior to going on unpaid leave. If an employee is off work due to a work-related injury and the employee qualifies for family and medical leave, it will run concurrently with any paid leave. The City reserves the right to count any paid leave that qualifies for family and medical leave toward the twelve (12) or twenty-six (26) weeks allowed under this policy.

employee's accrued sick leave has been exhausted, vacation leave may be used as sick leave upon request of the employee. If family leave is requested, the employee may use paid parental leave, if applicable, compensatory time off, and accrued vacation leave. For the birth of the employee's child and in order to care for the child, the employee may use accrued sick leave.

In the event that the appropriate paid leave is exhausted, the remainder of the family or medical leave period will consist of unpaid leave. Family and Medical leave will run concurrently to accrued sick leave and / or vacation, personal or other leave used for FMLA leave purposes.

~~(6)~~(7) Maximum Time Allowed

The maximum amount of family and medical leave available is twelve (12) weeks during a twelve (12) month period even if there is more than one family and medical leave qualifying event. The only exception to the twelve (12) week maximum is the leave to provide care of an injured service member, described below, which allows for an extended FMLA leave of 26 weeks.

~~(7)~~(8) Medical Certification

The Human Resources Director may require satisfactory proof of the proper use of medical leave and may disallow the applicability of medical leave in the absence of such proof.

The City requires medical certification from a healthcare provider to support a claim for leave to care for a seriously ill child, spouse, or parent, or for the employee's own serious health condition. Medical certifications must be submitted to the Human Resources Director within fifteen (15) working days. Recertification may also be required every 30 days. An employee will be notified if recertification is required. For leave to care for a seriously ill child, spouse, or parent, the certification must include an estimate of the amount of time the employee is needed to provide care. For the employee's own serious health condition, the certification must include a statement that the employee is unable to perform the essential functions of the position and expected duration. The City does not seek and should not be provided with genetic information. If an employee or applicant's genetic information is inadvertently received by the City; the City will return it to the healthcare provider and not use genetic information for any employment decision or action.

Failure to provide medical certification may result in a delay in the commencement or continuation of the FMLA leave. If a question arises whether an employee on FMLA is utilizing FMLA for reason(s) other than an FMLA-approved illness or injury, the City may take steps to verify the proper use of FMLA leave.

required to provide certification to the supervisor that the employee is able to return to regular duties. If the validity of a certification is questioned, the City may require that a second opinion be obtained. If the first and second opinions differ, the City may require a third opinion be obtained. The employee and the City must agree upon a health care provider for the third opinion and this opinion shall be binding on both parties. The City shall bear the expense of second and third opinions.

~~(8)~~(9) Return to Work

When an employee returns to work after Family and Medical Leave, the employee shall be restored to the same position or to an equivalent position involving the same or substantially similar duties and responsibilities. An employee will be restored to the same worksite or to a geographically proximate worksite. The

employee is also entitled to return to the same shift or an equivalent schedule.

Employees eligible for Family and Medical Leave will generally be returned to their old position or to a position with equal pay, benefits, and other terms and conditions of employment. However, the City cannot guarantee that employees will be returned to their original jobs in all cases. The City will determine whether a position is an equivalent position.

This policy does not entitle any employee to any right, benefit, or position of employment other than any right, benefit, or position to which the employee would have been entitled had the employee not taken leave. For example, if during an employee's approved leave, the employee is terminated for reasons unconnected with a legitimate leave, or the employee's position is eliminated through a reduction in force, the commitment to return the employee to a position with the City will cease at the time the employee is terminated or the position is eliminated. An employee on medical leave for five (5) consecutive working days or more for the employee's serious health condition, must provide a "Return-to-Work" release from the employee's health care provider before the employee will be permitted to return to work. The "Return-to-Work" release must state that the employee is able to resume work and must specifically reference that employee's job description and specific duties.

The City reserves the right to consult with the employee's health care provider for clarification on "Return to Work" releases or other FMLA documentation provided by the employee. An employee's failure and/or refusal to provide the necessary FMLA documentation and the periodic written updates as to the employee's FMLA status, as required by the FMLA and the City's policies, shall subject the employee to the possible cancellation of the leave, and other disciplinary action up to and including termination.

~~(9)~~(10) Failure to Return to Work

be subject to disciplinary action up to and including termination unless additional leave has been requested, in writing, and approved by the City in accordance with the City's policies. Employees should submit a written request for an extension of leave to the Department Director. This written request should be made as soon as the employee knows that they will not be able to return to work on the originally declared return date.

~~(10)~~(11) Continuation of Health Coverage Benefits

While utilizing unpaid Family and Medical Leave, an employee's health coverage benefits will continue without interruption as long as the employee pays their portion of the health coverage premiums. Health coverage premiums can be deducted from the paycheck before the leave begins, or during the leave, if the employee continues to receive pay (pre-tax), bi-weekly. While on unpaid FMLA,

the City will continue to pay its portions of the premiums during the duration of the FMLA.

~~(11)~~(12) Intermittent Leave

When medically necessary, an employee may take Family and Medical Leave on an intermittent basis or work a reduced schedule. Arrangements should be made with the employee's immediate supervisor so that the operations of the department are not unduly disrupted. An employee taking intermittent leave or leave on a reduced schedule may be temporarily assigned to an alternative position with equivalent pay and benefits if it better accommodates the needs of the department.

Employees are not entitled to take family leave intermittently or on a reduced leave schedule unless approved by their Department Director and the Human Resources Director.

~~(12)~~(13) Holidays

Holidays will be paid in accordance with the Holidays policy. City holidays will not be counted as part of the twelve (12) or twenty-six (26) weeks of Family and Medical Leave, whether the employee is on paid or unpaid leave.

~~(13)~~(14) Texas Municipal Retirement System (TMRS)

Employee contributions to TMRS may be made on a voluntary basis through a special arrangement with the City while an employee is on leave without pay status. It is the employee's responsibility to initiate such an arrangement by timely contacting the City's Human Resources Director and completing the necessary paperwork. This arrangement is subject to approval by the City and TMRS.

~~(14)~~(15) Recordkeeping

Family medical leave time will be tracked on an hourly basis for payroll and compliance purposes. To determine entitlement for employees who work variable

~~(15)~~(16) Military Family Leave Entitlement

Military Qualifying Exigency Leave: Employees who are otherwise eligible for FMLA and have a spouse, child, or parent on covered active duty (deployed to a foreign country) or called to covered active duty status in the National Guard or Reserves (deployment to a foreign country or in support of a contingency operation) may use their 12-week unpaid, job-protected leave to address certain qualifying exigencies including eligible: short-notice deployments; attendance at military events and related activities; childcare and school activities; addressing financial and legal arrangements; attending counseling sessions; attending post-deployment activities; up to 15 days of rest and recuperation; and parental care.

Military Caregiver Leave: Employees who are the spouse, parent, child, or next of kin of a service member who incurred a serious injury or illness while on active duty in the Armed Forces and is undergoing medical treatment, recuperation, or

therapy, may take up to 26 weeks of leave to care for the injured service member in a single 12-month period. The covered service member must be a current member or eligible veteran of the Armed Forces (including a member of the National Guard or Reserves) with a serious injury or illness incurred in, or aggravated by, service in the line of duty on active duty that may render the service member medically unfit to perform their duties.

SECTION 6: WORKPLACE CONDUCT

6.01 Standard Work Period

(a) For non-exempt employees, t~~T~~he 7-day work period begins each Monday at 12:01 a.m. and ends each following Sunday at 12:00 a.m.

~~(a)~~**(b)** For exempt employees, a ~~fourteen~~14-day work period runs contemporaneously with the 14-day pay period.

6.02 Business Hours

Normal business hours are 8:00 am to 5:00 pm.

6.03 Place of Business

The normal place of business for City employees is the City Hall, except that, certain employees have an alternate place of business as assigned by their supervisor or D~~d~~epartment H~~h~~ead, including but not limited to the Dripping Springs Ranch Park, Ranch House, Development Services, and South Regional Wastewater Treatment Plant. Other work locations may be designated by the Mayor, City Administrator, or Department Head at their discretion.

(a) Introduction: The ability to work remotely at the City of Dripping Springs is role-based. Some, but not all job positions, allow for telecommuting. The City may provide certain employees with the option to work remotely at an offsite location, including the employee's personal residence, if the employee meets the eligibility criteria, expectations, and responsibilities outlined in this Policy. Ultimately, working remotely is a voluntary privilege, not a right nor a term of employment.

(b) Authority: For purposes of this section, the City Administrator is the final approval authority for all telecommuting agreements, amendments, and revocations. Direct Supervisors and Deputy City Administrators may monitor compliance, provide recommendations, and enforce day-to-day expectations but may not unilaterally approve, amend, or revoke telecommuting agreements. Deputy City Administrators may act for the City Administrator if the City Administrator is unavailable. Any approval, amendment, or revocation should be submitted to the City Administrator for ratification in cases of Deputy City Administrator action.

(c) Scope: This Policy applies to all City of Dripping Springs Employees and is to be implemented by the Human Resources Director. Direct Supervisors, Directors, or Deputy City Administrators may request exceptions from the policy from the City

Administrator for themselves or for an employee.

(d) Purpose and Objectives: The City of Drippings Springs Telecommuting Policy is intended to provide employees general expectations and criteria that they must meet to telecommute. This Policy also provides the requirements for Direct Supervisors to monitor employee performance and ensure productivity.

The City's Telecommuting Policy objectives are to:

(1) Improve overall productivity of the city.
(2) Increase employee productivity.
(3) Make optimal use of City facilities and equipment.
(4) Improve employee recruitment and retention.

(e) General Expectations and Eligibility Criteria: Telecommuting is optional and employees can choose to stop working from a telecommuting location and return to the office at any time. To be eligible to telecommute, employees must have completed at least 90 days of continuous employment with the City including a satisfactory 90-day review prior to applying for telecommuting. Employees with less than ninety (90) days of service are not eligible to request or be considered for telecommuting or any exception. Regardless of whether the work site is an official City office or a telecommuting location, all employees must adhere to the policies outlined in the City's Personnel Manual, including those related to the use of technology.

Employees are responsible for maintaining the confidentiality of all work and minimizing distractions at the work site. If the expected levels of productivity, quality, and performance are not maintained, the City may revoke the Telecommuting Agreement, and the City also reserves the right to terminate the Employee's participation in Telecommuting at any time.

Eligibility Criteria:

(1) All Employees must be appropriately trained on City equipment and programs and be working productively to be considered for telecommuting.
(2) All employees must comply with all their requirements as defined by their Job Description.
(3) Employees must agree and adhere to all City policies and procedures defined in the Personnel Manual, including properly maintaining government records and wearing appropriate attire for online meetings, just as they do in a City office location.
(4) Employees are responsible for promptly updating the Telecommuting Agreement to reflect any changes.
(5) The Telecommuting Agreement may be revoked or amended by the City Administrator. An employee's Direct Supervisor or Deputy City Administrator may recommend revocation or amendment, subject to final approval by the City Administrator in consultation with the Human Resources Director. Reasons for revocation include, but are not limited to, performance issues, change in job

responsibilities, or job duties can no longer be performed remotely.

(6) An employee may not telecommute while on a Performance Improvement Plan. Once a Performance Improvement Plan is completed, the employee may reapply for approval of a new Telecommuting Agreement through the regular process.

(7) In the event the employee fails to meet all requirements in the Telecommuting Agreement, or when it is in the City's best interest, the employee will be required to report back to work at a City office location while the employee remains employed at the City.

(8) The workspace the employee will be using when working remotely must be free of any hazards and conducive to working productively, not interfere with assigned job responsibilities, (such as communicating orally with coworkers and the public), and allow work to be performed while maintaining confidentiality. Employees may not host in-person meetings with members of the public, colleagues, or professional contacts at their telecommuting location. All in-person meetings must be conducted on City property or another approved venue.

(f) Employee Responsibilities: Direct Supervisors will monitor productivity and effectiveness and raise concerns as soon as possible, implement adjustments, and reassess or notify the employee to return to their regularly designated City office location should telecommuting prove ineffective for that employee or position.

Employees must:

(1) Maintain a level of productivity when telecommuting that is equal to or higher than when working in the office.

(2) Maintain regular contact with their Direct Supervisor during the employee's regular working hours.

(3) Use City issued computer equipment with appropriate VPN access to stay logged into the City's network during regular working hours.

(4) Monitor City Issued cellphone or communications equipment regularly during regular working hours.

(5) Protect any confidential information accessed from view by other individuals present when telecommuting.

(6) Be prepared to return to the regularly designated City office location as directed after notification by someone in the employee's chain of command.

(7) Follow any other requirements specific to the employee's position as communicated by someone in the employee's chain of command including the employee's Direct Supervisor and/or Deputy City Administrator and City Administrator.

(8) Limit personal incidental use of City technology according to the City Technology Use Ppolicy and Acceptable Use Policy.

(9) Ensure distractions are kept to a minimum while telecommuting and do not interfere with job duties and responsibilities. This includes ensuring appropriate dependent care, personal responsibilities are managed, limiting background noise, preventing interruptions, etc.

(10) Notify their Direct Supervisor immediately of any situation which interferes with their ability to perform their duties.

(g) Remote Work Location: The Employee's primary remote work site must be documented in the City of Dripping Springs Telecommuting Agreement Form. Employees must work at their regularly designated City office location or other approved location when not at the remote work site.

(h) Employee Work Hours and Days:

(1) Telecommuting does not change the amount of time an employee is expected to work.

(2) Direct Supervisors and Deputy City Administrators must ensure each department has adequate in-person coverage for effective handling of the business needs of the City at office locations during the normal business hours, which are Monday through Friday from 8:00am to 5:00pm.

(3) An employee will be approved to telecommute on specific days only. Specific telecommuting days must be agreed upon by the City Administrator and the employee's Direct Supervisor and must stay consistent. Any changes to these days must receive both the Direct Supervisor's and City Administrator's approval. Holidays do not change approved telecommuting days.

(4) The number of days permitted to telecommute may range from none to a maximum of two (2) days per week depending on work responsibilities and assignments.

(5) Unless the employee is approved for an alternate work schedule, telecommuting work hours must be within the City's normal business hours of 8 a.m. to 5 p.m.

(6) A telecommuting employee should be prepared to report to the designated City office location as directed by anyone in the employee's chain of command. Examples of when an employee could be required to report in person include, but are not limited to, training, staff meetings, special projects, City events, and in-person interaction with coworkers and the public.

(7) If vacation, compensatory, or sick days are taken in a week, operations need to be considered whether or not remote day or days should be skipped.

(8) Telecommuting does not include approved off-site activities including training, emergency management activities, travel within the City due to normal job duties, or other activities that require an employee be off-site due to City needs.

(i) Telecommuting Employee Availability Requirements:

(1) Telecommuting Employees must be available for communication just as promptly as they would if they are working at their regularly designated City office location. This includes using email, Microsoft Teams, Ring Central, or City-issued or subsidized cellphone.

(2) Telecommuting Employees must provide internet connectivity at their own expense.

(3) Telecommuting Employees must attend all required virtual meetings, conference calls, and video chats.

(4) Telecommuting Employees may be required to use the web camera on their City-issued laptop for video calls when directed by their Direct Supervisor, Deputy City Administrator, or City Administrator.

(5) Telecommuting Employees must attend in-person meetings when directed by their Direct Supervisor, their Deputy City Administrator, or City Administrator.

(j) Work Assignments and Productivity Measurements:

(1) Employees must be at least as productive when working remotely as they would be at their designated City office location.

(2) Employees must comply with all requirements in the Job Description, Personnel Manual, and any direction from anyone in their chain of command.

(3) Direct Supervisors will provide assignments and establish productivity standards just as they would if the employee were working at their regularly designated City office location. Deputy City Administrators or City Administrator may delegate work assignments and productivity measures to subordinate levels of management.

(4) Work quality must not suffer due to the employee's remote work location.

(5) Direct Supervisors will evaluate work completed by the employee to ensure timely completion of work.

(6) The Direct Supervisor will address decreased work productivity by the employee.

(7) The Direct Supervisor will review the employees' telecommuting schedule annually in coordination with their annual Employee Performance Evaluation. Renewal of the employee's telecommuting agreement is continent on satisfactory performance.

(8) Any deviation from the standards set for each above item could result in a loss of approval for telecommuting.

(k) Use of Leave: The City of Dripping Springs policies and procedures for using leave must be followed by telecommuting employees in the same manner as when working at their regularly designated City office location. If an employee is sick while telecommuting, the employee must report hours worked and use sick leave for hours not worked. If an employee becomes otherwise engaged during the employee's work hours, the employee must report hours worked and use other appropriate paid leave for hours not worked. An employee may not work remotely two consecutive business days. In addition, if an employee has time off scheduled in the same week as a scheduled remote day, the employee shall coordinate their remote work so that the employee does not miss in office time on two full consecutive business days.

(l) Equipment, Software, and Supplies: The City of Dripping Springs will only provide necessary hardware and software for telecommuting employees to perform their job. Employees must follow all City computer security policies in the Personnel Manual and any other computer security policies, user acknowledgments, or licenses applicable to certain applications, programs, or systems. The Employee is responsible for protecting all City-owned equipment from theft, access, tampering, and other physical hazards. If equipment is stolen, damaged, or destroyed, the employee shall notify the City Administrator and IT Director in writing immediately.

Use of internet and wireless connections should be carefully monitored to ensure security of city resources and information. Use of Technology may only done in compliance with Section 7.07 Acceptable Use Policy. Questions related to the security of networks may be directed to the IT Director.

Employees should obtain needed work supplies from the designated locations during in-office workdays. Employees will not be reimbursed for materials and supplies they purchase unless preapproved by their Direct Supervisor.

The City is not responsible or liable for:

(1) Damages to an employee's real or personal property.

(2) Operating costs, including cable or internet charges, home maintenance, personal telephone lines, private insurance, or any other incidental costs associated with telecommuting or the Employee's remote worksite.

(3) Any injuries or property damage to personal vehicle while commuting between remote work location(s) and city work locations.

(m)Telecommuting Requests: Employees who wish to telecommute must discuss their interest with their Direct Supervisor and submit a request for approval by completing the City of Dripping Springs Telecommuting Agreement Form. The Direct Supervisor shall forward the Form to the Human Resources Director if the Direct Supervisor supports the request.

The Human Resources Director will:

(1) Evaluate the employee's assignment to ensure compliance with the Telecommuting policy and established criteria.

(2) Determine what the impact would be on the City if the employee were approved to telecommute.

(3) Evaluate whether the work history of the employee reflects an ability to work effectively in an independent capacity and an ability to comply with all telecommuting policies.

(4) Make a recommendation for approval or disapproval and discuss if needed with the chain of command.

(5) Route approved and denied requests to the City Administrator for final approval, amendment, or denial.

(J) Exception Requests: Employees who wish to request an exemption to the telecommuting policy must discuss their interest with their Direct Supervisor and submit a request for approval of the exception by completing the City of Dripping Springs Telecommuting Agreement Form. The Direct Supervisor shall forward the Form to the Human Resources Director if the Direct Supervisor supports the request for an exception. The City Administrator may choose to consider exceptions to the policy in certain circumstances, including situational telecommuting or emergency telecommuting. In limited circumstances, the Mayor may authorize an exception in coordination with the City Administrator.

(K) Notification: On the approval of a~~n~~ telecommuting agreement, denial of an agreement, or amendment or revocation of a telecommuting agreement, the Human Resources Director shall inform the Employee, the Employee's Direct Supervisor, the City

Administrators, and the Mayor in writing.

~~(a) Employees shall notify their supervisor, Department Head, City Administrator, and Human Resources Director of any work-related injury or illness as soon as possible, but no later than 24 hours after the incident occurs.~~

6.05 Accidents & Safety

All accidents and incidents shall be promptly reported to the City Administrator and Human Resources Director, when appropriate, investigated, reviewed, and analyzed to identify contributing factors and causes to prevent recurrence. The City may provide written policy guidance on safety measures for specific positions and/or equipment. Each accident or incident shall be documented in writing with an incident report. Workers compensation procedures should be followed as appropriate.

6.06 Professional Appearance

All employees are required to wear appropriate attire while on-duty and/or at City Hall, Dripping Springs Ranch Park, Development Services, Ranch House, the Wastewater Treatment Plant, and at other city parks and facilities. Department Heads may require that certain staff wear City of Dripping Springs clothing or other specialized apparel. If this is required, the City will provide access to such clothing. Please see the Uniform Policy for additional information. Employees are also required to engage in routine grooming and hygiene practices that are conducive to the workplace. Hair, jewelry, and wardrobe choices must be appropriate for the employee's interactions with members of the public and suitable to satisfy the City's legitimate job safety concerns.

6.07 Privacy

Employees shall have no reasonable expectation of privacy in their workspaces or on their computers. All City computers, phones, offices, lockers, cabinets, vehicles, and furnishings are subject to use and search by other City officials and employees.

6.08 Smoking

All City buildings and facilities are non-smoking areas.

6.09 Pets

Pets are not permitted in City office facilities. This restriction includes City common areas, meeting rooms, and individual offices. Facilities include Development Services, Dripping Springs Ranch Park, City Hall, Wastewater Treatment Plants and other indoor city office facilities. This prohibition is applicable to all City employees, contractors, and visitors.

Limited exceptions may be made under specific circumstances:

Service Animals

(a) Service Animals that are required for an employee's disability, in accordance with the Americans with Disabilities Act and applicable laws. Employees are encouraged to notify the Human Resources Director in advance if accompanied by a service animal to facilitate any necessary accommodation.

City Events
(b) Pets may be permitted at City-Sponsored events held at the workplace, subject to prior approval from the City Administrator and adherence to specific guidelines provided for the event.

Public Parks
Pets are allowed at public parks subject to park rules.

Approval from the City Administrator is required for any other exceptions.

6.10 Drug/Alcohol-Free Workplace

(a) No employee may consume, or be under the influence of, alcohol or illegal drugs while at City facilities or on duty, unless at an event at a City facility while off duty. Exceptions include medication prescribed by a licensed physician when used as prescribed.

(b) No employee may manufacture, distribute, dispense, possess, sell, purchase, or use a controlled substance on City property or while on duty.

(c) All City buildings and facilities are to remain drug and alcohol free except where a rental of a city facility or park is entered into and adequate insurance is provided. The Mayor and/or City Council may allow certain exceptions for alcohol served at specified official social functions.

(d) Post-accident testing may be conducted following any accident in which violations of safety procedures occur, resulting in either property damage or personal injury caused by an employee. Post-accident testing may be conducted following any accident involving personal injury and the operation of a City vehicle or heavy machinery if evidence exists that the employee caused the accident. Individuals to be tested in a post-accident situation shall include any individual directly involved in an accident whose order, action, or failure to act is determined to be, or cannot be ruled out as, a causative factor in the events leading to or causing such accident.

(e) Commercial Driver Employees and Applicants

(1) Employees

(A) As required by federal law and for the purposes of this Policy, the term "commercial driver" includes any employee who operates or may be required to operate a commercial motor vehicle requiring a commercial driver's license as defined by 49 C.F.R. § 383.23. This includes temporary, part-time, probationary, and regular employees who operate a commercial motor vehicle only occasionally, intermittently or during an emergency.

(B) All Commercial Driver employees will be subject to alcohol and drug testing. All employees who apply for transfer to a position, which requires or could require that the employee operate a commercial motor vehicle will be subject

to preemployment testing before being transferred.

(2) Applicants

All applicants who apply for positions which require or could require operation of a commercial motor vehicle will be subject to pre-employment alcohol and drug testing. Employee applicants who are not otherwise covered by this Policy who apply for or are to be promoted or are transferred or assigned into a position which requires operation of a commercial motor vehicle will be subject to pre-employment testing the same as any other applicant.

(3) Prohibitions

Each covered employee is required to comply with the provisions of federal law, which include the following prohibitions:

(A) No commercial driver shall report for duty or remain on duty to perform a safety- sensitive function while having an alcohol concentration of 0.04 or greater.

(B) No commercial driver shall be on duty or operate a commercial motor vehicle while the driver possesses alcohol or any product containing alcohol.

(C) No commercial driver shall use alcohol while performing safety-sensitive functions.

(D) No commercial driver shall perform safety-sensitive functions within four hours after using alcohol, regardless of the driver's actual alcohol concentration.

(E) No commercial driver shall refuse to submit to any alcohol or controlled substance test required under the law.

(F) (G) No commercial driver shall report for duty or remain on duty to perform a safety- sensitive function if the driver uses any controlled substances, except when the controlled substance is used pursuant to the instructions of a physician and the physician has advised the driver that the substance does not adversely affect the driver's ability to safely operate a commercial motor vehicle.

(G) (H) No driver shall report for duty, remain on duty or perform a safety-sensitive function, if the driver tests positive for controlled substances.

(H) Each driver shall report the use of any medication that may affect their ability to perform commercial driving.

(I) Each driver who parks any vehicle, city or personal, shall only park in designated parking spaces unless loading or unloading.

6.11 Violence & Weapons

(a) The City is committed to maintaining a workplace free from threats and acts of intimidation and violence. All reported incidents will be investigated. Any act of intimidation, threat of violence, or act of violence committed against any person on City property or while performing City business is prohibited. "Intimidation" includes any physical or verbal act toward another person, the result of which is that the person

reasonably fears for the person's safety or the safety of others. A "threat of violence" is a physical or verbal act which threatens bodily harm to another person or damage to the property of another. An "act of violence" is any physical act, whether or not it causes actual bodily harm to another person or damage to the property of another.

(b) No person shall possess or have control of any firearm, deadly weapon, or prohibited knife while in City Hall, City vehicle or designated City office, except as required in the lawful course of business or as authorized by law enforcement. Except that, an employee may keep a firearm locked in his or her vehicle in the parking areas of the city.

(c) Any City employee who is the subject of, or a witness to, a suspected violation of this standard should report the violation to a supervisor or person in authority who is not involved in the conduct. Any supervisor or person in authority who receives a report of a suspected violation of this standard shall document the incident and notify an appropriate City official. Any emergency, perceived emergency, or suspected criminal conduct shall be immediately reported to law enforcement. Sexual violence is also criminal conduct and shall be immediately reported.

(d) Any City employee found to be in violation of this standard may be subject to criminal prosecution as well as discipline up to and including dismissal.

6.12 Supplemental Employment

No full-time or part-time, regular employee may engage in outside employment without the written consent of the Mayor or City Administrator. No equipment or supplies belonging to the City may be used by employees for supplemental employment. An employee shall not engage in outside employment, including self-employment, where such activity would constitute a conflict of interest or adversely affect the employee's performance in City service. If an employee's outside employment begins to interfere with the effective performance of assigned City duties, the employee shall be required to terminate the outside employment or to resign from City service.

6.13 Political Activity

(a) When on duty or in City uniform, an employee of the City may not engage in any political activity relating to a campaign for any elective public office. No employee of the City shall, while on duty or in uniform, make, solicit, or receive any contribution to the campaign funds of any party, interest group or candidate for use in any City election. No employee shall participate in any political activity or campaign for, or with respect to, any candidate in a City Election, including on social media. No city employee will be disciplined for running for city or other office but may be forced to resign if elected, pursuant to state office holding laws. When not on duty and not in a uniform of the City, an employee may engage in political activity respective to governments and entities other than the City. An employee may not use the fact of their City employment to solicit campaign contributions for a candidate.

(b) An employee who is considering becoming a candidate for mayor or city council is hereby informed that election to such office would constitute a resignation from the City service on the day the individual, if elected, takes the oath of office. An employee is encouraged to advise the Mayor in writing prior to announcing candidacy for election or appointment to any public office.

6.14 Telephone Usage

City telephones are primarily for use in conducting City business. Personal calls shall be limited so as not to interfere with City business.

6.15 Media Relations

All media inquiries shall be directed to the People & Communications Director who will coordinate responses. The officially-designated spokespersons for the City are the Mayor, City Administrator, Deputy City Administrators, People & Communications Director, and City Attorney. Other city officials or employees may be authorized or designated to communicate with the media on the City's behalf by the Mayor, City Council, City Administrator or People & Communications Director.

6.16 Privacy

Employees do not have a reasonable expectation of privacy in storage devices provided by the City or located on City property, including but not limited to offices, desks, toolboxes, vehicles, and closets.

6.17 Performance Evaluation

The work performance of each permanent employee shall be evaluated annually. Evaluations for employees on probation shall be conducted upon completion of the probationary period of 90 days. Additional evaluations may be conducted if warranted, as determined by the City Administrator. Evaluations shall be recorded in writing on forms approved by the City Administrator. A copy of such evaluation shall be provided to the employee to whom they relate, and a duplicate copy shall be provided to the Human Resources Director for placement in the employee's permanent personnel file.

6.18 Supervisors

Each employee's direct supervisor shall be set by the ordinances, job descriptions, and contracts adopted by the city council. Authority to terminate resides with the City Administrator unless the employee is hired by City Council pursuant to state law or this Manual. The city council is the final termination authority for City Administrator, Deputy City Administrators, City Secretary, City Attorney, Parks and Community Services Director, City Treasurer/Finance Director, Maintenance Director, People & Communications Director, Human Resources Director, Building Official, Director of Emergency Preparedness and Homeland Security, and others designated by City Council. The City Administrator, in consultation with the employee's supervisor and the City Attorney, and Human Resources Director, is the final termination authority for all other employees unless otherwise designated by state law or city council. Employees who are

terminated may appeal their termination in the same manner as other grievances as described in Section 12.03.

6.19 Ethical Considerations

All City employees have a responsibility to the people of Dripping Springs in the performance of your official duties. Every employee should act fairly and honestly and should avoid conflicts of interest and creating the appearance of impropriety.

A City employee should not:

(a) divulge confidential City information to unauthorized persons;

(b) accept or solicit any gift, favor, or service that might reasonably tend to influence the officer or employee in the discharge of official duties or that the officer or employee knows or should know is being offered with the intent to influence the officer's or employee's official conduct;

(c) accept other employment or engage in a business or professional activity that the officer or employee might reasonably expect would require or induce the officer or employee to disclose confidential information acquired by reason of the official position;

(d) accept other employment or compensation that could reasonably be expected to impair the officer's or employee's independence of judgment in the performance of the officer's or employee's official duties;

(e) make personal investments that could reasonably be expected to create a substantial conflict between the officer's or employee's private interest and the public interest; or

(f) intentionally or knowingly solicit, accept, or agree to accept any benefit for having exercised the officer's or employee's official powers or performed the officer's or employee's official duties in favor of another.

Violation of these ethical guidelines is grounds for disciplinary action, up to and including termination.

6.20 Nursing Mother Breaks

(a) The City of Dripping Springs supports the practice of expressing breast milk by employees;

(b) The City shall make reasonable accommodations for the needs of employees who express breast milk including:

(1) providing a reasonable amount of break time for an employee to express breast milk each time the employee has the need to express the milk;

(2) providing a place, other than a bathroom, that is shielded from view and free from intrusion where the employee can express breast milk;

(c) The City will not discipline or discriminate against an employee because the employee has used her right to express breast milk under this policy.

(d) Any employee wishing to use this break time and area needs to inform the City as soon as possible so the City may make adequate reasonable accommodations.

6.21 Key Control Policy

Each employee employed shall be given access through a key system subject to a Key Control Policy adopted by the City and enforced by the City Administrator.

Each employee who is given a key shall be required to sign a Key Control Policy and:

(1) shall not give or loan the key to others;
(2) shall not make any attempts to copy, alter, duplicate, or reproduce the key;
(3) shall use the key for authorized purposes only;
(4) shall safeguard and store the key securely;
(5) shall immediately report any lost or stolen keys; and
(6) shall produce or surrender the key upon official request.

If a key is lost, stolen, or not surrendered when officially requested, a charge that reflects the cost of changing any and all locks and keys affected may be assessed to the employee. Misuse of City Equipment including City keys may result in discipline up to and including discharge pursuant to Section 12.02 of this Personnel Manual. Additional requirements related to Key Control may be approved and enforced by the City Administrator or Mayor. The Key Control Policy shall be attached to this Manual as Attachment "B".

6.22 City Hall and Facility Closure Policy

(a) The City Administrator shall determine when City Hall or other City facility is closed due to inclement weather, natural disaster, or other health or safety threat pursuant to city policy. The decision will be based on consultation with the Mayor, the Director of Emergency Preparedness and Homeland Security, and Hays County.

(b) The City Administrator shall determine which Parks are closed due to inclement weather, natural disaster, or other health and safety threat. The decision will be based on consultation with the Parks and Community Services Director, Dripping Springs Ranch Park Event Center Manager, the Mayor, the Director of Emergency Preparedness and Homeland Security, and Hays County.

(c) Unless an employee is personally notified by the employee's supervisor, or their designee, the employee is required to work remotely or that the employee is not to report to the employee's designated work site, an employee is expected to report to work. Each Department Head will determine whether employees in each Department shall be required to report to work. Any Employee who is not released from work by their supervisor or designee, shall report to work. Those who are released from work are required to work remotely if feasible. The City Administrator or Supervisor may

assign specific duties that may be performed from home. Any hours worked during a closure shall be treated as regular hours worked. Any Employee who is released from work during their normal work schedule may be eligible for paid leave under the Administrative Leave Policy. Administrative paid leave given during a full or partial city closure will solely be used to make up any time an Employee could not work due to the city closure. (For example, if an Employee is released from work for an eight-hour day, but works four hours at home, that Employee shall be paid for a regular eight-hour day, four hours actually work and four hours administrative paid time off if approved).

(d) In the event inclement weather, natural disaster, or other health or safety threat makes travel to work from home unsafe or impossible for an Employee, absence from work will be considered an excused absence if the Employee provides the required notification to the Employee's Supervisor or Department Head. Work from home will be considered hours worked and shall not be deducted from paid time off. The Employee may apply for administrative leave, with or without pay, or may use vacation time or compensatory time off if Employee has accrued compensatory time off. If additional time is needed for a commute due to inclement weather, natural disaster, or other health or safety threat, the additional time may be considered hours worked if approved by the City Administrator.

6.23 General Conduct

(a) The attitude and conduct of a City employee, whether in public or private, should at all times be such as to promote the good will and favorable attitude of the public toward the City. This includes providing courteous and respectful service to the public and to city employees.

(b) Attendance is an essential function of each position at the City of Dripping Springs. Unsatisfactory attendance is not allowed. It is exemplified by, but not limited to the following violations:

(1) unexcused absence or tardiness;

(2) failure to give notice of an absence or tardiness to the supervisor at least two (2) hours before starting time, or such other time as designated in a written policy established by the Dd~~e~~epartment Hl~~e~~ead/Dd~~i~~irector when possible;

(3) failure to return to work after any authorized leave of absence;

(4) absence or tardiness that causes significant curtailment or disruption of service without sufficient justification; or

(5) leaving working prior to the end of your work day unless authorized by your supervisor.

6.24 Use of City Vehicles

(a) City vehicles are furnished for official city business and may not be used for personal use unless approved by their Department Head or City Administrator, or their designee.

(b) The misuse of city vehicles/equipment shall be considered a serious offense subject to corrective action up to and including dismissal.

(c) All employees authorized to operate city vehicles and motorized equipment are covered by this section.

(d) City Administration is responsible for conducting Motor Vehicle Records (MVR) checks on all current employees who drive city vehicles or may operate a personal vehicle for official city business. The purpose of this check is to verify they have a valid State of Texas driver license without restrictions and are insurable under the city's motor vehicle insurance policy. Annual verification of drivers license for employees who drive as part of their employment shall be required.

(e) Accident Reporting.

(1) The operator of a city vehicle or personal vehicle on official city business shall take the following actions when involved in an accident:

(A) Render aid if possible and necessary.

(B) Call Law Enforcement.

(C) Make a record of the make, model, and license number of vehicles involved.

(D) When possible, take pictures of the vehicles and license plates of the involved vehicles as well as the area of the accident. Complete a vehicle/equipment damage report.

(E) Be courteous, but do not make or sign statements for anyone except the police.

(F) Do not offer promises on behalf of the city.

(G) Notify your supervisor as soon as possible.

(f) An employee of the city involved as a driver of the city vehicle or personal vehicle on official city business involved in a preventable accident may be required to undergo a driving evaluation.

(g) Operations.

(1) It is the employee's responsibility to ensure that they possess and maintain a current, valid, and appropriate operator license for the type of vehicle or equipment being operated.

(2) It is a violation for a city employee to violate the rules of the road, speed limits, traffic requirements, or any parking requirements while driving a city vehicle or driving a personal vehicle on city business.

(3) Employees are responsible for reporting the routine condition and maintenance of assigned vehicles or equipment. All employees with knowledge of a defect in a city vehicle or equipment must make a written report of the defect to the Maintenance Director prior to operating the vehicle or equipment, or upon becoming aware of the defect.

(4) Employees who know a defect exists in a vehicle or equipment that affects the safety of its operation must take the vehicle out of service and not operate the vehicle or equipment until it is properly placed back in service by the designated member.

(5) Employees must inform their supervisor when they are involved in a vehicular accident, convicted of a moving violation, DWI, DUI, or any other crime on or off the job that would impact the employee's ability to operate a city-owned vehicle or equipment.

(6) An employee must notify their supervisor immediately whenever their driver license/CDL is temporarily or permanently suspended.

(7) Should a driver receive a traffic citation while operating a city vehicle or a personal vehicle on city business, they must notify their supervisor within 24 hours, excluding holidays and weekends.

(8) An employee, who, as an operator of a city or personal vehicle or equipment, experiences a number of preventable accidents or is found to have an excessive number of moving or parking violations, may be subject to an evaluation of their ability to continue driving for the city and may be permanently prohibited from operating vehicles or equipment for official city business.

(9) Involvement in a preventable accident may be considered an offense requiring corrective action.

(10) The need for corrective action, and its extent, will be based on the driving requirements, driving record, accident-causing factors, frequency of accidents, and the driver's negligence.

(11) Drivers found to be driving city vehicles, or personal vehicles on city-related business, under the influence of alcohol, controlled substances, or illegal drugs will be subject to immediate dismissal.

6.25 In-City Training

The City provides in-house training opportunities to its staff in order to educate employees on important topics and follow state and federal law requirements. Cybersecurity and FEMA safety training is required for all new employees and on an annual basis. In addition, training on harassment and ethics rules will be required annually. Open government, fraud and other training will be required as applicable.

SECTION 7: TECHNOLOGY USE POLICY

7.01 No Right to Use City Computers or Phones

Use of City computers to access the internet or electronic mail (i.e., "email") is a privilege not a right. The City provides computers and internet / email access for the express purpose of conducting City business and performing municipal tasks.

7.02 Primary Purpose

City computers and phones, including city-issued mobile phones and radios, are to be used primarily for conducting City business. City technology is not intended to be used for conducting personal business. Incidental and infrequent personal use of City technology and City internet / email access is allowable provided that it does not hinder or interfere with conducing City business. Limited personal use of City internet or personal email accounts is best conducted while on break.

7.03 No Privacy Expectation

City officers and employees have no reasonable expectation of privacy on City computers, phones, radios, internet, or email. The City has the right to view and inspect all City

computers, phones, and radios including information accessed, downloaded, viewed, sent, or received over the internet or by email. Much of the information generated by or stored on City technology or obtained through City internet or email access is public information that is required to be catalogued under the Texas Records Retention Act, and subject to mandatory disclosure under the Texas Public Information Act, or other law. Use of City computers, phones, radios, and internet or email accounts constitutes consent by the City officer or employee for City inspection of those computers and internet or email accounts, and data transmitted thereon.

7.04 City Email Accounts

All City employees are required to use their City-issued email accounts to conduct City business. Employees are prohibited from using their personal email accounts to conduct City business. When corresponding about City business via email, all City personnel must include the City's standardized email stationery and signature within the emailed message. If an employee receives a city email at a private email address, the employee should immediately forward the email to his or her city email address for storage.

7.05 Prohibitions

No officer or employee may:

(a) Download any software or program onto City computers or phones without the express written authorization of the City Administrator and city IT Director. No employee may have TikTok on any city device including computers, tablets, and mobile phones.

(b) Use City computers, phones, radios, City-funded internet / email accounts, or any other communication device on which City business occurs or is funded by the City:

(1) in a manner that neglects the officer or employee's assigned duties or interferes in City operations;
(2) to participate in on-line chat rooms, unless those chat rooms are sponsored by legitimate professional organizations relevant to municipal government, and such participation is approved in advance by the Mayor or City Administrator;
(3) to invite an employee on a date or make sexual propositions of employees;
(4) to harass or otherwise interfere with a City employee. This prohibition includes but is not limited to harassment stemming from an employee's race, ethnicity, color, sex, age, or marital status;
(5) to send or distribute off-color jokes, articles or stories that are lewd and that a reasonable person would find to be offensive;
(6) to send or distribute worms, malware, or viruses;
(7) to send threatening messages to any other person or institution;
(8) use City computers or City-funded internet / email accounts to view, download, or distribute pornographic material, including obscene images or text;
(9) to disclose, release, or otherwise transmit confidential or privileged information belonging to the City without the express permission of the Mayor or City Administrator;
(10) to store personal information (i.e., that information not directly related to City business). Officers and employees shall regularly remove any personal data (i.e.,

that which is not prepared for or by the City for conducting City business) from City computers and internet / email accounts;

(11) to delete or remove programs installed by the City or delete data prepared by or for the City that is related to City business;

(12) to operate a private business, do work for another employer, or conduct political campaigns. This prohibition does not apply to the preparation and generation of election notices and related documents required by law;

~~(12)~~(13) in violation of the City's AI Policy; or

~~(13)~~(14) to violate another person's privacy, perform an illicit act, or commit a crime.

7.06 Duty to Report

Officers and employees shall report Violations of this Technology Use Policy to the Mayor or City Administrator. Officers and employees who have received a worm, virus, or phishing or social engineering email or text must immediately notify the City Administrator, city IT Director, or the City's Information Technology Consultant. The City Administrator may suspend or revoke an employee's internet or email access privilege for violation of this Policy. Violation of this Policy is basis for disciplinary action, up to and including termination. The unauthorized disclosure of confidential or privileged information belonging to the City is basis for disciplinary action, up to and including termination, and may be punishable as a criminal misdemeanor.

7.07 Acceptable Use Policy

(a) Purpose: The purpose of this Acceptable Use Policy (AUP) is to protect the integrity, confidentiality, and availability of City of Dripping Springs systems, data, and networks by establishing guidelines for acceptable use of internet and network resources, including the use of Wi-Fi connections.

(b) Scope: This policy applies to all employees, contractors, consultants, temporary staff, interns, and any other authorized users (hereafter referred to as "users") who access systems, applications, or data using any device, whether owned by the organization or personally owned.

(c) Policy Statement: To safeguard sensitive data and maintain the highest level of cybersecurity, users must not connect to or access City systems or data via public or unsecured Wi-Fi networks. This includes, but is not limited to:

(1) Free Wi-Fi offered by coffee shops, restaurants, or cafes
(2) Airport or airline Wi-Fi services
(3) Hotel or lodging-provided Wi-Fi networks
(4) Any Wi-Fi network not encrypted with WPA2/WPA3 and not under the direct control of the user or the organization

(d) Acceptable Network Access: Users are only permitted to access City systems and data using:

(1) Organization-provided networks (wired or wireless)
(2) Secure, encrypted home networks
(3) Personal mobile hotspots with WPA2/WPA3 encryption
(4) Corporate VPN connections over trusted networks

(e) Prohibited Use: Users are strictly prohibited from:

(1) Connecting to public or open Wi-Fi networks when accessing, transmitting, or handling organizational data
(2) Disabling or circumventing security measures such as VPNs or firewalls while connected to a Wi-Fi network
(3) Using any network that does not provide end-to-end encryption and is not configured in accordance with organizational security standards
(4) Using AI in any manner inconsistent with state law, IT Director direction, or any AI Policy approved by the City.

(f) Enforcement: Violation of this policy may result in disciplinary action under the Personnel Manual. City of Dripping Springs reserves the right to monitor and audit network activity to ensure compliance.

(g) Exceptions: Exceptions to this policy must be approved in writing by the City Administrator in consultation with the IT Director. Approved exceptions must include appropriate risk mitigation measures, such as the mandatory use of VPN and endpoint encryption.

SECTION 8: SOCIAL MEDIA POLICY

8.01 Introduction

Given the multitude of concerns (legal, political, and ethical) raised by social networking (Facebook, Instagram, Snapchat, LinkedIn, TikTok, Twitter, etc.) this Social Media Policy ("Policy") establishes prudent and acceptable practices regarding City of Dripping Springs officials and employees (personnel) use of the internet.

8.02 Purpose

The City has a legitimate government interest in effective, efficient, and consistent communications with the public. The City also strives to have a productive workplace. While the City encourages its personnel to enjoy and make good use of their off-duty time, certain activities on the part of its personnel may become a problem if such activities could: impair the work of any City official or employee; create a harassing, demeaning, or hostile work environment; or

(a) disrupt the smooth and orderly flow of work; or harm the goodwill and reputation of the City among its citizens or in the community.

For these reasons, the City reminds its personnel that the following guidelines apply in their use of social media, while both on and off duty.

8.03 Disclaimer

(a) Under this Policy, the City disavows, and is not responsible for any sites, posts, opinions, or content not coordinated through and approved by the City Administrator or People & Communications Director.

(b) If City personnel posts data purporting to be on behalf of the City while using a social media site without the prior approval of the City Administrator, the City is not responsible for said posted content. Such content is not to be construed as reflecting the views or opinions of the Mayor, City Council or City Staff, and the City is not responsible for archiving such content in accordance with the records retention schedule or providing copies in accordance with the Texas Public Information Act (PIA) and may be grounds for disciplinary action.

(c) The absence of explicit reference herein to a particular site does not limit the extent of the application of this Policy. If any personnel is uncertain, the employee must consult their supervisor before proceeding.

8.04 General Guidelines

(a) While on duty, the use of City equipment or internet service by personnel must be limited to work-related tasks. Social media activities shall never interfere with work commitments.

(b) It shall be a Policy violation for any personnel to post online content as a representative of the City, or on the City's behalf without the City Administrator's or People & Communications Director's prior approval.

(c) Any personnel posting City-related issues online not as an approved representative of the City or on the City's behalf, shall explicitly clarify they are speaking for themselves and not on behalf of the City by displaying the following disclaimer: "This is my own opinion and not necessarily the opinion or position held by the City or City Council."

8.05 Guidelines for Official City Sites

(a) All City-sanctioned social media sites shall be maintained by the People & Communications Director, City Administrator, or their designee. Any content to be posted on City-sanctioned social media sites must meet the approval of the People & Communications Director or the City Administrator before it is posted.

(b) All personnel that engage in social media activities and/or visit any City-sanctioned social media site on the City's behalf shall adhere to applicable federal, state, and local laws, regulations, and policies, including the Texas Public Information Act and the records retention schedule. All content must be managed, stored, and retrieved to comply with these laws.

(c) Any personnel that posts online content as a representative of the City, or on the City's behalf shall clearly state within said post that said content is subject to all applicable records retention and public disclosure laws. All City-sanctioned social media sites shall clearly indicate that any articles and any other content posted or submitted for posting are subject to records retention and public disclosure.

(d) Any content posted as representative of the City, or content posted to a City sanctioned social media site containing any of the following is prohibited:

(1) Comments not topically related to the particular site or blog article being commented upon;
(2) Profane language or content;
(3) Content that promotes, fosters, or perpetuates discrimination on the basis of race, creed, color, age, religion, sex, marital status, status with regard to public assistance, national origin, physical or mental disability;
(4) Sexual content or links to sexual content;
(5) Conduct or encouragement of illegal activity;
(6) Information that may compromise the safety or security of the public or public systems;
(7) Content that violates a legal ownership interest of any other party;
(8) Information that is incorrect or misleading;
(9) Information that is in conflict with an approved City policy, ordinance, directive, or plan; and/or
(10) Anything else that creates a disruption in the workplace.

(e) Content submitted for posting on a City-sanctioned social media site that is deemed unsuitable for posting by the People & Communications Director or the City Administrator because it violates criteria in the preceding item of this Policy, shall be retained pursuant to the records retention schedule along with a description of the reason the specific content is deemed unsuitable for posting.

(f) Any hyperlinks posted on a City-sanctioned social media site shall be accompanied by the following disclaimer: "The City guarantees neither the authenticity, accuracy, appropriateness nor security of the link, website, or content linked thereto."

(g) Personnel found in violation of this Policy may be subject to disciplinary action, up to and including termination of employment.

8.06 Guidelines for Marketing and Branding

To ensure consistent brand messaging and to protect band integrity, the City has guidelines when it comes to marketing and branding of all city entities. The People & Communications Director or designated representative is the lead on any communications, design and marketing of city-related brands, events, programs, initiatives, departments, and facilities. All designs should follow the established brand guidelines that includes logo(s), typography, and photography. No letter heads, advertisements, brochures, guides or email signatures shall be created without approval from the People & Communications Director. Any new city logo must be approved by the City Council. Compliance is mandatory, with the People & Communications Director responsible for enforcement and periodic reviews. Failure to adhere to these guidelines may result in disciplinary action.

SECTION 9: SURPLUS EQUIPMENT POLICY

9.01 Purpose

The purpose of this ***Surplus Equipment Policy*** is to establish procedures for managing and disposing of the City's surplus property and equipment in a manner that is fiscally responsible. This policy applies to all City of Dripping Springs personnel.

9.02 Definitions

Office Equipment: Not office supplies. Includes furniture, electrical appliances, wall hangings, and anything else valued over $25.00 and/or listed in the City of Dripping Springs liability inventory.

IT Equipment: Machines used to acquire, store, analyze, or process data and information electronically, including for printing, transmitting, and receiving, or storing electronic information such as a computer, computer accessories, or copy machine.

Surplus Property: Equipment, furniture, scrap or salvaged material, or other tangible property that might still have some usefulness but is no longer needed or required by the City of Dripping Springs, regardless of its present condition or estimated value.

Office Supplies: Office tools such as staplers, writing utensils, scissors, and other tools used within the office with a replacement value of under $25.00.

Salvage Property: Generally, refers to personal property that is damaged, used, or consumed so that it has no value for the purpose for which it was originally intended.

9.03 Procedure

Under this policy, City staff are responsible for:

(1) Coordinating the transfer of surplus equipment from the City;
(2) Ensuring that the appropriate paperwork or forms are completed prior to transfer;
(3) Providing temporary storage until sale or disposal of the surplus equipment or property;
(4) Maintaining a master list of all surplus equipment that is transferred or is awaiting transfer;
(5) Updating the master list of surplus equipment accordingly;
(6) Allocating the proceeds from the sale of surplus equipment properly and in accordance with Texas Local Government Code Chapter 51, if necessary.

Unauthorized removal, disposal, or expropriation of City equipment or surplus property is considered theft and constitutes a serious breach of City policy and may result in disciplinary action, including, but not limited to dismissal, or criminal prosecution.

(a) Reporting Authority: Parks employees shall report issues related to non-IT equipment

to the Parks and Community Services Director.

All other employees shall report issues related to non-IT equipment to the Maintenance Director and IT related equipment to the IT Director.

(b) Surplus Equipment: The Maintenance Director may declare equipment or property that is no longer useful for the City of Dripping Springs as surplus. Before declaring equipment or property as surplus, the Maintenance Director is encouraged to:

(1) Trade in the property towards the purchase of new property;
(2) Transfer the property within the City; or
(3) Transfer the property to another City office.

The Maintenance Director shall oversee any of the above transactions or other disposal of surplus equipment or property.

(c) Broken Equipment (Non-IT): The City Parks and Community Services Director and the Maintenance Director can determine the procedure for the disposition of broken equipment that can be repaired.

If broken equipment cannot be repaired, an employee shall inform their immediate supervisor. The Department Director will work with the City Parks and Community Services Director or the Maintenance Director to dispose of that broken equipment or property with written approval by City Administrator. This does not govern the procedure for disposal or transfer of broken IT equipment or property.

(d) Unused Equipment (Non-IT):-An employee shall inform their immediate supervisor if there is unused equipment at their workstation or site. The Department Director will work with the City Parks and Community Services Director and the Maintenance Director to determine the procedure for the disposition of unused equipment or property with written approval of the City Administrator. Unused equipment is equipment that is no longer needed due to:

- Lack of continued need
- Lack of trade-in value
- Obsolescence
- Wear, damage, or deterioration
- Major repair is impractical
- Excessive cost of maintenance

(e) Broken Equipment (IT): The City IT Director is in charge of processing, transferring, and disposing of broken IT equipment or property. In general, the length of time that an electronic or computing device should be a consideration when determining whether such a device should be deemed surplus, especially if IT equipment is broken, or breaks

often. Used IT devices, even broken devices, can contain confidential data and licensed software that are at risk of unauthorized use. To promote the security of confidential information, the IT Director is required to erase data stored on IT devices before their sale, disposal, or relocation.

Many IT devices contain harmful heavy metals that are harmful to the environment when improperly disposed. If these devices are subject to disposal, they cannot be disposed of in landfills or other scrap metal recycling programs. Compliance with local or state recycling programs is requested.

Employees shall inform IT Director of broken equipment. If broken beyond repair, IT equipment cannot be repaired, an employee shall inform IT Director. The IT Director may dispose of that the broken equipment or property with written approval by City Administrator.

(f) Unused Equipment (IT): The City IT Director is in charge of processing, transferring, and disposing of unused IT equipment or property. In general, the length of time that an electronic or computing device should be a consideration when determining whether such a device should be deemed surplus. If the equipment is unused and can be transferred or sold, then the City IT Director should make that consideration when determining proper disposition procedures for that equipment or property.

Unused IT devices still contain harmful heavy metals that are harmful to the environment when improperly disposed. If these devices are subject to disposal, they cannot be disposed of in landfills or other scrap metal recycling programs. Compliance with local or state recycling programs is requested.

Employees shall inform the IT Director if there is unused IT equipment at their workstation or site. The IT Director can determine the procedure for the disposition of unused equipment or property with written approval of the City Administrator. Unused equipment is equipment that is no longer needed due to:

- Lack of continued need
- Lack of trade-in value
- Obsolescence
- Wear, damage, or deterioration
- Repair is impractical
- Excessive cost of maintenance

(g) Equipment for Sale: The Maintenance Director is in charge of selling any surplus equipment or property. Items may be transferred to other City departments, donated to non-profit organizations, or given away at no cost to avoid landfill disposal. Items will be sold at the discretion of the Maintenance Director with approval from the City Administrator. The City Maintenance Director, with the prior approval of the City

Administrator, may donate surplus equipment or property directly to a non-profit organization with proof of the 501(c)(3) status of recipient.

(h) Office Supplies: For office supplies, as defined above, that are broken, such as a stapler or scissors, an employee may dispose of such supply. After disposing of any such property, the employee should inform their immediate supervisor and the Department Director will inform the Maintenance Director or City Parks and Community Services Director of the disposition.

For office supplies, as defined above, that are unused, such as a stapler or scissors, an employee shall inform their immediate supervisor. The Department Director will inform the Maintenance Director or City Parks and Community Services Director so that such supply can be stored.

If there is a question of whether an item can be disposed of as an "office supply" or whether an object is "equipment", the employee should contact the Maintenance Director or City Parks and Community Services Director for verification and handle such property appropriately.

SECTION 10: TRAVEL AND REIMBURSEMENTS

10.01 Registration Fees

Fees charged for registration for conferences, meetings, or seminars are allowed for prepayment or reimbursement. Invoices, registration forms, and supporting information providing documentation of fees or rates must be submitted with the request for payment.

10.02 Reimbursements

Reimbursement for education, training, conference, and other business-related expenditures incurred by City employees and officials in the performance of their duties and responsibilities will comply with standard, uniform procedures. Reimbursements may be made for the following types of expenditures, upon submittal of an expense report along with the receipts:

(a) Transportation: Coach rate air fare, toll roads, out-of-pocket expenses incurred during use of a City vehicle, mileage at the current Internal Revenue Service established rate. Cost of any taxi fare incurred, plus gratuity. Cost associated with parking of personal or City vehicles resulting from travel or conduct of City business. Each official and employee will use best efforts to use the most cost-efficient travel for each trip. Reimbursements will only be given for the actual cost of travel and will not be given for the use of reward travel or "miles".

(b) Meals: Cost of meal reimbursement will be based on actual charges and should be reasonable and prudent, not extravagant. The costs of meals will be reimbursed up to the state per diem rate for the location at which the meal is purchased pursuant to the

rates established by the U.S. General Services Administration.

(c) Entertainment: Employees are responsible for the costs of their own entertainment.

(d) Lodging: Actual cost of room, plus appropriate taxes.

(e) Per Diem: The City Administrator or Mayor may establish per diem for certain travel events.

10.03 Cash Advances

Employees shall submit receipts accounting for all cash advances made from petty cash.

SECTION 11: DISCRIMINATION

11.01 Equal Employment Opportunity

The City's employment decisions are made without regard to race, color, religion, sex, age, sexual orientation, military status, veteran status, national origin, mental or physical disability, pregnancy, or marital status. Discrimination or harassment against any person in recruitment, examination, appointment, training, promotion, discipline, or any other aspect of personnel administration because of political or religious opinions or affiliations, membership or non-membership in employee organizations, or because of race, color, national origin, age, disability, veteran status, sex, or marital status is prohibited. Any employee discriminated against or harassed shall report such conduct to his or her immediate supervisor, City Administrator or Human Resources Director; provided, however, if a City Administrator or Human Resources Director is the alleged source of a claim of discrimination or harassment, the aggrieved employee may address such claim directly to the Mayor, or if the Mayor is the alleged source of a claim, then the aggrieved employee may address such claim directly to any member of City Council.

11.02 General Prohibition

The City shall base all employment actions and decisions on a person's qualifications, experience, performance, demeanor, and behavior. The City shall **not** discriminate against employees on the basis of race, color, age, veteran status, military status, pregnancy status, ethnicity, sex, religion, sexual orientation, or nation of origin.

Every supervisor is expected to implement this policy through uniform and consistent employment practices. Management is also responsible for maintaining a professional working environment free of intimidation, sexual harassment, and all other forms of harassment and discriminatory conduct.

11.03 Discrimination and Harassment

(a) Harassment Prohibited

It is City Policy that all employees should be able to enjoy a work environment free from all forms of unlawful discrimination, including sexual, racial, religious, or other

harassment. Accordingly, no employee shall engage in harassment of any employee, applicant, or any other individual.

(b) Discrimination and Harassment Defined
Discrimination and harassment is behavior that is motivated in whole or in party by a person's protected class, that is not welcome, and is personally offensive, or that lowers morale and that, therefore, interferes with an employee's work effectiveness. It can include verbal abuse and gestures. Harassment occurs in many forms, including but not limited to, unwelcome physical contact, verbal abuse, leering, gestures, electronic communication, and more subtle communication or advances and pressure involving the individual's protected class. Whether particular conduct constitutes, or harassment is based on the reasonable perception of the victim. Harassment includes unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when:

(1) adversely affects a term or condition of an individual's employment; or

(2) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment; or

(3) submission to or rejection of such conduct by an individual is used as the basis for employment decisions affecting such individuals; or

(4) such conduct has the purpose or effect of interfering with an individual's work performance or creating an intimidating, hostile, or offensive work environment, whether or not it is directly linked to the granting or denial of an economic benefit.

(c) Discrimination and Harassment is Punishable
Discrimination and Harassment are forms of misconduct that undermines the integrity of the employment relationship. No employee should be subjected to unsolicited and unwelcome sexual overtures or conduct, either verbal or physical or verbal abuse related to a protected status. A finding that any employee has committed any such form of harassment will result in disciplinary action.

Reporting Required
Any employee who believes that the employee has been subjected to any of the forms of harassment set forth above should report this harassment to:
(1) the employee's supervisor;
(2) the City Administrator;
(3) the City Attorney;
(4) the Human Resources, and/or
(5) the Mayor.

Complaints against the City Administrator should be reported to the Mayor, the City

Attorney, or a member of the City Council. Every supervisor or officer receiving a report of alleged harassment must notify the Mayor and all persons in the alleged offender's chain of command. Appropriate action must be promptly taken. The first action taken in such event shall include steps calculated to prevent reoccurrence of any such alleged incidents, pending investigation and final resolution of the complaint. Each such report shall be investigated promptly, and appropriate corrective action will be taken with the City Administrator's concurrence unless the allegation involves the City Administrator, in which case the appropriate corrective action will be taken by the Mayor.

(d) Investigation Without Retaliation

All good faith complaints of harassment will be promptly investigated, ensuring confidentiality to the maximum possible extent. Disciplinary action shall be taken against any employee in violation of this policy. Such disciplinary action will be determined by the nature of the wrongful act and may result in immediate dismissal of the offending employee. No employee of the City shall be retaliated against for filing a complaint of harassment in good faith or for participating and cooperating in the good faith reporting or investigation of such a claim. However, the City recognizes that false accusations of harassment can have serious effects on innocent men and women, their reputation, and their families. False accusations of sexual harassment will result in severe disciplinary action.

(e) Training Required

It will be the responsibility of the City Administrator to inform all employees of the policy concerning non-discrimination, equal employment opportunities, and harassment, as well as the gravity of such behavior and the procedure to be employed in the event an allegation develops.

11.04 Disabilities

The City shall evaluate all job applicants and employees based on ability to perform the essential functions of the position with or without reasonable accommodation. The City shall comply with the federal Americans with Disabilities Act (ADA).

11.05 Religious Affiliation

The City shall not evaluate or take employment action on job applicants or employees based on the applicant or employee's religious practices or membership. It is imperative, however, that employees do not allow their religious activities to interfere with the performance of work-related duties or the completion of assignments. Being a government institution, the City does not allow employees to proselytize.

11.06 Immigration Law Compliance

(a) Federal law requires that the City ensure all employees are authorized for employment in the United States. Therefore, only individuals lawfully authorized for employment in the United States will be employed.

(b) In connection with federal law, the City must collect certain information and review

certain documentation concerning the employment authorization of individuals hired. This information and documentation will be used only for compliance with the Immigration Reform and Control Act, as amended, and not for any unlawful purpose. If an employee's employment authorization changes or terminates after the start date of employment, the employee will be responsible for informing the City Administrator or ~~a~~ Human Resources Director ~~representative~~ immediately.

SECTION 12: DISCIPLINARY MEASURES

12.01 Progressive Discipline

To the extent practicable, the City prefers to pursue a course of progressive discipline, which may include the following options (in no particular order): verbal counseling, training, verbal reprimands, written reprimands, suspension with pay, suspension without pay, demotion, reduction in pay, and discharge.

12.02 Discretionary Discipline

Whether to take disciplinary action rests with the discretion of direct supervisor of the employee in consultation with the City Administrator and Human Resources Director and who shall not be bound by the terms or procedures of this Manual (which is solely a guide). The Mayor shall be consulted for any disciplinary action that involves an employee whose final hiring or firing authority rests with City Council.

12.03 Grievance Procedure

(a) Employees or recently separated former employees dissatisfied with any employment issue, such as a possible job discrimination matter, health and safety issues, drug-related issues, or a disciplinary matter, may pursue a grievance.

(b) Employees or recently separated former employees may submit a written grievance regarding any employment issue to the City Administrator within five (5) business days of the latest occurrence. A written grievance involving the City Administrator may be submitted to the Mayor within five (5) business days of the latest occurrence. The notice must specify what action was taken by the City or what action has been observed, and how the action is either unwarranted or inappropriate.

(c) The City will investigate, when necessary, allow the initiator of the grievance a reasonable opportunity to bring forth evidence and witnesses to support the initiator's case, and allow the initiator to question and fully refute any charges brought against the employee or recently separated former employee. The City Administrator shall issue a decision on all grievances to the submitting employee. For employees for which the City Administrator is the final hiring and termination authority, the City Administrator's decision is final. For employees for which the City Council is the final hiring and termination authority, the submitting employee may appeal the City Administrator's decision to the Mayor for consideration by City Council within five business days of receiving the decision of the City Administrator.

12.04 Personnel Files

Employees may request access to their personnel files via the City Administrator or Human Resources Director. In general, for individuals other than the employee, an employee's personnel file should be accessed only by those who have a job-related need to know or if a law requires the release. Under the Public Information Act, and subject to confidentiality rules set by state law, some or all of an individual's personnel file may be released to a member of the public if requested. Both at and following the time you separate from employment, the employee may make copies of documents in the employee's personnel file if you wish. Copying of such documents should be arranged with the Human Resources Director and will cost ten cents per copy, payable in advance. An electronic copy can be requested at no cost to the employee. Your personnel file will be maintained in City records in accordance with all applicable legal requirements.

SECTION 13: SEPARATIONS

13.01 Non-Disciplinary Separations

(a) Layoffs: The City retains the ability to restructure all employment positions and perform any necessary Reductions in Force (RIFs).

(b) Resignation: Employees may resign at any time. To remain in good standing, employees are encouraged to provide two (2) weeks' notice of any intent to voluntarily leave employment.

(c) Retirement: Any retirement intentions must be in conformance with the City's retirement plan.

13.02 Incapacity: An employee may be separated if such employee is unable to perform the functions of the employee's position, as expressly provided in the job description for such position, with or without reasonable accommodation. A finding that an employee is Unfit for Duty shall be made only through individual medical determination by a competent medical authority as prescribed by the City Administrator and Mayor. The City Administrator may require that a current employee undergo a Fit for Duty evaluation, at the City's expense, to determine if such employee is able to satisfactorily perform the essential functions of the employee's current position, and whether the employee can satisfactorily perform such functions with or without reasonable accommodation.

13.03 Discharge

Authority to terminate resides with the City Administrator unless the employee is hired by City Council pursuant to state law or this Manual. The City Administrator shall consult with the employee's supervisor, Human Resources Director and the City Attorney prior to termination. During an investigation related to discipline or discharge, the City Administrator may place the employee on paid or unpaid administrative leave. Either the City or employees may terminate the employment relationship, for any reason, or no reason (so long as the reason is not discriminatory, as established by this Manual).

A non-exhaustive list of grounds for discipline or discharge of an employee by the City include (but is not limited to) the following:

(a) Insubordination
(b) Neglect of Duty
(c) Violation of City Policy, City Ordinance, State Law, or Federal Law
(d) Failure to conduct self in a courteous and proper manner while on duty.
(e) Misappropriation of Funds, Equipment, or Supplies
(f) Persistent tardiness or truancy
(g) Carelessness or Recklessness
(h) Misconduct
(i) Misuse of City equipment or information
(j) Dishonesty
(k) Violation of Personnel Manual
(l) Incompetency
(m) Harassment
(n) Discourteous Conduct towards other employees, officials, or the public
(o) Failure to attend mandatory meetings or trainings without cause

13.04 Return Items

On or before the last day of employment with the City, all departing employees must return all equipment, supplies, files, and resources provided to the employee by the City during the employee's tenure with the City.

13.05 Payment for Leave

The City will pay separated employees for untaken vacation leave of up to 120 hours if the employee has worked for the City for at least 1 year. Compensatory time will be paid-out upon termination for all exempt employees. Employees who are terminated or do not provide adequate notice of resignation shall not receive accrued vacation leave.

13.06 Reference

All reference inquiries are to be directed to the City Administrator or the City Administrator's designee. The City Administrator may designate an employee or former employee's supervisor or director as the appropriate individual to provide a reference. Under state law, the City is allowed to provide a truthful employment reference regarding a current or former employee. However, the City is not required to provide an employment reference to or about a current or former employee.

13.07 Rehire Eligibility and Recognition

Employees who completed the City's initial employment period and who were part of a reduction in force, as well as those employees who voluntarily resigned, will be eligible for rehire if they had a satisfactory work record while employed with the City.

Former employees who had a less than satisfactory work record appropriately noted at termination as not being eligible for rehire are excluded from the rehire consideration.

Employees who were involuntarily terminated by the City or who were laid off with a less than satisfactory work record or who failed to complete their initial employment period will not be considered for rehire.

13.08 Service Restoration Rules for Eligible Employees

If a former employee with less than one year's prior service is rehired, the employee will be considered a new employee and will not be eligible for prior service recognition for seniority or benefit plan participation purposes.

If a former employee with more than one year's prior service is rehired, the employee's seniority and eligibility to participate in company benefit plans will be bridged if the employee is rehired and the period of prior service was no more than two (2) years. Service recognition will include prior service recognition for accrued leave plans after one year of service of returning to the City.

If a former employee with more than one year's prior service is rehired and the duration of the period of absence exceeded two (2) years, the employee will be considered a new employee and will not be eligible for prior service recognition for seniority or benefit plan for participation purposes.

13.09 Rehire Service Date Adjustment

When recognition of prior service is granted, a rehired employee's service date will be adjusted in accordance with the service restoration rule (13.08).

13.10 Continuation of Group Insurance

The federal Consolidated Omnibus Reconciliation Act of 1985 (COBRA) provides individuals with the option of continuing group health insurance coverage, under specified conditions and at the individual's full expense or as required by law, beyond the date which the insurance would otherwise terminate.

Each covered employee is responsible for promptly notifying the City of any change in family status—such as separation, divorce, or a child becoming ineligible for dependent coverage. If such a change would cause the employee or a covered dependent to become ineligible for City-supplemented group insurance, the City will provide written notice of COBRA continuation rights, including instructions for electing continuation coverage. Specific deadlines must be met, and full premiums must be paid in a timely manner by the employee or the applicable spouse or child directly to the health plan provider.

ACKNOWLEDGEMENT

I, _____ (*printed name*), hereby acknowledge

that I have received a copy of the City of Dripping Springs's ***Personnel Manual***. I have read and understood the information presented to me. If I have questions about anything I have read, I have asked my Supervisor for and received clarification. Specifically, I understand the following:

- My employment status is *at-will*, and either I or the City of Dripping Springs may terminate my employment at any time, with or without reason.
- I do not have a contract or term of office with the City of Dripping Springs unless it is through a separate written and signed agreement.
- My supervisor does not have the authority to enter into a contract with me. ○ Harassment and discrimination are not tolerated in the workplace.
- I share with my fellow employees a duty to prevent and report violations of the policies set forth in the Personnel Manual.
- My employer will promptly and thoroughly investigate all claims and take remedial measures, up to and including termination.

_____ _____

Employee's Signature Witness's Signature

_____ _____

Date Date

DRAFT 9.25.2025

City of Dripping Springs

ELECTION REGARDING PERSONAL INFORMATION

TO THE CITY SECRETARY:

I, _____(*printed name*), hereby make the following election with respect to allowing public access to information in the custody of the City of Dripping Springs that relates to my home address, home telephone number, and social security number or that reveals whether I have family members.

I do ***not*** want the City of Dripping Springs to disclose or allow public access to the following (*check all that apply*):

_____ My home address

_____ My home telephone number
_____ Information that reveals whether I have family members

_____
Employee's Signature

_____
Date

DRAFT 9.25.2025

Attachment "A"
EMPLOYEE TRAINING AND REIMBURSEMENT AGREEMENT

THIS EMPLOYEE TRAINING AND REIMBURSEMENT AGREEMENT (the "Agreement") dated _____, 20__, ("Effective Date") is by and between, the City of Dripping Springs, a municipality in Hays County, and _____, a current employee of the City ("Employee").

RECITALS

WHEREAS, Employee has requested and the City has agreed to pay for the Employee to attend a conference, meeting, seminar, workshop, training, educational course, or similar instructional class (collectively, "Training"); and

WHEREAS, in consideration for the City's payment for the Training, Employee acknowledges that through attendance at such Training, Employee will acquire skills and enhance his or her professional skills or knowledge making the Employee more marketable; and

WHEREAS, Employee agrees to reimburse the City for the cost of such Training in the event that employment with the City is terminated in accordance with the terms of this Agreement.

AGREEMENT

NOW THEREFORE, in consideration of the above recitals and the individual and mutual covenants of the parties hereinafter set forth, and for other good and valuable consideration, it is hereby agreed by and between the parties hereto:

1. Cost of Training and Expenses. The City agrees to pay a total of $_____ ("Cost") for the following Training:

Name of Training: _____

Training Provided by: _____

Training Location: _____

Date(s) of Training: _____

In addition to the Cost of the Training, the City agrees to reimburse additional reasonable expenses related to attendance at such Training up to $_____ for travel, food, and incidentals; provided that the Employee submits the appropriate expense reports and all receipts for the expenses associated with the Training and such expenses are reimbursable.

2. Reimbursement for Cost of Training. Except as provided below, Employee agrees to reimburse the City for the Cost of the Training paid by the City if the Employee's employment terminates within two (2) years of completion of the Training. Employee agrees to reimburse the City within thirty (30) days of termination.

3. Salary Deduction. Employee agrees and authorizes the City to deduct the amount owed hereunder, to the extent permissible by law, from Employee's pay following notification of termination of employment with the City. The City, in its sole discretion, may determine whether to deduct any amount owed from the Employee's pay. If the amount owed under this Agreement exceeds the amount deducted from the Employee's pay, in accordance with Section 2, Employee agrees to reimburse the City any remaining amount due to the City within thirty (30) days of terminating employment.

4. Continuation of Employment-at-Will Relationship. Employee and the City understand and agree that this Agreement does not constitute an employment agreement and nothing in this Agreement shall replace the Employee and the City's at-will employment arrangement. Both Employee and the City understand that the employment relationship may be terminated by either party for any or no reason at any time prior to the termination of this Agreement.

5. Term. This Agreement shall be in effect from the Effective Date until all reimbursement, if any, is due under this Agreement.

6. Entire Agreement; Amendments. This Agreement contains the entire understanding of the parties. Employee and the City may mutually agree to modify the terms of this Agreement at any time; provided, however, that any such modification must be in writing and signed by both parties to this Agreement.

7. Governing Law. This Agreement shall be governed by and construed under the laws of the State of Texas and any dispute shall have venue in Hays County.

8. Severability. If any provision of this Agreement is held to be invalid by a court of law, the remaining provisions shall remain in full force and effect.

9. Counterparts. This Agreement shall be executed in one or more counterparts and all such counterparts shall constitute one and the same instrument.

10. Headings. Headings of provisions of this Agreement are solely for the convenience of reference and are not a part of this Agreement and shall not affect the meaning, construction, operation, or effect hereof.

IN WITNESS WHEREOF, the City and Employee hereto have caused this Agreement to be executed on the date and year first above written.

EMPLOYEE

_____

Employee Name: _____ (Printed)

CITY OF DRIPPING SPRINGS

_____

Michelle Fischer, City Administrator

DRAFT 9.25.2025

Attachment "B"
KEY CONTROL POLICY

The purpose of this ***Key Control Policy*** is to establish reasonable personal security for the staff of the City of Dripping Springs and to ensure the protection of personal and city property through the control of keys (including fobs) to city facilities.

In return for the loan of a key, employees: 1) shall not give or loan the key to others; 2) shall not make any attempts to copy, alter, duplicate, or reproduce the key; 3) shall use the key for authorized purposes only; 4) shall safeguard and store the key securely; 5) shall immediately report any lost or stolen keys; and 6) shall produce or surrender the key upon official request.

If a key is lost, stolen, or not surrendered when officially requested, a charge that reflects the cost of changing any and all locks and keys affected may be assessed. ***Misuse of City Equipment including City keys may result in discipline up to and including discharge pursuant to Section 12.02 of the*** **CITY OF DRIPPING SPRINGS PERSONNEL MANUAL.**

KEY DISTRIBUTION & RETURN

EMPLOYEE NAME: _____ DEPARTMENT: _____

ISSUE DATE: _____ ISSUER'S SIGNATURE: _____

RETURN DATE: _____ RECEIVER'S SIGNATURE: _____

REQUESTED ACTION/RECORD *(circle those that apply)*

KEY ISSUANCE RETURNED KEY LOCK OPENING

LOCK/HARDWARE CHANGE REPORT OF LOST/STOLEN KEY

DESCRIPTION OF KEY(S)

1. _____ 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

DRAFT 9.25.2025

DETAILS

_____

_____

_____

ACKNOWLEDGEMENT AND AGREEMENT

I, _____ *(printed name)*, hereby acknowledge that I have received a copy of the City of Dripping Springs's ***Key Control Policy.*** I have read and understood the information presented to me. I agree to return any City of Dripping Springs keys/fobs to the City upon my separation from the City on or before the last day of my employment or upon request of the City Administrator.

In return for the loan of this key(s), I agree to: 1) not give or loan the key(s) to others; 2) not make any attempt to copy, alter, duplicate, or reproduce the key(s); 3) use the key(s) for authorized purposes only; 4) safeguard and store the key(s) securely; 5) immediately report any lost or stolen key(s); and 6) produce or surrender the key(s) upon official request. I also agree that if the key is lost, stolen, or not surrendered when officially requested, a charge that reflects the cost of changing any and all locks affected may be assessed.

_____	_____
Employee's Signature	City Administrator's Signature
_____	_____
Date	Date

DRAFT 9.25.2025

Attachment "C"

City of Dripping Springs Telecommute Agreement Form

I, the undersigned Employee, understand that telecommuting may be revoked or amended if my job responsibilities change, the job duties can no longer be performed remotely, or when it is in the City's best interest. I affirm that the physical address listed below is my primary designated remote work location. I affirm by my signature below that I have read the City of Dripping Springs Telecommuting Policy and agree to comply with the requirements contained therein.

Employee Name:

_____

(Last name) (First name)

Remote Work Location:

_____

(Street Address) (City) (State) (ZIP code)

Employee Requested Telecommute Work Schedule:

Number of Days Per Week Telecommuting Requested: Telecommuting Day(s) Requested:

☐ 1 ☐ Monday ☐ Thursday

☐ 2 ☐ Tuesday ☐ Friday

☐ Wednesday

_____

Employee Signature Date

Hours Working during Remote Work: _____ a.m. to _____ p.m.

Requested Telecommute Work Schedule Approved by Direct Supervisor

Number of Days Per Week Telecommuting Approved:

☐ 0 ☐ Monday ☐ Thursday

☐ 1 ☐ Tuesday ☐ Friday

☐ 2 ☐ Wednesday

Direct Supervisor Signature Date

City Administrator Approval

☐Approved ☐Denied

Signature Date

Employee's Remote Work Details

Work Duties & Responsibilities

Employee Initial Below:

___ I understand that if I take vacation, compensatory, or sick days during the week, my supervisor may decide whether to skip the remote days based on operational needs.

___ I will ensure that I am available by phone, email, and Ring Central during work hours unless otherwise engaged in City business.

___ I agree to update Outlook Calendar to "Show As" to "Working Elsewhere" for any remote work day.

___ I understand that if I do not meet the communication standards set by the City, my enrollment in Telecommuting Work Program may be subject to adjustment or termination based on administration's discretion.

___ I understand that I must maintain internet connectivity at my own expense at all times while working remotely and may have to travel to the office if internet connectivity is lost at my remote work location.

Phone Number to be reached at when working remotely: _____

CITY OF DRIPPING SPRINGS
RESOLUTION NO. 2025-_____

A RESOLUTION OF THE CITY COUNCIL OF DRIPPING SPRINGS, TEXAS, REVISING THE PERSONNEL MANUAL.

WHEREAS, each city should have a personnel manual directed to its employees to provide guidance on the duties and responsibilities of the city and the employees; and

WHEREAS, the City Council of the City of Dripping Springs ("City Council") finds it to be in the public interest, and necessary for the public health, safety and welfare, that the City of Dripping Springs ***Personnel Manual*** be updated from time to time to reflect current state and federal law and city practices related to city employees; and

WHEREAS, the City Council of the City of Dripping Springs finds it to be in the interest of hiring and retaining employees to provide a comprehensive Personnel Manual that is regularly updated; and

WHEREAS, the City Council of the City of Dripping Springs finds it to be in the interest of the City to regulate telecommuting and leave to ensure productivity and limit cybersecurity threats; and

WHEREAS, the City Council finds that it is reasonable and prudent for this amendment to the ***Personnel Manual*** to be adopted.

NOW, THEREFORE, BE IT RESOLVED by the City of Dripping Springs City Council:

1. The City Council hereby approves the amendment to City of Dripping Springs ***Personnel Manual*** pursuant to *Exhibit A*, attached.

2. The City Council approves the funds necessary for these personnel actions, as provided in the budget for the current fiscal year.

3. The City Council directs City staff to work with the Mayor and City Administrator to acknowledge the amendment to the ***Personnel Manual*** and receive training and information on the amended ***Personnel Manual*** under the direction of the Mayor and City Administrator.

PASSED & APPROVED this, the _____ day of _____ 2025, by a vote of ___ (*ayes*) to ___ (*nays*) to ____ (*abstentions*) of the City Council of Dripping Springs, Texas.

CITY OF DRIPPING SPRINGS:

by: _____
Bill Foulds, Jr., Mayor

ATTEST:

_____
Diana Boone , City Secretary

ATTACHMENT “A”



City of Dripping Springs

PERSONNEL MANUAL

The Handbook Of
Benefits, Policies & Procedures
For Employees of the
City of Dripping Springs

DRIPPING SPRINGS
Texas

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SECTION 1: INTRODUCTION

1.01 Policies Established

These policies and all amendments hereto shall be the official personnel policies of the City. The City retains the right to unilaterally change policies in this Manual and will advise employees of those changes. All prior policies are hereby repealed.

1.02 Purpose

This Manual is adopted by the City Council as a guidance document, not a contract. Through this Manual, the City Council strives to bring uniformity, consistency, and fairness to its employment practices.

1.03 Applicability

These policies apply to all City employees, except where inconsistent with state law, federal law, City ordinance, or the particular agreement hiring a specific employee. In the event of such inconsistency, the state or federal law, ordinance, or agreement shall prevail.

1.04 Objectives

The City seeks to achieve these objectives through the systematic, uniform application of modern personnel practices. The City's personnel policies strive to:

(a) promote and increase productivity, efficiency, and responsiveness to the public, and economy in the City service;

(b) provide fair and equal opportunity for qualified persons to enter and progress in the City's service in a manner based on merit and fitness;

(c) maintain recruitment, advancement, and other practices to enhance the attractiveness of a City career;

(d) develop and maintain consistent, up-to-date position classifications and compensation plans;

(e) develop high morale among City employees by fostering good working relationships, and by providing uniform personnel policies, opportunity for advancement, and consideration of employee needs and desires;

(f) retain employees on the basis of the adequacy of their performance, correct inadequate performance, and separate employees whose inadequate performance cannot be corrected; and

(g) assure that employees are protected against coercion for partisan political purposes and are prohibited from using their positions with the City for the purpose of interfering with or affecting the results of any kind of official election.

1.05 At-Will

(a) All employees of the City serve at-will except those who are a party to a City Council approved employment agreement. Any City Council approved employment agreement preempts any provision of these policies where there is any conflict.

(b) These policies and the benefits described herein do not constitute a contract of employment or a contract between the City and any employee to provide any benefit. Nothing contained herein shall create an entitlement to, or property interest in, continued employment with the City.

(c) The City may alter, modify, amend, or terminate any of the policies or benefits set forth herein at any time, with or without notice. Notwithstanding any statement contained in these policies, or in any other document or statement issued by the City or any of its representatives to the contrary, the City shall have the right to terminate any employee from employment with the City, at any time, with or without cause, subject to state and federal law.

1.06 Dissemination

The City shall make every effort to thoroughly acquaint employees with the materials in these personnel policies and any subsequent revision. Copies of these policies and all amendments shall be furnished to each employee. Notwithstanding the foregoing, it is each employee's responsibility to become familiar with the contents of these policies, and to ask questions when necessary, for a full understanding.

1.07 City Administrator

The term "City Administrator" as used in this Manual includes the City Administrator, a Deputy City Administrator, and others specifically designated by the City Administrator to act as agents.

1.08 Chain of Command

Each employee has a supervisor who should be consulted should any work issue arise. If the supervisor is unavailable, or a response is determined by the employee to be inadequate, the employee may discuss the issue with the Department Director, , Human Resources Director, a Deputy City Administrator, or City Administrator, unless a different procedure is described herein. The supervisory chain of command for each employee shall be listed in the employee's job description. Engaging in activity outside the chain of command as relates to employment matters is detrimental to the employment relationship and harms the ability of the City to react effectively and consistently when presented with employee issues. Each month the City Administrator

shall prepare a report for the mayor that lists the hiring, termination, staffing levels, and significant employee actions.

1.09 Core Values

City of Dripping Springs (COD) Texas



Core Values - **C O D S T X**

- **Community** - support, connection, value through relationships
- **Openness** - open and accepting, transparency, communication
- **Dependability** - trust, teamwork, honesty, responsive, available
- **Service** - safety, sincerity, smiles, self-respect
- **Teamwork** - working together for common goals
- **Excellence** - quality, commitment, professional, greatness, brilliance

SECTION 2: CLASSIFICATIONS

2.01 Classifications Listed

There are 5 classifications of employees with the City:
(1) Full-Time—Exempt;
(2) Full Time—Non-exempt;
(3) Part-Time—Regular;
(4) Temporary;
(5) Seasonal; and
(6) Event/Intermittent.

While not considered an "employee" under this Manual, a sixth classification is Contract Services. Volunteers who are not employed by the City in any capacity are not generally governed by this Personnel Manual but will be reviewed in the same manner as an employee as it relates to conduct and ethics as applicable. Employees who volunteer for the City in a capacity other than their normal job functions will be governed by this Manual.

2.02 Full-Time—Exempt

Employees who work a regular schedule of more than 30 hours a week and meet the federal law requirements of an employee exempt from overtime shall be considered full-time—exempt if approved by the City through a job description. The employee's average of hours worked per week is not considered when determining whether an employee is full-time—exempt.

Pursuant to the Fair Labor Standards Act, as may be amended (FLSA) and applicable state laws, exempt employees are those who qualify as such under the statute because they fall into one of the exempt categories. Exempt employees are not entitled to overtime compensation pay (but are entitled to compensatory time, as explained elsewhere).

Employees are only considered exempt if: (1) they meet the federal requirement; and (2) the approved job description designates the employee as exempt.

2.03 Full-Time—Non-exempt

Employees who work a regular schedule of more than 30 hours a week and who are not exempt employees based on their job duties or compensation shall be considered full-time—non-exempt. The employee's average of hours worked per week is not considered when determining whether an employee is full-time—nonexempt. Non-exempt employees are eligible for overtime pay if the employee works more than forty (40) hours in a 7-day work period. The 7-day work period runs from Monday to Sunday.

2.04 Part-Time—Regular

Employees who work a regular schedule of less than 30 hours a week shall be considered part-time.

2.05 Regular

Any employee who works for an indefinite period of time (not temporary, seasonal, or event/intermittent) shall be considered regular employees.

2.06 Temporary

Employees who work for a short period of time shall be considered temporary employees.

2.07 Seasonal

Employees who work solely for a specific time of year shall be considered seasonal employees. Seasonal employees may not be employed more than three months in any one year and should start and end employment around the same time every year except when also employed as an event/intermittent employee.

2.08 Event/Intermittent

Employees who work at special events or intermittently at any time of the year on an occasional basis. Seasonal and temporary employees may work as event/intermittent employees.

2.09 Contract Services

At the discretion of the City Council, officer or employee positions may be staffed by professional services providers on a contract basis.

SECTION 3: HIRING

3.01 Hiring Authority

The City Council is the hiring authority for all City officers as described in Local Government Code Chapter 22 or as otherwise designated by the City Council. These officers include City Administrator, Deputy City Administrators, City Secretary, City Attorney, People & Communications Director, Human Resources Director, Parks and Community Services Director, City Treasurer/Finance Director, Maintenance Director,

Utilities Director, Building Official, Planning Director, Director of Emergency Preparedness and Homeland Security, and others designated by City Council.

The City Administrator has the authority to hire any position if such hiring is not required to be authorized by the City Council pursuant to this provision or other resolution or ordinance. The City Administrator may delegate hiring positions to a department head.
For exempt employees of Dripping Springs Ranch Park, the Chair of the Dripping Springs Ranch Park Board of Directors may be involved in the hiring process as described by city ordinance and park rules and policies. The City Administrator has the authority to hire any Dripping Springs Ranch Park position, other than those listed above as hired by the City Council but may consider the input of the Chair of the Dripping Springs Ranch Park Board, if any, in making the hiring determination.

3.02 Interim Appointment

When an emergency exists that requires the services of personnel who are not otherwise available, such employees may be immediately hired by the Mayor or City Administrator for a period not to exceed 90 days without regard to normal recruitment and selection requirements. If the hiring of the interim employee is not confirmed by the primary hiring authority for that position or the City Council within the 90-day period, the employee is considered to be automatically discharged as of the 91st day. Any interim appointment of a position for which the City Council is the primary hiring authority shall be brought to the City Council at the next regular City Council Meeting.

3.03 Background Checks

(a) Background Processing. Some or all of the following background checks may be conducted for applicants for employment and certain volunteers:

(1) Social Security Verification. Validates the applicant's Social Security number, date of birth, and former addresses.

(2) Prior Employment Verification. Confirms the applicant's employment with the listed employers, including dates of employment, the position held, and additional information available about performance rating, the reason for departure, and eligibility for rehire.

(3) Personal and Professional References. Correspondence or in-person contact will be made to individuals listed as references by the applicant.

(4) Educational Verification. Confirms the applicant's educational institution, including the years attended and the degree/diploma received.

(5) Criminal History. Includes a review of criminal convictions and probation. The existence of criminal convictions is not an automatic prohibition on City employment. The following factors will be considered for applicants with a criminal history:

(A) The nature of the crime and its relationship to the position.

(B) The time since the conviction.

(C) The number (if more than one) of convictions.

(D) Whether hiring, transferring, or promoting the applicant would pose an unreasonable risk to the city, its employees, or its citizens and vendors.

(6) Motor Vehicle Records: provides a report on an individual's driving history in the state requested. This search will be conducted when driving is an essential requirement of the position.

(b) The Human Resources Director will notify the department head/supervisor regarding the findings of the background check. The department head will assess the potential risks and liabilities related to the job's requirements and determine whether the individual should be hired. If a decision not to hire an individual is made based on the results of a background check, the Human Resources Director will make notification to the applicant.

3.04 Notice

(a) The Human Resources Director or the Director's Designee shall provide, by appropriate means, public notification of vacancies to be filled within the City service and shall maintain a list of current announced vacancies for public inspection. Notice is not required for those vacancies to be filled internally via promotion, transfer, temporary promotion, or reinstatement.

(b) Each job announcement, insofar as practicable, shall specify the title, nature of the job, required minimum qualifications, proposed rate of pay, and the deadline for and method of application.

(c) All job openings shall be posted on the City Website and any other location as deemed appropriate and best designed to hire the most qualified candidate. The City Administrator and the Human Resources Director may post any existing position regardless of hiring authority as soon as a vacancy exists. The City Administrator and the Human Resources Director may post for a new position as soon as the job description and creation of the position is approved by City Council.

3.05 Evaluation

The City Administrator and Human Resources Director shall determine the most appropriate means of evaluating applications against job requirements to identify the best qualified applicants. Interviews, background checks (criminal and credit), written tests, and/or other screening procedures may be used as appropriate. Applicants shall be required to provide any job-related information necessary to demonstrate compliance with prescribed minimum qualification requirements for the positions involved.

3.06 Residence

There shall be no residence requirement for City employment, except as may be provided by law. Employees likely to be called to work in cases of emergency may be required to reside within reasonable commuting ranges of their places of work as may be specified in their job description.

3.07 Orientation and Introductory Period

The Human Resources Director shall provide orientation to all city employees, in coordination with the Finance Department, IT Department, and the employee's supervisor, including required benefit and financial paperwork, review of job description and duties, required training, core values, department specific policies, disclosure of personal information, and personnel manual.

All employees shall serve in an introductory capacity for the first 90 days of employment, promotion, or reassignment. During this introductory period, new employees shall be subject to close evaluation. New employees shall not be entitled to standard employee benefits, including paid leave, except to the extent specifically authorized by this Manual. However, (1) health benefits begin the first day of the month following the start date or as designated by the health coverage provider; and (2) TMRS benefits begin immediately upon full-time eligible employment with the City. Completion of the introductory period does not alter the at-will relationship, create a property interest in employment for any duration, or obligate the City to retain the employee for any certain duration. If this policy conflicts with a separate employment agreement with an employee or an employment benefits provider, the employment agreement prevails over the personnel policy.

3.08 Youth Employment

It is the policy of the City of Dripping Springs that no individual under the age of fifteen (15) shall be hired. Applicants between the ages of fifteen (15) and eighteen (18) shall be required to show proof of age to the satisfaction of the City Administrator or the Administrator's designee. Employees under the age of eighteen (18) shall not have duties or perform work that is prohibited by state or federal law.

3.09 Job Descriptions

The City Council shall be the approving authority for all new positions. All positions shall have a job description which includes exempt or non-exempt status of employee. The City Council shall be the approving authority for all job descriptions for new positions and for all positions hired by the City Council. The City Administrator may make minor amendments to any job description in consultation with the Human Resources Director, the City Attorney, and the Mayor..

3.10 Nepotism

(a) No person who is related within the second degree of affinity or within the third degree by consanguinity to any elected officer of the city is eligible for any office, position, clerkship or other service of the city. This prohibition does not affect an officer or employee within the named degree, who has already served at least two years of employment with the city at the time when the elected officer takes office.

(b) No employee may work in a position which is in the line of supervision of a person who is related within the second degree of affinity or third degree of consanguinity or anyone living in the same household as the employee.

(c) In the case of a marriage of two (2) existing employees, or other situation giving rise to a relationship prohibited by this policy, the individuals concerned will decide who will terminate or modify employment. If no decision can be made within 30 calendar days, the City Administrator, or their designee, will decide. At any time, either employee is free to apply for a different position with the city for which they are qualified, and that would eliminate a violation of this policy.

(d) Affinity (Marriage Relationships): First Degree/Second Degree Spouse Spouse's Grandparents Father-in-law Spouse's Grandchildren Mother-in-law Brother-in-law Son-in-law Sister-in-Law Daughter-in-law

(e) Consanguinity (Blood Relationships): First Degree/Second Degree/Third Degree Mother Grandmother Great-Grandmother Father Grandfather Great-Grandfather Daughter Granddaughter Great-Granddaughter Son Grandson Great-Grandson Brother Uncle Sister Aunt Niece Nephew Half-blood relationships fall within the same degree as those of full blood. Step relationships by affinity (marriage) fall within the same degree as those by consanguinity (blood). For example, a stepson would be considered the same as a son. An adopted child is considered the child of the adoptive parents.

SECTION 4: COMPENSATION

4.01 Appropriations

Wages, salaries, and working schedules for all employees shall be in accordance with the provisions of the City budget currently in effect, including amendments, and within the limitations of the financial provisions of each department, as approved by the City Council for each fiscal year.

4.02 Timesheets and Time Clock

(a) Timesheets: Each exempt employee as defined in Section 2.02 of this Manual is required to turn in the employee's timesheet by the final day of each pay period (see 4.03(a)) to the Department Head. Each Department Head must approve and submit the approved timesheets to the City Treasurer by 9:00 a.m. the next business day following the final day of each pay period. Absences for the pay period must be submitted with each time sheet.

(b) Time Clock: Each non-exempt employee as defined in Section 2.03 of this Manual is required to use the Time Clock to clock in and out each day with the employee's timecard if the employee works at the site where a time clock is located and accessible. Each employee is required to sign the employee's timecard agreeing that the time card accurately and completely reflects all time worked during the period in question and that no hours were worked that do not appear on the card. It is a violation of city policy to:

(1) allow another to clock in or out for the employee;
(2) fail to clock in when the employee arrives;

(3) fail to clock out when the employee takes a lunch break or leaves work;
(4) fail to submit all hours worked; or
(5) fail to follow time clock policies or procedures issued by the City Administrator.

Any failure of this policy may result in disciplinary action.

A non-exempt employee may use a time sheet if approved by the employee's supervisor and/or whose primary work location is at a location that does not have a time clock shall use a time sheet.

Any discrepancy between the timecard and the employee's work hours requires notification to the employee's supervisor within seventy-two (72) hours whether the discrepancy is based on employee error or time clock malfunction. Only an employee's supervisor, the City Administrator, or a Deputy City Administrator may make manual changes to an employee's timecard or time sheet. Time recorded will be the work-time paid or employees will be paid from time sheets verified by actual recorded times. Any adjustments to the recorded time on a timecard or time sheet must be approved by the employee's supervisor. Supervisors will be accountable to the City Administrator for any manual changes submitted.

4.03 Payment Procedures

(a) Employees will be paid every other Friday. Approved timesheets must be turned in by 9 a.m. on the first business day following the end of each pay period. If a payday is scheduled for a City holiday, the payday will be processed the day before the City holiday or holidays.

(b) Paychecks shall not be given to third parties without the express written authorization of the affected employee or as required by state law.

(c) If an employee receives a paper paycheck and is absent on a scheduled payday, the employee's paycheck shall be held until the employee returns, unless a written request for other arrangements has been delivered to the City Administrator prior to such payday.

(d) Direct deposit for employee paychecks is encouraged. To enroll in direct deposit, an employee shall complete the form provided by the Accounting Department and the form must be signed in ink and the original must be submitted to Accounting.

4.04 Overtime

(a) Overtime commences for each hour a non-exempt employee works beyond the standard 40-hour week in the seven-day work period. Overtime shall not be calculated to include vacation, sick leave, or any other paid leave taken during the same seven-day work period as "hours worked." Hours worked for purposes of overtime are any hours

worked in the seven-day work period and include holiday hours. Special pay for work during non-business hours, nights, or weekends will not be given unless otherwise specified in this manual.

(b) All nonexempt employees are eligible for overtime compensation in accordance with the FLSA.

(c) Overtime compensation shall be calculated in accordance with Section 5.03(f).

(d) Each non-exempt employee shall be responsible for notifying the employee's supervisor if an assignment cannot be completed within the employee's regular 40-hour workweek. No employee shall work overtime unless the employee's supervisor has determined that such overtime is required. Any employee who works unapproved overtime shall be paid, but may be subject to discipline.

(e) All exempt employees are entitled to compensatory time. Compensatory time shall accrue in accordance with §5.03(f) (below).

(f) An employee who requests the use of accrued compensatory time shall be permitted to take such leave within a reasonable period after making the request unless the employee's absence would unduly disrupt the operations of the City.

4.05 Raises, Merit Increases, and Cost of Living Adjustments

City Council has the sole authority to pass ordinances affecting pay scales. Raises, merit increases, and cost of living adjustments shall be considered at the time of annual employee evaluations or when brought to the City Council by the City Administrator. An employee who desires to request a raise or merit increase at a time other than at the time of annual employee evaluation, may make the request in writing to the employee's supervisor and the City Administrator. The City Administrator, in consultation with the employee's supervisor, shall decide whether to bring a recommendation for a pay raise or merit increase to the City Council.

4.06 Promotions

When possible, job openings within the City are filled by promoting qualified employees. A promotion is based on several criteria which includes, but is not limited to, performance in the employee's current job, attitude, attendance, punctuality, experience and interest in the City and qualifications for the open position. An employee applicant will be considered in a fair and appropriate manner as would any applicant. After considering qualifications, experience, etc., an opening will be filled by the person best qualified for the position. All promotions are made without regard to race, color, religion, sex, age, national origin, disability, or marital status. No supervisor may alter the terms of employment from "at-will" to a contracted relationship due to a promotion of an employee to a different position without approval from City Council.

4.07 On Call Policy

(a) Roles and Responsibilities

(1) Department Directors:

(A) The City Administrator, Deputy City Administrators, the Maintenance Director, Utilities Director, Dripping Springs Ranch Park Manager, Director of Emergency Preparedness and Homeland Security, and the Parks and Community Services Director, will schedule employees for On-Call duty. Priority will be given to employees who volunteer for duty and have the necessary knowledge and skills for On-Call duty.

(B) The City Administrator, Deputy City Administrators, the Maintenance Director, Utilities Director, Dripping Springs Ranch Park Manager, Director of Emergency Preparedness and Homeland Security, and Parks and Community Services Director will oversee the On-Call schedule, duties, and concerns of On-Call Employees at City facilities.

(C) No employee may be scheduled more than three weeks in a row for On Call Duty. In addition, the Director of Emergency Preparedness and Homeland Security or Designee shall ensure that all employees are provided adequate rest time when called to work during emergency situations.

(2) Employees who are On-Call:

(A) Inform Department Director of availability for On-Call duty.

(B) For the week of On-Call duty:

i Obtain the City-Issued Cellphone prior to beginning of week (if available).

ii Answer all inquiries or after-hours emergencies either by phone or on-site.

iii Stay within 30 minutes of the City of Dripping Springs. (Employee is not required to stay on-site when On Call).

iv Are not allowed to be under the influence of alcohol or any other substance when On-Call.

v May use a City Vehicle for their On-Call duties and commuting solely while on On-Call duty in order to benefit the City.

vi On-Call Employees may be issued a City-Issued Cell Phone to respond to all On-Call calls.

(C) Failure to follow these requirements can result in limitations to On-Call duty in the future and other discipline as allowed by the Personnel Manual.

(b) Compensation for On-Call Duty

(1) On-Call Employees will receive a stipend of $200 for each week per month they are On-Call.

(2) On-Call Employees will receive pay for the time they actually work which begins when the Employee responds to an On-Call request.

i Non-exempt: receive hourly wage or overtime. Any hours worked during On Call time by a non-exempt, full-time, regular employee is eligible for Overtime Pay.

ii Exempt: receive compensatory time off if in the week of On-Call hours worked the total hours worked are over 40 hours in the 7-day work period.

4.08 Longevity Pay

The City provides regular employees longevity pay, at the budgeted rate for each full year of service, up to a maximum of 20 years. Employees with less than one year of service shall receive a budgeted amount up to an amount equal to one year of service.

4.09 Employee Referral Incentive Program

(a) The City provides new employees retention and sign-on incentives for new and returning seasonal employees. The incentives are paid based on the Employee Referral Incentive Program Policy. Only one retention or sign-on incentive per fiscal year per new or returning employee is authorized.

(b) The City provides current city employees who recruit an individual who starts employment with the City whom the employee recruits. The incentive is for the recruitment of permanent and seasonal employees.

(c) Employees who are a supervisor, hiring authority for the position, or make a recommendation on the hiring for a position, including the Human Resources Director are ineligible. Event or Intermittent employees are also not eligible. Event and Intermittent employees, as defined by Section 2.08 of this manual, are employees who work special events (e.g., City festivals or Winter Wonderland, etc.) or intermittently at any time of the year for the City on an occasional basis.

(d) There is no limitation on the number of employees or employee referral incentives that can be earned by current employees. The incentives are paid based on the Employee Referral Incentive Program Policy. Employees must request a referral incentive from the Human Resources Director in writing. The referred candidate will be reviewed by the Human Resources Director and/or City Attorney. Any disputes or interpretations of a referral will be handled by the City Attorney.

SECTION 5: BENEFITS

5.01 Insurance

The City provides varying types of insurance coverage, which includes hospitalization, major medical, life, long-term disability, and dental for full-time, regular employees only. The types of insurance coverage, and the required employee participation, may vary from year to year. Upon employment, an application for coverage shall be completed on the employee and forwarded to the insurance company. The application must be submitted before coverage will become effective. If an employee is on unpaid leave for longer than thirty consecutive days, the absence may affect the employee's insurance coverage and may result in the loss of paid coverage by the City. If this occurs, the employee will be offered continuation of health coverage at the employee's cost (COBRA) for the time of unpaid leave to the extent required by law.

5.02 Workers' Compensation

(a) Workers' Compensation coverage is provided for all employees.

(b) In the event of a job-related injury, a standard Workers' Compensation claim form must

be completed and submitted to the City Administrator within forty-eight (48) hours of the accident causing the injury, or within forty-eight (48) hours from the time the employee is physically able to do so. Contact the City Administrator to obtain the necessary form(s).

5.03 Leave

(a) Employees are generally not required to work on City holidays. The City may choose to observe the day preceding or following a holiday's official date. Each year the City Council will adopt the official City Calendar and that shall be the official list of City Holidays for employees for that year. City holidays are as follows, but are subject to change pursuant to City Council discretion:

- New Year's Day
- Martin Luther King's Birthday (third Monday in January)
- Washington's Birthday (Presidents Day) (third Monday in February)
- Memorial Day (last Monday in May)
- Juneteenth
- Fourth of July
- Labor Day (first Monday in September)
- Columbus Day (second Monday in October)
- Veterans Day (November 11)
- Thanksgiving Day and the Day after Thanksgiving
- Christmas Eve
- Christmas Day
- New Year's Eve

In addition, each employee will be given 1-personal floating day to use as needed. Personal day will not carry over to following year. Full-time, exempt employees required by their supervisors to work on a holiday shall be given the same amount of substitute time off as is worked, up to 8 hours substitute time off with pay on another date. Regular, part-time employees are eligible for holiday pay on a pro-rated basis. Holiday hours are considered hours worked for the purpose of compensatory time off for exempt employees and for overtime for non-exempt employees. An employee on unpaid leave on a designated holiday, or in a non-pay status on a scheduled workday immediately preceding or immediately following a designated holiday, shall not receive pay for the holiday. An employee on preapproved vacation leave on a designated holiday, or any type of paid leave, shall not have the holiday deducted from his or her leave time.

(b) Religious Observance: Employees desiring to observe religious holidays not coinciding with an officially designated City holiday may be given time off without pay, or may be authorized to use accrued vacation leave, a floating holiday, or compensatory time.

(c) Vacation: Upon hire, full-time, regular employees shall be given 40 hours of vacation

and will additionally commence to accrue paid vacation as follows: 7 hours each month if employed less than 1 year; 10 hours per month if employed 1 to, but less than 10 years. A full-time regular employee who has been employed more than 10 years shall receive 14 hours per month of vacation leave. Each regular employee will be eligible to use vacation hours after successfully completing a 90-day introductory period.

Vacation leave shall accrue on a prorated basis each year of employment. All requests for vacation leave are subject to the City's staffing needs and must be approved in advance by the supervisor or Department Head. On January 1st of each year accrued vacation time will be reviewed for each employee and any accrued vacation hours over 120 hours shall expire. Accrued vacation leave that has not expired will be paid out when an employee leaves service with the city up to 112 hours if an employee has been employed for at least six continuous months with the city. Supervisors shall keep the Department Heads and the Human Resources Director informed of their employees' planned vacation time off.

(d) Sick Leave: Full-time, regular employees shall commence to accrue paid sick leave at the rate of 4 hours per month upon full-time employment with the city. Sick leave may be taken as accrued when an employee is ill, to attend doctor/dentist appointments, or to care for a member of the employee's household. Employees unable to work because of unexpected illnesses shall notify their immediate supervisor as soon as reasonably possible. The City may require a physician's verifying statement for any illness that exceeds 3 working days within a two-week pay period, or in the event of excessive absences or absences of extraordinary duration. Sick leave may be carried over to subsequent fiscal years. Accrued sick leave will not be paid out when an employee leaves service with the city. Any employee who exhausts sick leave due to illness may substitute vacation leave or other appropriate paid leave during the time of the illness. Leave that is eligible for Family Medical Leave Act is governed by Section 5.07 of this Manual.

(e) Injury Leave: An employee injured on-the-job shall receive benefits as provided in the City's Workers' Compensation coverage. Nothing herein shall prevent an employee from using accumulated sick leave, vacation leave, or compensatory time off during an absence due to injury. An employee shall immediately report any injury incurred in the line of duty, however minor, to a supervisor, and take such first aid treatment as may be necessary. In the event of a job-related injury, a standard Workers' Compensation claim form must be completed and submitted to the City Administrator within forty-eight (48) hours of the accident causing the injury, or within forty-eight (48) hours from the time the employee is physically able to do so.

(f) Compensatory Time: Salaried, exempt employees will receive compensatory time with pay at a rate of one hour comp time for every hour worked over 40 in a standard seven-day work period (**1:1**). Compensatory Time may be taken as accrued. Holiday hours are considered hours worked for purposes of compensatory time off. Compensatory time may be carried over to subsequent fiscal years. Compensatory

Time of more than 100 hours may not be carried over to the next fiscal year. The City may either: (1) recommend time off for the employee to use Compensatory Time off; or (2) shall exchange pay for Compensatory Time, at the City Administrator's discretion for payouts of 100 hours or less where the hours cannot be carried over and the employee does not take the hours as paid time off. The Mayor may approve an additional payout of 20 hours of compensatory time off. For payouts of over 120 hours not approved by the Mayor, the issue may only be approved by City Council. This section does not apply to compensatory time off earned in lieu of overtime for nonexempt employees.

(g) Civic Leave: Each January 1st each full-time, exempt and non-exempt, regular employees shall accrue 8 hours of paid leave toward satisfying civic activities, such as voting, and donating blood. New employees accrue the 8 hours of Civic Leave upon employment. Civic Leave may be taken as accrued. In addition, employees are provided paid civic leave for jury service. Employees granted civic leave for jury service shall retain all juror fees. Employees excused or released from jury service during working hours shall report to their work stations, unless otherwise instructed. Civic leave may not be carried over to subsequent fiscal years.

(h) Bereavement Leave: Bereavement leave shall be available to any full-time or part-time regular employee. Bereavement leave shall not exceed twenty-four work hours within sixty (60) days of the death of a family member or a member of the employee's household and shall be prorated for part-time regular employees. Bereavement Leave may be taken as accrued. Bereavement leave is available upon the death of an immediate family member or a member of the employee's household. Immediate family member includes children, spouse or partner, parent, grandparent, grandchild, or sibling, whether related by blood or marriage. A member of the employee's household includes any individual who resides with the employee. Bereavement leave is available for each death meeting the above criteria.

(i) Parental Leave: Each pregnant employee shall be treated the same as other similarly situated employees regarding requests for sick leave and for accommodations related to performing the essential functions of the job. Pregnant employees and employees with illnesses or disabilities arising from pregnancy or maternity shall be entitled to benefits on the same basis as employees with other types of illnesses or disabilities. The employee will be entitled to resume work following the end of the pregnancy when the employee is able to perform all job duties and has obtained a physician's release to return to duty. Parental Leave intended for the care of a child by a parent or guardian shall be handled as outlined in the Family and Medical Leave Act policy.

(j) Military Leave:

(1) The City complies with the Uniformed Services Employment and Re-employment Rights Act of 1994 (USERRA), as amended. USERRA is a federal statute that protects employees who engage in military duty in the uniformed services. The exception to the "at-will" doctrine contained in USERRA applies only to this

section of the Personnel Manual regarding military leave.

(2) Military leave shall be approved leave for regular, full-time employees of the City who are members of the state military forces or members of the reserve components of the Armed Forces of the United States.

(3) The paid military leave period is measured as the fiscal year October 1 through September 30.

(4) Employees may elect to continue medical benefit coverage under COBRA for the duration of the military leave unless covered under the provisions of FMLA.

(5) All requests for leave should be accompanied by a copy of the order, directive, notice, or other documents requiring absence from scheduled work.

(6) An employee who is a member of the state military forces or a reserve component of the armed forces will be granted up to fifteen days of paid leave per fiscal year for days on which the employee is engaged in authorized training or duty ordered or authorized by the Texas military pursuant to Chapter 437 of the Government Code:

(1) All requests for leave must be accompanied by a copy of the order, directive, notice, or other document requiring absence from scheduled work.

(2) Leave pay will not be granted for hours before or after the regularly scheduled working hours or for overtime hours scheduled.

(3) No employee using Chapter 437 military leave will be discriminated against for use of this leave or lose any work benefit while using this leave.

(k) Administrative Leave: In circumstances not falling within other provisions of these policies, the City Administrator or Mayor may authorize an employee to take leave *without pay* under such terms and conditions as may be mutually agreeable. The City Administrator or Mayor may authorize an employee to take up to eighty (80) hours of leave with pay within a twelve-month period when it is in the best interest of the City and staff. Any request for administrative leave exceeding eighty (80) hours within a twelve-month period must be approved by the City Council.

(l) Unauthorized Absence: Employees who are absent from work without having provided notice, obtained a supervisor's approval, provided a legitimate excuse, or who fail to return from scheduled time off without notice, may be deemed to have abandoned their position. Abandonment of an employment position may lead to disciplinary action or the determination that the employee has resigned.

(m) Donation of Paid Time Off: One or more employee may donate accrued paid time off, including sick leave, vacation leave, or compensatory time off hours to another employee if: (1) the receiving employee has exhausted all paid time off or will exhaust

the paid time off during the expected leave time; (2) the receiving employee is requesting leave for a reason listed above where the employee would normally have paid time off but has exhausted the employee's paid leave; and (3) the supervisor of the receiving employee and the city administrator gives their approval. A receiving employee may not: (1) use donated time off for vacation leave; or (2) use donated time off for more than twelve (12) weeks in one twelve (12) month period.

(n) Partial Day Absences:

(1) Partial Day Absences of less than eight hours where an exempt employee, as defined in Section 2.02 of this Manual, is unavailable for work shall:

(a) be charged to accumulated time off such as vacation, compensatory time off, sick leave, or other paid leave as appropriate; or

(b) be taken as leave without pay if all paid leave is exhausted.

(2) An exempt employee requesting an absence of less than eight hours due to unavailability, and who has exhausted all paid leave, shall request approval of unpaid leave from the City Administrator or Mayor pursuant to Section 5.03(1) pursuant to this Manual or request Donation of Paid Leave under certain circumstances as defined in Section 5.03(n).

(3) Partial Day Absence leave is not required where the exempt employee is able to reach 40 or more hours in a 7-day work period and where such daily work periods are approved by the Department Head.

5.04 Retirement

The City participates in the Texas Municipal Retirement System (TMRS), through which retirement benefits are provided to each permanent employee who averages 1000 hours per year or more.

5.05 Training

The following educational opportunities are available, at the discretion of the Mayor and/or City Council, and subject to budget appropriations:

(a) Events: Employees are encouraged to attend professional conferences, seminars and workshops reasonably related to municipal activities.

(b) Memberships: The City may fund employee membership in professional development organizations. Membership activities must be related to the employee's position with the City. All memberships funded by the City must be approved by the City Administrator.

(c) Tuition Reimbursement: The City may reimburse employees for the cost of tuition for the employee's continuing education. The degree program must be related to the employee's position with the City and approved by the Mayor and City Administrator in advance. To be eligible for reimbursement, the program must be for: (1) certifications

or licenses that are directly related to the employee's core job duties; or
(2) course credit at a college or university accredited by the Texas Higher Education Coordinating Board. To be eligible for reimbursement, the employee must have received a grade of "B" or higher for that semester (or "pass" if the course is only offered "pass/fail"). The Mayor or City Administrator may approve up to three thousand dollars ($3,000) of tuition reimbursement per calendar year. Requests above three thousand dollars ($3,000) per year require approval by City Council. No minimum amount of tuition reimbursement is mandated or required by this policy but is solely at the discretion of the Mayor, City Administrator, and City Council. The approved written reimbursement agreement shall be attached to this Manual as Attachment "A".

(d) Travel Reimbursement: Employees may submit reasonable travel expenses related to educational events, professional conferences, seminars, classes, and workshops that are reasonably related to municipal activities in writing to the City Administrator. These expenses may be reimbursed by the City on a case-by-case basis and travel reimbursement may be given for events whether or not the tuition, seminar, or conference fee is paid for by the City or the Employee.

(e) Employee Reimbursement for Training or Tuition Costs: Each employee who receives training or accepts tuition for continuing education that costs more than $1000 for one class, event, or related travel expenses for such training or schooling shall sign a written reimbursement agreement that states that they will reimburse the City for the costs related to the training or schooling if the employee separates from the City within two years of the date of the training if a single day, or the last day of the training if a multi-day event, or from the last day of classes for classes reimbursed by the City.

5.06 Uniform Policy

(a) The City purchases uniform shirts, pants, shoes, and other clothing for certain employees of the City. The purchase of uniforms, amount, and type are set by the budget each year based on each department's budget. When an employee receives a uniform item from the City, the employee is responsible for keeping the item in good repair. If an employee purchases clothing, and the City pays for the logo, the employee may keep the clothing upon separation from employment. For items purchased by the City, the item must be returned to the City unless the item is released to the employee by the City Administrator.

(b) All uniforms bearing a city logo and purchased by the City are considered City property and must be relinquished to the supervisor upon the end of the employee's employment with the city. If items are not returned, the City may pursue reimbursement for the amount spent

on that employee's City-purchased uniforms. Each department head is responsible for maintaining a list of City-purchased uniforms or logoed items and providing that information to the finance department.

(c) Supervisors are expected to exercise reasonable diligence and to make a good faith effort to ensure the return of City-purchased uniforms upon termination of an employee. This includes keeping accurate records of what uniforms the City has purchased and who is in possession of each item. Such record shall be made available to the City Administrator and the finance department.

(d) No identifiable part of the uniform shall be worn while off duty and not involved in an activity directly related to one's employment and assignments with the City. The uniform may be worn while commuting to and from the workplace. It is a violation of this policy to wear the uniform while in private, employed elsewhere, or when self-employed doing outside employment.

5.07 Family And Medical Leave Act (FMLA)

(a) Definitions

(1) 12-Month Period: A rolling 12-month period measured backward from the date the leave is taken.
(2) 12-Month Service Member Period: A single 12-month period measured forward from the first day Service Member Family Leave is taken.
(3) Child: A biological, adopted, or foster child, a stepchild, a legal ward; or a child of a person standing in loco parentis, who is standing in the place of a parent, who is either under the age of 18 or age 18 or older and requires active assistance or supervision to provide daily self-care. A biological or legal relationship is necessary. A more detailed definition is provided in the Family and Medical Leave Act which is available from the Human Resources Director's office.
(4) Health Care Provider: A Doctor of Medicine or osteopathy who is authorized to practice medicine or surgery (as appropriate) by the State in which the doctor practices; or any other person determined by the Secretary of Labor to be capable of providing health care services. A more expansive definition is provided in the Family and Medical Leave Act of 1993 which is available in the Human Resources Department.
(5) Next of Kin: The nearest blood relative of a Covered Service member.
(6) Parent: A biological or adoptive parent or an individual who stands or stood in the place of a parent to an employee when the employee was a child. This term does not include parents-in-law.
(7) Serious Health Condition: An illness, injury, impairment, or physical or mental condition that involves:

(A) Any period of incapacity or treatment that results in inpatient care (i.e., an overnight stay) in a hospital, hospice, or residential medical care facility;
(B) Any period of incapacity requiring absence from work, school, or other regular daily activities, of more than three calendar days, that also involves continuing treatment by (or under the supervision of) a health care provider; or

(C) Continuing treatment by (or under the supervision of) a health care provider for a chronic or long-term health condition so serious that, if not treated, would likely result in a period of incapacity of more than three calendar days; or 4) for prenatal care. Voluntary or cosmetic treatments (such as most treatments for orthodontia or acne) which are not medically necessary are not "serious health conditions," unless inpatient hospital care is required. Restorative dental surgeries after an accident or removal of cancerous growths are serious health conditions provided all the other conditions of this regulation are met.

(8) Spouse: A husband, wife, or domestic partner lawfully married to one other, as defined or recognized under state or federal law for purposes of marriage, including common law marriage.

(b) Policy

An employee may be eligible to take up to twelve (12) weeks of unpaid family and medical leave during a rolling twelve (12) month period. An eligible employee is one who has been employed with the City for at least twelve (12) months, and who has worked at least 1,250 hours during the twelve (12) months preceding the first date leave is to be taken. Leave can be taken for any of the following reasons: birth of a child, placement with the employee of a child for adoption or foster care; when the employee is needed to care for a child, spouse, domestic partner, or parent who has a serious health condition; or when the employee is unable to perform the essential functions of the position because of the employee's own serious health condition.

Generally, employees will be returned to the same or an equivalent position upon their return from FMLA leave. The City complies with all provisions of FMLA in its employment practices and makes available detailed explanations and instructions of FMLA benefits and procedures to all employees who fall within its provisions, should such circumstances arise.

(c) Conditions

All eligible employees shall be granted family or medical leave consisting of unpaid leave, and when requested and appropriate, accrued sick and/or vacation leave, for a combined total of up to twelve (12) weeks during the FMLA leave year for the following reasons:

(1) Family Leave: Any family leave must be taken within twelve months from the date of the birth or placement of a child for adoption or foster care.
(2) The birth and subsequent care of the employee's newborn child and in order to care for the child;
(3) The placement of a child with the employee for adoption or foster care, and to care for the child.

(d) Medical Care

(1) To care for a spouse or domestic partner, child, or parent who has a serious health condition;
(2) The employee is unable to perform the essential functions of their position due to the employee's own serious health condition;
(3) A "qualifying exigency" as a result of the employee's spouse, child, or parent who is a military member on covered active duty or called to covered active duty (or notified of an impending call to active duty), or in support of a contingency operation for covered members of a Reserve component, or
(4) To care for a covered service member with a serious injury or illness if the employee is the spouse, child, parent, or next of kin of the covered service member (military caregiver leave).
(5) Any other circumstance provided by the FMLA.
(A) Employees are entitled to 12 weeks of FMLA-protected leave for a qualifying reason.
(B) Employees are entitled to 26 weeks of leave if they qualify as military caregivers.

(e) Procedures

(1) Twelve-Month Period

The twelve (12) month period for counting family and medical leave is a "rolling" twelve (12) month period measured backward from the date an employee requests or is placed on FMLA leave. Each time an employee takes FMLA leave, the remaining leave entitlement would be any balance of the 12 weeks that has not been used during the immediately preceding 12 months, or 26 weeks provided in certain circumstances.

Employees are eligible to take medical leave intermittently or on a reduced leave schedule only when medically necessary. Employees are not entitled to take family leave intermittently or on a reduced leave schedule unless approved by their Department Director and the City Administrator.

(2) Employee Request for Leave

An employee must give at least thirty (30) days' advance notice in writing for the need to take foreseeable family or medical leave for planned medical treatment, unless the need is unforeseeable, in which case, as much notice as is practicable should be given. The request must state the reason for the leave, the anticipated duration of the leave, and the starting and ending dates of the leave. When it is not practicable under the circumstances to provide thirty (30) days advance notice, the employee must give notice to the Human Resources Director as soon as possible but no later than two (2) business days after the employee learns of the need for the FMLA leave.

(3) Department Notification

Each Department Director is responsible for notifying the Human Resources Director and the City Administrator immediately when an employee is away from work for a family and medical leave qualifying event (if family and medical leave has not been approved), even if the employee is utilizing paid vacation, sick or personal leave, or is out due to a work-related injury. An employee using sick leave should be reported to the Human Resources Director or the Director's designee if it is anticipated that the duration of the illness will be three (3) or more days, or once the employee exceeds three (3) days.

(4) Human Resources Director Responsibility

Human Resources Director is responsible for the central administration of all requests for family and medical leave. The Human Resources Director reserves the right to automatically place an employee on family and medical leave if it is determined that a qualifying event has occurred. The Human Resources Director may retroactively designate the beginning date of FMLA to the beginning date of the employee's absence for the qualifying event.

(5) Approval

An employee shall submit a request for family and medical leave through proper channels to the Department Head who will then forward it to the Human Resources Director for approval. Confidential medical information that accompanies the application can be submitted directly to the Human Resources Director.

(6) Substitution of Paid Leave

An employee utilizing this policy for the placement of a child for adoption or foster care with the employee shall be required to exhaust all accrued vacation, parental, sick, and any other applicable paid leave prior to going on unpaid leave. An employee utilizing this policy for the serious illness of a child, spouse, or parent must exhaust all accrued sick leave, vacation leave, compensatory time off, and any other applicable paid leave prior to going on unpaid leave. If an employee gives birth to a child, sick leave can be utilized until the employee receives a release from the doctor. After being released, the employee may use additional sick leave if permitted in accordance with the sick leave policy. Once all applicable sick leave has been used, the employee shall be required to exhaust all accrued vacation, compensatory time, holiday leave, parental leave, and any other accrued paid leave, prior to going on unpaid leave. An employee utilizing this policy for the employee's own serious health condition shall exhaust all accrued sick leave, vacation leave and personal leave prior to going on unpaid leave. If an employee is off work due to a work-related injury and the employee qualifies for family and medical leave, it will run concurrently with any paid leave. The City reserves the right to count any paid leave that qualifies for family and medical leave toward the twelve (12) or twenty-six (26) weeks allowed under this policy.

If medical leave is requested, the employee may use accrued sick leave. After an employee's accrued sick leave has been exhausted, vacation leave may be used as sick leave upon request of the employee. If family leave is requested, the employee may use paid parental leave, if applicable, compensatory time off, and accrued vacation leave. For the birth of the employee's child and in order to care for the child, the employee may use accrued sick leave.

In the event that the appropriate paid leave is exhausted, the remainder of the family or medical leave period will consist of unpaid leave. Family and Medical leave will run concurrently to accrued sick leave and / or vacation, personal or other leave used for FMLA leave purposes.

(7) Maximum Time Allowed

The maximum amount of family and medical leave available is twelve (12) weeks during a twelve (12) month period even if there is more than one family and medical leave qualifying event. The only exception to the twelve (12) week maximum is the leave to provide care of an injured service member, described below, which allows for an extended FMLA leave of 26 weeks.

(8) Medical Certification

The Human Resources Director may require satisfactory proof of the proper use of medical leave and may disallow the applicability of medical leave in the absence of such proof.

The City requires medical certification from a healthcare provider to support a claim for leave to care for a seriously ill child, spouse, or parent, or for the employee's own serious health condition. Medical certifications must be submitted to the Human Resources Director within fifteen (15) working days. Recertification may also be required every 30 days. An employee will be notified if recertification is required. For leave to care for a seriously ill child, spouse, or parent, the certification must include an estimate of the amount of time the employee is needed to provide care. For the employee's own serious health condition, the certification must include a statement that the employee is unable to perform the essential functions of the position and expected duration. The City does not seek and should not be provided with genetic information. If an employee or applicant's genetic information is inadvertently received by the City; the City will return it to the healthcare provider and not use genetic information for any employment decision or action.

Failure to provide medical certification may result in a delay in the commencement or continuation of the FMLA leave. If a question arises whether an employee on FMLA is utilizing FMLA for reason(s) other than an FMLA-approved illness or injury, the City may take steps to verify the proper use of FMLA leave.

Upon returning to work after leave for the employee's own illness, an employee is required to provide certification to the supervisor that the employee is able to return to regular duties. If the validity of a certification is questioned, the City may require that a second opinion be obtained. If the first and second opinions differ, the City may require a third opinion be obtained. The employee and the City must agree upon a health care provider for the third opinion and this opinion shall be binding on both parties. The City shall bear the expense of second and third opinions.

(9) Return to Work

When an employee returns to work after Family and Medical Leave, the employee shall be restored to the same position or to an equivalent position involving the same or substantially similar duties and responsibilities. An employee will be restored to the same worksite or to a geographically proximate worksite. The employee is also entitled to return to the same shift or an equivalent schedule.

Employees eligible for Family and Medical Leave will generally be returned to their old position or to a position with equal pay, benefits, and other terms and conditions of employment. However, the City cannot guarantee that employees will be returned to their original jobs in all cases. The City will determine whether a position is an equivalent position.

This policy does not entitle any employee to any right, benefit, or position of employment other than any right, benefit, or position to which the employee would have been entitled had the employee not taken leave. For example, if during an employee's approved leave, the employee is terminated for reasons unconnected with a legitimate leave, or the employee's position is eliminated through a reduction in force, the commitment to return the employee to a position with the City will cease at the time the employee is terminated or the position is eliminated. An employee on medical leave for five (5) consecutive working days or more for the employee's serious health condition, must provide a "Return-to-Work" release from the employee's health care provider before the employee will be permitted to return to work. The "Return-to-Work" release must state that the employee is able to resume work and must specifically reference that employee's job description and specific duties.

The City reserves the right to consult with the employee's health care provider for clarification on "Return to Work" releases or other FMLA documentation provided by the employee. An employee's failure and/or refusal to provide the necessary FMLA documentation and the periodic written updates as to the employee's FMLA status, as required by the FMLA and the City's policies, shall subject the employee to the possible cancellation of the leave, and other disciplinary action up to and including termination.

(10) Failure to Return to Work

Employees who do not return to work after using all Family or Medical Leave will be subject to disciplinary action up to and including termination unless additional leave has been requested, in writing, and approved by the City in accordance with the City's policies. Employees should submit a written request for an extension of leave to the Department Director. This written request should be made as soon as the employee knows that they will not be able to return to work on the originally declared return date.

(11) Continuation of Health Coverage Benefits

While utilizing unpaid Family and Medical Leave, an employee's health coverage benefits will continue without interruption as long as the employee pays their portion of the health coverage premiums. Health coverage premiums can be deducted from the paycheck before the leave begins, or during the leave, if the employee continues to receive pay (pre-tax), bi-weekly. While on unpaid FMLA, the City will continue to pay its portions of the premiums during the duration of the FMLA.

(12) Intermittent Leave

When medically necessary, an employee may take Family and Medical Leave on an intermittent basis or work a reduced schedule. Arrangements should be made with the employee's immediate supervisor so that the operations of the department are not unduly disrupted. An employee taking intermittent leave or leave on a reduced schedule may be temporarily assigned to an alternative position with equivalent pay and benefits if it better accommodates the needs of the department.

Employees are not entitled to take family leave intermittently or on a reduced leave schedule unless approved by their Department Director and the Human Resources Director.

(13) Holidays

Holidays will be paid in accordance with the Holidays policy. City holidays will not be counted as part of the twelve (12) or twenty-six (26) weeks of Family and Medical Leave, whether the employee is on paid or unpaid leave.

(14) Texas Municipal Retirement System (TMRS)

Employee contributions to TMRS may be made on a voluntary basis through a special arrangement with the City while an employee is on leave without pay status. It is the employee's responsibility to initiate such an arrangement by timely contacting the City's Human Resources Director and completing the necessary paperwork. This arrangement is subject to approval by the City and TMRS.

(15) Recordkeeping

Family medical leave time will be tracked on an hourly basis for payroll and compliance purposes. To determine entitlement for employees who work variable

hours, the minimum hours required for eligibility is calculated on a pro-rata or proportional basis by averaging the weekly hours worked during the twelve (12) weeks prior to the start of family and medical leave.

(16) Military Family Leave Entitlement

Military Qualifying Exigency Leave: Employees who are otherwise eligible for FMLA and have a spouse, child, or parent on covered active duty (deployed to a foreign country) or called to covered active duty status in the National Guard or Reserves (deployment to a foreign country or in support of a contingency operation) may use their 12-week unpaid, job-protected leave to address certain qualifying exigencies including eligible: short-notice deployments; attendance at military events and related activities; childcare and school activities; addressing financial and legal arrangements; attending counseling sessions; attending post-deployment activities; up to 15 days of rest and recuperation; and parental care.

Military Caregiver Leave: Employees who are the spouse, parent, child, or next of kin of a service member who incurred a serious injury or illness while on active duty in the Armed Forces and is undergoing medical treatment, recuperation, or therapy, may take up to 26 weeks of leave to care for the injured service member in a single 12-month period. The covered service member must be a current member or eligible veteran of the Armed Forces (including a member of the National Guard or Reserves) with a serious injury or illness incurred in, or aggravated by, service in the line of duty on active duty that may render the service member medically unfit to perform their duties.

SECTION 6: WORKPLACE CONDUCT

6.01 Standard Work Period

The 7-day work period begins each Monday at 12:01 a.m. and ends each following Sunday at 12:00 a.m.

6.02 Business Hours

Normal business hours are 8:00 am to 5:00 pm.

6.03 Place of Business

The normal place of business for City employees is the City Hall, except that, certain employees have an alternate place of business as assigned by their supervisor or department head, including but not limited to the Dripping Springs Ranch Park, Ranch House, Development Services, and South Regional Wastewater Treatment Plant. Other work locations may be designated by the Mayor, City Administrator, or Department Head at their discretion.

6.04 Telecommuting

Employees may be allowed to occasionally work from remote locations, with the prior consent of the Mayor or City Administrator as an additional benefit to the employee. The City Administrator may also designate certain employees for regular telecommuting schedules. A telecommuting schedule is a privilege. The request to telecommute is not guaranteed for any employee and may be modified, restricted, or removed at any time by the City Administrator or Mayor.

All telecommuting employees shall make themselves available on a set schedule including being available at their city owned cellphone during work hours, if any, or having their phone extension forwarded to their cellphone while telecommuting. The employee shall also maintain access to electronic mail at all times while telecommuting. Employee shall be available for virtual meetings while telecommuting. Any employee who is unable to maintain phone, electronic mail access, and for virtual meetings during their telecommuting time shall not be eligible for telecommuting and may also be required to take leave if they are unavailable during their work hours for any reason. Telecommuting is not to be used in lieu of paid or unpaid leave.

Considerations for telecommuting shall include: (1) department availability at City Hall; (2) availability of telecommuting employee; (3) productivity of telecommuting employee; and (4) in person meeting requirements for telecommuting employee. Each employee is required to notify the employee's supervisor immediately if any situation arises that will affect the employee's ability to work while telecommuting.

Any telecommuting employee shall develop a written plan with the employee's supervisor upon request for telecommuting. Quarterly review of each telecommuting employee's performance while telecommuting will be done upon approval of the employee's telecommuting plan.

6.05 Accidents & Safety

All accidents and incidents shall be promptly reported to the City Administrator and Human Resources Director, when appropriate, investigated, reviewed, and analyzed to identify contributing factors and causes to prevent recurrence. The City may provide written policy guidance on safety measures for specific positions and/or equipment. Each accident or incident shall be documented in writing with an incident report. Workers compensation procedures should be followed as appropriate.

6.06 Professional Appearance

All employees are required to wear appropriate attire while on-duty and/or at City Hall, Dripping Springs Ranch Park, Development Services, Ranch House, the Wastewater Treatment Plant, and at other city parks and facilities. Department heads may require that certain staff wear City of Dripping Springs clothing or other specialized apparel. If this is required, the City will provide access to such clothing. Please see the Uniform Policy for additional information. Employees are also required to engage in routine grooming and hygiene practices that are conducive to the workplace. Hair, jewelry, and wardrobe choices

must be appropriate for the employee's interactions with members of the public and suitable to satisfy the City's legitimate job safety concerns.

6.07 Privacy

Employees shall have no reasonable expectation of privacy in their workspaces or on their computers. All City computers, phones, offices, lockers, cabinets, vehicles, and furnishings are subject to use and search by other City officials and employees.

6.08 Smoking

All City buildings and facilities are non-smoking areas.

6.09 Pets

Pets are not permitted in City office facilities. This restriction includes City common areas, meeting rooms, and individual offices. Facilities include Development Services, Dripping Springs Ranch Park, City Hall, Wastewater Treatment Plants and other indoor city office facilities. This prohibition is applicable to all City employees, contractors, and visitors.

Limited exceptions may be made under specific circumstances:

Service Animals

(a) Service Animals that are required for an employee's disability, in accordance with the Americans with Disabilities Act and applicable laws. Employees are encouraged to notify the Human Resources Director in advance if accompanied by a service animal to facilitate any necessary accommodation.

City Events

(b) Pets may be permitted at City-Sponsored events held at the workplace, subject to prior approval from the City Administrator and adherence to specific guidelines provided for the event.

Public Parks

Pets are allowed at public parks subject to park rules.

Approval from the City Administrator is required for any other exceptions.

6.10 Drug/Alcohol-Free Workplace

(a) No employee may consume, or be under the influence of, alcohol or illegal drugs while at City facilities or on duty, unless at an event at a City facility while off duty. Exceptions include medication prescribed by a licensed physician when used as prescribed.

(b) No employee may manufacture, distribute, dispense, possess, sell, purchase, or use a controlled substance on City property or while on duty.

(c) All City buildings and facilities are to remain drug and alcohol free except where a

rental of a city facility or park is entered into and adequate insurance is provided. The Mayor and/or City Council may allow certain exceptions for alcohol served at specified official social functions.

(d) Post-accident testing may be conducted following any accident in which violations of safety procedures occur, resulting in either property damage or personal injury caused by an employee. Post-accident testing may be conducted following any accident involving personal injury and the operation of a City vehicle or heavy machinery if evidence exists that the employee caused the accident. Individuals to be tested in a post-accident situation shall include any individual directly involved in an accident whose order, action, or failure to act is determined to be, or cannot be ruled out as, a causative factor in the events leading to or causing such accident.

(e) Commercial Driver Employees and Applicants

(1) Employees

(A) As required by federal law and for the purposes of this Policy, the term "commercial driver" includes any employee who operates or may be required to operate a commercial motor vehicle requiring a commercial driver's license as defined by 49 C.F.R. § 383.23. This includes temporary, part-time, probationary, and regular employees who operate a commercial motor vehicle only occasionally, intermittently or during an emergency.

(B) All Commercial Driver employees will be subject to alcohol and drug testing. All employees who apply for transfer to a position, which requires or could require that the employee operate a commercial motor vehicle will be subject to preemployment testing before being transferred.

(2) Applicants

All applicants who apply for positions which require or could require operation of a commercial motor vehicle will be subject to pre-employment alcohol and drug testing. Employee applicants who are not otherwise covered by this Policy who apply for or are to be promoted or are transferred or assigned into a position which requires operation of a commercial motor vehicle will be subject to pre-employment testing the same as any other applicant.

(3) Prohibitions

Each covered employee is required to comply with the provisions of federal law, which include the following prohibitions:

(A) No commercial driver shall report for duty or remain on duty to perform a safety- sensitive function while having an alcohol concentration of 0.04 or greater.

(B) No commercial driver shall be on duty or operate a commercial motor vehicle while the driver possesses alcohol or any product containing alcohol.

(C) No commercial driver shall use alcohol while performing safety-sensitive functions.

(D) No commercial driver shall perform safety-sensitive functions within four

hours after using alcohol, regardless of the driver's actual alcohol concentration.

(E) No commercial driver shall refuse to submit to any alcohol or controlled substance test required under the law.

(F) (G) No commercial driver shall report for duty or remain on duty to perform a safety- sensitive function if the driver uses any controlled substances, except when the controlled substance is used pursuant to the instructions of a physician and the physician has advised the driver that the substance does not adversely affect the driver's ability to safely operate a commercial motor vehicle.

(G) (H) No driver shall report for duty, remain on duty or perform a safety-sensitive function, if the driver tests positive for controlled substances.

(H) Each driver shall report the use of any medication that may affect their ability to perform commercial driving.

(I) Each driver who parks any vehicle, city or personal, shall only park in designated parking spaces unless loading or unloading.

6.11 Violence & Weapons

(a) The City is committed to maintaining a workplace free from threats and acts of intimidation and violence. All reported incidents will be investigated. Any act of intimidation, threat of violence, or act of violence committed against any person on City property or while performing City business is prohibited. "Intimidation" includes any physical or verbal act toward another person, the result of which is that the person reasonably fears for the person's safety or the safety of others. A "threat of violence" is a physical or verbal act which threatens bodily harm to another person or damage to the property of another. An "act of violence" is any physical act, whether or not it causes actual bodily harm to another person or damage to the property of another.

(b) No person shall possess or have control of any firearm, deadly weapon, or prohibited knife while in City Hall, City vehicle or designated City office, except as required in the lawful course of business or as authorized by law enforcement. Except that, an employee may keep a firearm locked in his or her vehicle in the parking areas of the city.

(c) Any City employee who is the subject of, or a witness to, a suspected violation of this standard should report the violation to a supervisor or person in authority who is not involved in the conduct. Any supervisor or person in authority who receives a report of a suspected violation of this standard shall document the incident and notify an appropriate City official. Any emergency, perceived emergency, or suspected criminal conduct shall be immediately reported to law enforcement. Sexual violence is also criminal conduct and shall be immediately reported.

(d) Any City employee found to be in violation of this standard may be subject to criminal prosecution as well as discipline up to and including dismissal.

6.12 Supplemental Employment

No full-time or part-time, regular employee may engage in outside employment without the written consent of the Mayor or City Administrator. No equipment or supplies belonging to the City may be used by employees for supplemental employment. An employee shall not engage in outside employment, including self-employment, where such activity would constitute a conflict of interest or adversely affect the employee's performance in City service. If an employee's outside employment begins to interfere with the effective performance of assigned City duties, the employee shall be required to terminate the outside employment or to resign from City service.

6.13 Political Activity

(a) When on duty or in City uniform, an employee of the City may not engage in any political activity relating to a campaign for any elective public office. No employee of the City shall, while on duty or in uniform, make, solicit, or receive any contribution to the campaign funds of any party, interest group or candidate for use in any City election. No employee shall participate in any political activity or campaign for, or with respect to, any candidate in a City Election, including on social media. No city employee will be disciplined for running for city or other office but may be forced to resign if elected, pursuant to state office holding laws. When not on duty and not in a uniform of the City, an employee may engage in political activity respective to governments and entities other than the City. An employee may not use the fact of their City employment to solicit campaign contributions for a candidate.

(b) An employee who is considering becoming a candidate for mayor or city council is hereby informed that election to such office would constitute a resignation from the City service on the day the individual, if elected, takes the oath of office. An employee is encouraged to advise the Mayor in writing prior to announcing candidacy for election or appointment to any public office.

6.14 Telephone Usage

City telephones are primarily for use in conducting City business. Personal calls shall be limited so as not to interfere with City business.

6.15 Media Relations

All media inquiries shall be directed to the People & Communications Director who will coordinate responses. The officially-designated spokespersons for the City are the Mayor, City Administrator, Deputy City Administrators, People & Communications Director, and City Attorney. Other city officials or employees may be authorized or designated to communicate with the media on the City's behalf by the Mayor, City Council, City Administrator or People & Communications Director.

6.16 Privacy

Employees do not have a reasonable expectation of privacy in storage devices provided by the City or located on City property, including but not limited to offices, desks, toolboxes, vehicles, and closets.

6.17 Performance Evaluation

The work performance of each permanent employee shall be evaluated annually. Evaluations for employees on probation shall be conducted upon completion of the probationary period of 90 days. Additional evaluations may be conducted if warranted, as determined by the City Administrator. Evaluations shall be recorded in writing on forms approved by the City Administrator. A copy of such evaluation shall be provided to the employee to whom they relate, and a duplicate copy shall be provided to the Human Resources Director for placement in the employee's permanent personnel file.

6.18 Supervisors

Each employee's direct supervisor shall be set by the ordinances, job descriptions, and contracts adopted by the city council. Authority to terminate resides with the City Administrator unless the employee is hired by City Council pursuant to state law or this Manual. The city council is the final termination authority for City Administrator, Deputy City Administrators, City Secretary, City Attorney, Parks and Community Services Director, City Treasurer/Finance Director, Maintenance Director, People & Communications Director, Human Resources Director, Building Official, Director of Emergency Preparedness and Homeland Security, and others designated by City Council. The City Administrator, in consultation with the employee's supervisor and the City Attorney, and Human Resources Director, is the final termination authority for all other employees unless otherwise designated by state law or city council. Employees who are terminated may appeal their termination in the same manner as other grievances as described in Section 12.03.

6.19 Ethical Considerations

All City employees have a responsibility to the people of Dripping Springs in the performance of your official duties. Every employee should act fairly and honestly and should avoid conflicts of interest and creating the appearance of impropriety.

A City employee should not:

(a) divulge confidential City information to unauthorized persons;

(b) accept or solicit any gift, favor, or service that might reasonably tend to influence the officer or employee in the discharge of official duties or that the officer or employee knows or should know is being offered with the intent to influence the officer's or employee's official conduct;

(c) accept other employment or engage in a business or professional activity that the officer or employee might reasonably expect would require or induce the officer or employee to disclose confidential information acquired by reason of the official position;

(d) accept other employment or compensation that could reasonably be expected to impair the officer's or employee's independence of judgment in the performance of the officer's or employee's official duties;

(e) make personal investments that could reasonably be expected to create a substantial conflict between the officer's or employee's private interest and the public interest; or

(f) intentionally or knowingly solicit, accept, or agree to accept any benefit for having exercised the officer's or employee's official powers or performed the officer's or employee's official duties in favor of another.

Violation of these ethical guidelines is grounds for disciplinary action, up to and including termination.

6.20 Nursing Mother Breaks

(a) The City of Dripping Springs supports the practice of expressing breast milk by employees;

(b) The City shall make reasonable accommodations for the needs of employees who express breast milk including:

(1) providing a reasonable amount of break time for an employee to express breast milk each time the employee has the need to express the milk;

(2) providing a place, other than a bathroom, that is shielded from view and free from intrusion where the employee can express breast milk;

(c) The City will not discipline or discriminate against an employee because the employee has used her right to express breast milk under this policy.

(d) Any employee wishing to use this break time and area needs to inform the City as soon as possible so the City may make adequate reasonable accommodations.

6.21 Key Control Policy

Each employee employed shall be given access through a key system subject to a Key Control Policy adopted by the City and enforced by the City Administrator.

Each employee who is given a key shall be required to sign a Key Control Policy and:

(1) shall not give or loan the key to others;
(2) shall not make any attempts to copy, alter, duplicate, or reproduce the key;
(3) shall use the key for authorized purposes only;
(4) shall safeguard and store the key securely;
(5) shall immediately report any lost or stolen keys; and
(6) shall produce or surrender the key upon official request.

If a key is lost, stolen, or not surrendered when officially requested, a charge that reflects the cost of changing any and all locks and keys affected may be assessed to the employee. Misuse of City Equipment including City keys may result in discipline up to and including discharge pursuant to Section 12.02 of this Personnel Manual. Additional requirements related to Key Control may be approved and enforced by the City Administrator or Mayor. The Key Control Policy shall be attached to this Manual as Attachment "B".

6.22 City Hall and Facility Closure Policy

(a) The City Administrator shall determine when City Hall or other City facility is closed due to inclement weather, natural disaster, or other health or safety threat pursuant to city policy. The decision will be based on consultation with the Mayor, the Director of Emergency Preparedness and Homeland Security, and Hays County.

(b) The City Administrator shall determine which Parks are closed due to inclement weather, natural disaster, or other health and safety threat. The decision will be based on consultation with the Parks and Community Services Director, Dripping Springs Ranch Park Event Center Manager, the Mayor, the Director of Emergency Preparedness and Homeland Security, and Hays County.

(c) Unless an employee is personally notified by the employee's supervisor, or their designee, the employee is required to work remotely or that the employee is not to report to the employee's designated work site, an employee is expected to report to work. Each Department Head will determine whether employees in each Department shall be required to report to work. Any Employee who is not released from work by their supervisor or designee, shall report to work. Those who are released from work are required to work remotely if feasible. The City Administrator or Supervisor may assign specific duties that may be performed from home. Any hours worked during a closure shall be treated as regular hours worked. Any Employee who is released from work during their normal work schedule may be eligible for paid leave under the Administrative Leave Policy. Administrative paid leave given during a full or partial city closure will solely be used to make up any time an Employee could not work due to the city closure. (For example, if an Employee is released from work for an eight-hour day, but works four hours at home, that Employee shall be paid for a regular eight-hour day, four hours actually work and four hours administrative paid time off if approved).

(d) In the event inclement weather, natural disaster, or other health or safety threat makes travel to work from home unsafe or impossible for an Employee, absence from work will be considered an excused absence if the Employee provides the required notification to the Employee's Supervisor or Department Head. Work from home will be considered hours worked and shall not be deducted from paid time off. The Employee may apply for administrative leave, with or without pay, or may use vacation time or compensatory time off if Employee has accrued compensatory time off. If additional time is needed for a commute due to inclement weather, natural disaster, or other health or safety threat, the additional time may be considered hours worked if approved by the City Administrator.

6.23 General Conduct

(a) The attitude and conduct of a City employee, whether in public or private, should at all times be such as to promote the good will and favorable attitude of the public toward the City. This includes providing courteous and respectful service to the public and to city employees.

(b) Attendance is an essential function of each position at the City of Dripping Springs.

Unsatisfactory attendance is not allowed. It is exemplified by, but not limited to the following violations:

(1) unexcused absence or tardiness;
(2) failure to give notice of an absence or tardiness to the supervisor at least two (2) hours before starting time, or such other time as designated in a written policy established by the department head/director when possible;
(3) failure to return to work after any authorized leave of absence;
(4) absence or tardiness that causes significant curtailment or disruption of service without sufficient justification; or
(5) leaving working prior to the end of your work day unless authorized by your supervisor.

6.24 Use of City Vehicles

(a) City vehicles are furnished for official city business and may not be used for personal use unless approved by their Department Head or City Administrator, or their designee.

(b) The misuse of city vehicles/equipment shall be considered a serious offense subject to corrective action up to and including dismissal.

(c) All employees authorized to operate city vehicles and motorized equipment are covered by this section.

(d) City Administration is responsible for conducting Motor Vehicle Records (MVR) checks on all current employees who drive city vehicles or may operate a personal vehicle for official city business. The purpose of this check is to verify they have a valid State of Texas driver license without restrictions and are insurable under the city's motor vehicle insurance policy. Annual verification of drivers license for employees who drive as part of their employment shall be required.

(e) Accident Reporting.

(1) The operator of a city vehicle or personal vehicle on official city business shall take the following actions when involved in an accident:
(A) Render aid if possible and necessary.
(B) Call Law Enforcement.
(C) Make a record of the make, model, and license number of vehicles involved.
(D) When possible, take pictures of the vehicles and license plates of the involved vehicles as well as the area of the accident. Complete a vehicle/equipment damage report.
(E) Be courteous, but do not make or sign statements for anyone except the police.
(F) Do not offer promises on behalf of the city.
(G) Notify your supervisor as soon as possible.

(f) An employee of the city involved as a driver of the city vehicle or personal vehicle on official city business involved in a preventable accident may be required to undergo a driving evaluation.

(g) Operations.

(1) It is the employee's responsibility to ensure that they possess and maintain a current, valid, and appropriate operator license for the type of vehicle or

equipment being operated.

(2) It is a violation for a city employee to violate the rules of the road, speed limits, traffic requirements, or any parking requirements while driving a city vehicle or driving a personal vehicle on city business.

(3) Employees are responsible for reporting the routine condition and maintenance of assigned vehicles or equipment. All employees with knowledge of a defect in a city vehicle or equipment must make a written report of the defect to the Maintenance Director prior to operating the vehicle or equipment, or upon becoming aware of the defect.

(4) Employees who know a defect exists in a vehicle or equipment that affects the safety of its operation must take the vehicle out of service and not operate the vehicle or equipment until it is properly placed back in service by the designated member.

(5) Employees must inform their supervisor when they are involved in a vehicular accident, convicted of a moving violation, DWI, DUI, or any other crime on or off the job that would impact the employee's ability to operate a city-owned vehicle or equipment.

(6) An employee must notify their supervisor immediately whenever their driver license/CDL is temporarily or permanently suspended.

(7) Should a driver receive a traffic citation while operating a city vehicle or a personal vehicle on city business, they must notify their supervisor within 24 hours, excluding holidays and weekends.

(8) An employee, who, as an operator of a city or personal vehicle or equipment, experiences a number of preventable accidents or is found to have an excessive number of moving or parking violations, may be subject to an evaluation of their ability to continue driving for the city and may be permanently prohibited from operating vehicles or equipment for official city business.

(9) Involvement in a preventable accident may be considered an offense requiring corrective action.

(10) The need for corrective action, and its extent, will be based on the driving requirements, driving record, accident-causing factors, frequency of accidents, and the driver's negligence.

(11) Drivers found to be driving city vehicles, or personal vehicles on city-related business, under the influence of alcohol, controlled substances, or illegal drugs will be subject to immediate dismissal.

6.25 In-City Training

The City provides in-house training opportunities to its staff in order to educate employees on important topics and follow state and federal law requirements. Cybersecurity and FEMA safety training is required for all new employees and on an annual basis. In addition, training on harassment and ethics rules will be required annually. Open government, fraud and other training will be required as applicable.

SECTION 7: TECHNOLOGY USE POLICY

7.01 No Right to Use City Computers or Phones

Use of City computers to access the internet or electronic mail (i.e., "email") is a privilege not a right. The City provides computers and internet / email access for the express purpose of conducting City business and performing municipal tasks.

7.02 Primary Purpose

City computers and phones, including city-issued mobile phones and radios, are to be used primarily for conducting City business. City technology is not intended to be used for conducting personal business. Incidental and infrequent personal use of City technology and City internet / email access is allowable provided that it does not hinder or interfere with conducing City business. Limited personal use of City internet or personal email accounts is best conducted while on break.

7.03 No Privacy Expectation

City officers and employees have no reasonable expectation of privacy on City computers, phones, radios, internet, or email. The City has the right to view and inspect all City computers, phones, and radios including information accessed, downloaded, viewed, sent, or received over the internet or by email. Much of the information generated by or stored on City technology or obtained through City internet or email access is public information that is required to be catalogued under the Texas Records Retention Act, and subject to mandatory disclosure under the Texas Public Information Act, or other law. Use of City computers, phones, radios, and internet or email accounts constitutes consent by the City officer or employee for City inspection of those computers and internet or email accounts, and data transmitted thereon.

7.04 City Email Accounts

All City employees are required to use their City-issued email accounts to conduct City business. Employees are prohibited from using their personal email accounts to conduct City business. When corresponding about City business via email, all City personnel must include the City's standardized email stationery and signature within the emailed message. If an employee receives a city email at a private email address, the employee should immediately forward the email to his or her city email address for storage.

7.05 Prohibitions

No officer or employee may:

(a) Download any software or program onto City computers or phones without the express written authorization of the City Administrator and city IT Director. No employee may have TikTok on any city device including computers, tablets, and mobile phones.

(b) Use City computers, phones, radios, City-funded internet / email accounts, or any other communication device on which City business occurs or is funded by the City:

(1) in a manner that neglects the officer or employee's assigned duties or interferes in City operations;

(2) to participate in on-line chat rooms, unless those chat rooms are sponsored by legitimate professional organizations relevant to municipal government, and such participation is approved in advance by the Mayor or City Administrator;

(3) to invite an employee on a date or make sexual propositions of employees;

(4) to harass or otherwise interfere with a City employee. This prohibition includes but is not limited to harassment stemming from an employee's race, ethnicity, color, sex, age, or marital status;
(5) to send or distribute off-color jokes, articles or stories that are lewd and that a reasonable person would find to be offensive;
(6) to send or distribute worms, malware, or viruses;
(7) to send threatening messages to any other person or institution;
(8) use City computers or City-funded internet / email accounts to view, download, or distribute pornographic material, including obscene images or text;
(9) to disclose, release, or otherwise transmit confidential or privileged information belonging to the City without the express permission of the Mayor or City Administrator;
(10) to store personal information (i.e., that information not directly related to City business). Officers and employees shall regularly remove any personal data (i.e., that which is not prepared for or by the City for conducting City business) from City computers and internet / email accounts;
(11) to delete or remove programs installed by the City or delete data prepared by or for the City that is related to City business;
(12) to operate a private business, do work for another employer, or conduct political campaigns. This prohibition does not apply to the preparation and generation of election notices and related documents required by law; or
(13) to violate another person's privacy, perform an illicit act, or commit a crime.

7.06 Duty to Report

Officers and employees shall report Violations of this Technology Use Policy to the Mayor or City Administrator. Officers and employees who have received a worm, virus, or phishing or social engineering email or text must immediately notify the City Administrator, city IT Director, or the City's Information Technology Consultant. The City Administrator may suspend or revoke an employee's internet or email access privilege for violation of this Policy. Violation of this Policy is basis for disciplinary action, up to and including termination. The unauthorized disclosure of confidential or privileged information belonging to the City is basis for disciplinary action, up to and including termination, and may be punishable as a criminal misdemeanor.

SECTION 8: SOCIAL MEDIA POLICY

8.01 Introduction

Given the multitude of concerns (legal, political, and ethical) raised by social networking (Facebook, Instagram, Snapchat, LinkedIn, TikTok, Twitter, etc.) this Social Media Policy ("Policy") establishes prudent and acceptable practices regarding City of Dripping Springs officials and employees (personnel) use of the internet.

8.02 Purpose

The City has a legitimate government interest in effective, efficient, and consistent communications with the public. The City also strives to have a productive workplace.

While the City encourages its personnel to enjoy and make good use of their off-duty time, certain activities on the part of its personnel may become a problem if such activities could: impair the work of any City official or employee; create a harassing, demeaning, or hostile work environment; or

(a) disrupt the smooth and orderly flow of work; or harm the goodwill and reputation of the City among its citizens or in the community.

For these reasons, the City reminds its personnel that the following guidelines apply in their use of social media, while both on and off duty.

8.03 Disclaimer

(a) Under this Policy, the City disavows, and is not responsible for any sites, posts, opinions, or content not coordinated through and approved by the City Administrator or People & Communications Director.

(b) If City personnel posts data purporting to be on behalf of the City while using a social media site without the prior approval of the City Administrator, the City is not responsible for said posted content. Such content is not to be construed as reflecting the views or opinions of the Mayor, City Council or City Staff, and the City is not responsible for archiving such content in accordance with the records retention schedule or providing copies in accordance with the Texas Public Information Act (PIA) and may be grounds for disciplinary action.

(c) The absence of explicit reference herein to a particular site does not limit the extent of the application of this Policy. If any personnel is uncertain, the employee must consult their supervisor before proceeding.

8.04 General Guidelines

(a) While on duty, the use of City equipment or internet service by personnel must be limited to work-related tasks. Social media activities shall never interfere with work commitments.

(b) It shall be a Policy violation for any personnel to post online content as a representative of the City, or on the City's behalf without the City Administrator's or People & Communications Director's prior approval.

(c) Any personnel posting City-related issues online not as an approved representative of the City or on the City's behalf, shall explicitly clarify they are speaking for themselves and not on behalf of the City by displaying the following disclaimer: "This is my own opinion and not necessarily the opinion or position held by the City or City Council."

8.05 Guidelines for Official City Sites

(a) All City-sanctioned social media sites shall be maintained by the People & Communications Director, City Administrator, or their designee. Any content to be

posted on City-sanctioned social media sites must meet the approval of the People & Communications Director or the City Administrator before it is posted.

(b) All personnel that engage in social media activities and/or visit any City-sanctioned social media site on the City's behalf shall adhere to applicable federal, state, and local laws, regulations, and policies, including the Texas Public Information Act and the records retention schedule. All content must be managed, stored, and retrieved to comply with these laws.

(c) Any personnel that posts online content as a representative of the City, or on the City's behalf shall clearly state within said post that said content is subject to all applicable records retention and public disclosure laws. All City-sanctioned social media sites shall clearly indicate that any articles and any other content posted or submitted for posting are subject to records retention and public disclosure.

(d) Any content posted as representative of the City, or content posted to a City sanctioned social media site containing any of the following is prohibited:

(1) Comments not topically related to the particular site or blog article being commented upon;
(2) Profane language or content;
(3) Content that promotes, fosters, or perpetuates discrimination on the basis of race, creed, color, age, religion, sex, marital status, status with regard to public assistance, national origin, physical or mental disability;
(4) Sexual content or links to sexual content;
(5) Conduct or encouragement of illegal activity;
(6) Information that may compromise the safety or security of the public or public systems;
(7) Content that violates a legal ownership interest of any other party;
(8) Information that is incorrect or misleading;
(9) Information that is in conflict with an approved City policy, ordinance, directive, or plan; and/or
(10) Anything else that creates a disruption in the workplace.

(e) Content submitted for posting on a City-sanctioned social media site that is deemed unsuitable for posting by the People & Communications Director or the City Administrator because it violates criteria in the preceding item of this Policy, shall be retained pursuant to the records retention schedule along with a description of the reason the specific content is deemed unsuitable for posting.

(f) Any hyperlinks posted on a City-sanctioned social media site shall be accompanied by the following disclaimer: "The City guarantees neither the authenticity, accuracy, appropriateness nor security of the link, website, or content linked thereto."

(g) Personnel found in violation of this Policy may be subject to disciplinary action, up to and including termination of employment.

8.06 Guidelines for Marketing and Branding

To ensure consistent brand messaging and to protect band integrity, the City has guidelines when it comes to marketing and branding of all city entities. The People & Communications Director or designated representative is the lead on any communications, design and marketing of city-related brands, events, programs, initiatives, departments, and facilities. All designs should follow the established brand guidelines that includes logo(s), typography, and photography. No letter heads, advertisements, brochures, guides or email signatures shall be created without approval from the People & Communications Director. Any new city logo must be approved by the City Council. Compliance is mandatory, with the People & Communications Director responsible for enforcement and periodic reviews. Failure to adhere to these guidelines may result in disciplinary action.

SECTION 9: SURPLUS EQUIPMENT POLICY

9.01 Purpose

The purpose of this ***Surplus Equipment Policy*** is to establish procedures for managing and disposing of the City's surplus property and equipment in a manner that is fiscally responsible. This policy applies to all City of Dripping Springs personnel.

9.02 Definitions

Office Equipment: Not office supplies. Includes furniture, electrical appliances, wall hangings, and anything else valued over $25.00 and/or listed in the City of Dripping Springs liability inventory.

IT Equipment: Machines used to acquire, store, analyze, or process data and information electronically, including for printing, transmitting, and receiving, or storing electronic information such as a computer, computer accessories, or copy machine.

Surplus Property: Equipment, furniture, scrap or salvaged material, or other tangible property that might still have some usefulness but is no longer needed or required by the City of Dripping Springs, regardless of its present condition or estimated value.

Office Supplies: Office tools such as staplers, writing utensils, scissors, and other tools used within the office with a replacement value of under $25.00.

Salvage Property: Generally, refers to personal property that is damaged, used, or consumed so that it has no value for the purpose for which it was originally intended.

9.03 Procedure

Under this policy, City staff are responsible for:

(1) Coordinating the transfer of surplus equipment from the City;
(2) Ensuring that the appropriate paperwork or forms are completed prior to transfer;
(3) Providing temporary storage until sale or disposal of the surplus equipment or property;
(4) Maintaining a master list of all surplus equipment that is transferred or is awaiting transfer;
(5) Updating the master list of surplus equipment accordingly;
(6) Allocating the proceeds from the sale of surplus equipment properly and in accordance with Texas Local Government Code Chapter 51, if necessary.

Unauthorized removal, disposal, or expropriation of City equipment or surplus property is considered theft and constitutes a serious breach of City policy and may result in disciplinary action, including, but not limited to dismissal, or criminal prosecution.

(a) Reporting Authority: Parks employees shall report issues related to non-IT equipment to the Parks and Community Services Director.

All other employees shall report issues related to non-IT equipment to the Maintenance Director and IT related equipment to the IT Director.

(b) Surplus Equipment: The Maintenance Director may declare equipment or property that is no longer useful for the City of Dripping Springs as surplus. Before declaring equipment or property as surplus, the Maintenance Director is encouraged to:

(1) Trade in the property towards the purchase of new property;
(2) Transfer the property within the City; or
(3) Transfer the property to another City office.

The Maintenance Director shall oversee any of the above transactions or other disposal of surplus equipment or property.

(c) Broken Equipment (Non-IT): The City Parks and Community Services Director and the Maintenance Director can determine the procedure for the disposition of broken equipment that can be repaired.

If broken equipment cannot be repaired, an employee shall inform their immediate supervisor. The Department Director will work with the City Parks and Community Services Director or the Maintenance Director to dispose of that broken equipment or property with written approval by City Administrator. This does not govern the procedure for disposal or transfer of broken IT equipment or property.

(d) Unused Equipment (Non-IT):-An employee shall inform their immediate supervisor if there is unused equipment at their workstation or site. The Department Director will work with the City Parks and Community Services Director and the Maintenance Director to determine the procedure for the disposition of unused equipment or property with

written approval of the City Administrator. Unused equipment is equipment that is no longer needed due to:

- Lack of continued need
- Lack of trade-in value
- Obsolescence
- Wear, damage, or deterioration
- Major repair is impractical
- Excessive cost of maintenance

(e) Broken Equipment (IT): The City IT Director is in charge of processing, transferring, and disposing of broken IT equipment or property. In general, the length of time that an electronic or computing device should be a consideration when determining whether such a device should be deemed surplus, especially if IT equipment is broken, or breaks often. Used IT devices, even broken devices, can contain confidential data and licensed software that are at risk of unauthorized use. To promote the security of confidential information, the IT Director is required to erase data stored on IT devices before their sale, disposal, or relocation.

Many IT devices contain harmful heavy metals that are harmful to the environment when improperly disposed. If these devices are subject to disposal, they cannot be disposed of in landfills or other scrap metal recycling programs. Compliance with local or state recycling programs is requested.

Employees shall inform IT Director of broken equipment. If broken beyond repair, IT equipment cannot be repaired, an employee shall inform IT Director. The IT Director may dispose of that the broken equipment or property with written approval by City Administrator.

(f) Unused Equipment (IT): The City IT Director is in charge of processing, transferring, and disposing of unused IT equipment or property. In general, the length of time that an electronic or computing device should be a consideration when determining whether such a device should be deemed surplus. If the equipment is unused and can be transferred or sold, then the City IT Director should make that consideration when determining proper disposition procedures for that equipment or property.

Unused IT devices still contain harmful heavy metals that are harmful to the environment when improperly disposed. If these devices are subject to disposal, they cannot be disposed of in landfills or other scrap metal recycling programs. Compliance with local or state recycling programs is requested.

Employees shall inform the IT Director if there is unused IT equipment at their workstation or site. The IT Director can determine the procedure for the disposition of

unused equipment or property with written approval of the City Administrator. Unused equipment is equipment that is no longer needed due to:

- Lack of continued need
- Lack of trade-in value
- Obsolescence
- Wear, damage, or deterioration
- Repair is impractical
- Excessive cost of maintenance

(g) Equipment for Sale: The Maintenance Director is in charge of selling any surplus equipment or property. Items may be transferred to other City departments, donated to non-profit organizations, or given away at no cost to avoid landfill disposal. Items will be sold at the discretion of the Maintenance Director with approval from the City Administrator. The City Maintenance Director, with the prior approval of the City Administrator, may donate surplus equipment or property directly to a non-profit organization with proof of the 501(c)(3) status of recipient.

(h) Office Supplies: For office supplies, as defined above, that are broken, such as a stapler or scissors, an employee may dispose of such supply. After disposing of any such property, the employee should inform their immediate supervisor and the Department Director will inform the Maintenance Director or City Parks and Community Services Director of the disposition.

For office supplies, as defined above, that are unused, such as a stapler or scissors, an employee shall inform their immediate supervisor. The Department Director will inform the Maintenance Director or City Parks and Community Services Director so that such supply can be stored.

If there is a question of whether an item can be disposed of as an “office supply” or whether an object is “equipment”, the employee should contact the Maintenance Director or City Parks and Community Services Director for verification and handle such property appropriately.

SECTION 10: TRAVEL AND REIMBURSEMENTS

10.01 Registration Fees

Fees charged for registration for conferences, meetings, or seminars are allowed for prepayment or reimbursement. Invoices, registration forms, and supporting information providing documentation of fees or rates must be submitted with the request for payment.

10.02 Reimbursements

Reimbursement for education, training, conference, and other business-related expenditures incurred by City employees and officials in the performance of their duties

and responsibilities will comply with standard, uniform procedures. Reimbursements may be made for the following types of expenditures, upon submittal of an expense report along with the receipts:

(a) Transportation: Coach rate air fare, toll roads, out-of-pocket expenses incurred during use of a City vehicle, mileage at the current Internal Revenue Service established rate. Cost of any taxi fare incurred, plus gratuity. Cost associated with parking of personal or City vehicles resulting from travel or conduct of City business. Each official and employee will use best efforts to use the most cost-efficient travel for each trip. Reimbursements will only be given for the actual cost of travel and will not be given for the use of reward travel or "miles".

(b) Meals: Cost of meal reimbursement will be based on actual charges and should be reasonable and prudent, not extravagant. The costs of meals will be reimbursed up to the state per diem rate for the location at which the meal is purchased pursuant to the rates established by the U.S. General Services Administration.

(c) Entertainment: Employees are responsible for the costs of their own entertainment.

(d) Lodging: Actual cost of room, plus appropriate taxes.

(e) Per Diem: The City Administrator or Mayor may establish per diem for certain travel events.

10.03 Cash Advances

Employees shall submit receipts accounting for all cash advances made from petty cash.

SECTION 11: DISCRIMINATION

11.01 Equal Employment Opportunity

The City's employment decisions are made without regard to race, color, religion, sex, age, sexual orientation, military status, veteran status, national origin, mental or physical disability, pregnancy, or marital status. Discrimination or harassment against any person in recruitment, examination, appointment, training, promotion, discipline, or any other aspect of personnel administration because of political or religious opinions or affiliations, membership or non-membership in employee organizations, or because of race, color, national origin, age, disability, veteran status, sex, or marital status is prohibited. Any employee discriminated against or harassed shall report such conduct to his or her immediate supervisor, City Administrator or Human Resources Director; provided, however, if a City Administrator or Human Resources Director is the alleged source of a claim of discrimination or harassment, the aggrieved employee may address such claim directly to the Mayor, or if the Mayor is the alleged source of a claim, then the aggrieved employee may address such claim directly to any member of City Council.

11.02 General Prohibition

The City shall base all employment actions and decisions on a person's qualifications, experience, performance, demeanor, and behavior. The City shall **not** discriminate against employees on the basis of race, color, age, veteran status, military status, pregnancy status, ethnicity, sex, religion, sexual orientation, or nation of origin.

Every supervisor is expected to implement this policy through uniform and consistent employment practices. Management is also responsible for maintaining a professional working environment free of intimidation, sexual harassment, and all other forms of harassment and discriminatory conduct.

11.03 Discrimination and Harassment

(a) Harassment Prohibited

It is City Policy that all employees should be able to enjoy a work environment free from all forms of unlawful discrimination, including sexual, racial, religious, or other harassment. Accordingly, no employee shall engage in harassment of any employee, applicant, or any other individual.

(b) Discrimination and Harassment Defined

Discrimination and harassment is behavior that is motivated in whole or in party by a person's protected class, that is not welcome, and is personally offensive, or that lowers morale and that, therefore, interferes with an employee's work effectiveness. It can include verbal abuse and gestures. Harassment occurs in many forms, including but not limited to, unwelcome physical contact, verbal abuse, leering, gestures, electronic communication, and more subtle communication or advances and pressure involving the individual's protected class. Whether particular conduct constitutes, or harassment is based on the reasonable perception of the victim. Harassment includes unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when:

(1) adversely affects a term or condition of an individual's employment; or

(2) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment; or

(3) submission to or rejection of such conduct by an individual is used as the basis for employment decisions affecting such individuals; or

(4) such conduct has the purpose or effect of interfering with an individual's work performance or creating an intimidating, hostile, or offensive work environment, whether or not it is directly linked to the granting or denial of an economic benefit.

(c) Discrimination and Harassment is Punishable

Discrimination and Harassment are forms of misconduct that undermines the integrity of the employment relationship. No employee should be subjected to unsolicited and

unwelcome sexual overtures or conduct, either verbal or physical or verbal abuse related to a protected status. A finding that any employee has committed any such form of harassment will result in disciplinary action.

Reporting Required
Any employee who believes that the employee has been subjected to any of the forms of harassment set forth above should report this harassment to:
(1) the employee's supervisor;
(2) the City Administrator;
(3) the City Attorney;
(4) the Human Resources, and/or
(5) the Mayor.

Complaints against the City Administrator should be reported to the Mayor, the City Attorney, or a member of the City Council. Every supervisor or officer receiving a report of alleged harassment must notify the Mayor and all persons in the alleged offender's chain of command. Appropriate action must be promptly taken. The first action taken in such event shall include steps calculated to prevent reoccurrence of any such alleged incidents, pending investigation and final resolution of the complaint. Each such report shall be investigated promptly, and appropriate corrective action will be taken with the City Administrator's concurrence unless the allegation involves the City Administrator, in which case the appropriate corrective action will be taken by the Mayor.

(d) Investigation Without Retaliation
All good faith complaints of harassment will be promptly investigated, ensuring confidentiality to the maximum possible extent. Disciplinary action shall be taken against any employee in violation of this policy. Such disciplinary action will be determined by the nature of the wrongful act and may result in immediate dismissal of the offending employee. No employee of the City shall be retaliated against for filing a complaint of harassment in good faith or for participating and cooperating in the good faith reporting or investigation of such a claim. However, the City recognizes that false accusations of harassment can have serious effects on innocent men and women, their reputation, and their families. False accusations of sexual harassment will result in severe disciplinary action.

(e) Training Required
It will be the responsibility of the City Administrator to inform all employees of the policy concerning non-discrimination, equal employment opportunities, and harassment, as well as the gravity of such behavior and the procedure to be employed in the event an allegation develops.

11.04 Disabilities

The City shall evaluate all job applicants and employees based on ability to perform the essential functions of the position with or without reasonable accommodation. The City shall comply with the federal Americans with Disabilities Act (ADA).

11.05 Religious Affiliation

The City shall not evaluate or take employment action on job applicants or employees based on the applicant or employee's religious practices or membership. It is imperative, however, that employees do not allow their religious activities to interfere with the performance of work-related duties or the completion of assignments. Being a government institution, the City does not allow employees to proselytize.

11.06 Immigration Law Compliance

(a) Federal law requires that the City ensure all employees are authorized for employment in the United States. Therefore, only individuals lawfully authorized for employment in the United States will be employed.

(b) In connection with federal law, the City must collect certain information and review certain documentation concerning the employment authorization of individuals hired. This information and documentation will be used only for compliance with the Immigration Reform and Control Act, as amended, and not for any unlawful purpose. If an employee's employment authorization changes or terminates after the start date of employment, the employee will be responsible for informing the City Administrator or a Human Resources representative immediately.

SECTION 12: DISCIPLINARY MEASURES

12.01 Progressive Discipline

To the extent practicable, the City prefers to pursue a course of progressive discipline, which may include the following options (in no particular order): verbal counseling, training, verbal reprimands, written reprimands, suspension with pay, suspension without pay, demotion, reduction in pay, and discharge.

12.02 Discretionary Discipline

Whether to take disciplinary action rests with the discretion of direct supervisor of the employee in consultation with the City Administrator and Human Resources Director and who shall not be bound by the terms or procedures of this Manual (which is solely a guide). The Mayor shall be consulted for any disciplinary action that involves an employee whose final hiring or firing authority rests with City Council.

12.03 Grievance Procedure

(a) Employees or recently separated former employees dissatisfied with any employment issue, such as a possible job discrimination matter, health and safety issues, drug-related issues, or a disciplinary matter, may pursue a grievance.

(b) Employees or recently separated former employees may submit a written grievance regarding any employment issue to the City Administrator within five (5) business days of the latest occurrence. A written grievance involving the City Administrator may be submitted to the Mayor within five (5) business days of the latest occurrence. The notice must specify what action was taken by the City or what action has been observed, and

how the action is either unwarranted or inappropriate.

(c) The City will investigate, when necessary, allow the initiator of the grievance a reasonable opportunity to bring forth evidence and witnesses to support the initiator's case, and allow the initiator to question and fully refute any charges brought against the employee or recently separated former employee. The City Administrator shall issue a decision on all grievances to the submitting employee. For employees for which the City Administrator is the final hiring and termination authority, the City Administrator's decision is final. For employees for which the City Council is the final hiring and termination authority, the submitting employee may appeal the City Administrator's decision to the Mayor for consideration by City Council within five business days of receiving the decision of the City Administrator.

12.04 Personnel Files

Employees may request access to their personnel files via the City Administrator or Human Resources Director. In general, for individuals other than the employee, an employee's personnel file should be accessed only by those who have a job-related need to know or if a law requires the release. Under the Public Information Act, and subject to confidentiality rules set by state law, some or all of an individual's personnel file may be released to a member of the public if requested. Both at and following the time you separate from employment, the employee may make copies of documents in the employee's personnel file if you wish. Copying of such documents should be arranged with the Human Resources Director and will cost ten cents per copy, payable in advance. An electronic copy can be requested at no cost to the employee. Your personnel file will be maintained in City records in accordance with all applicable legal requirements.

SECTION 13: SEPARATIONS

13.01 Non-Disciplinary Separations

(a) Layoffs: The City retains the ability to restructure all employment positions and perform any necessary Reductions in Force (RIFs).

(b) Resignation: Employees may resign at any time. To remain in good standing, employees are encouraged to provide two (2) weeks' notice of any intent to voluntarily leave employment.

(c) Retirement: Any retirement intentions must be in conformance with the City's retirement plan.

13.02 Incapacity: An employee may be separated if such employee is unable to perform the functions of the employee's position, as expressly provided in the job description for such position, with or without reasonable accommodation. A finding that an employee is Unfit for Duty shall be made only through individual medical determination by a competent medical authority as prescribed by the City Administrator and Mayor. The City Administrator may require that a current employee undergo a Fit for Duty evaluation, at the City's expense, to determine if such employee is able to satisfactorily perform the

essential functions of the employee's current position, and whether the employee can satisfactorily perform such functions with or without reasonable accommodation.

13.03 Discharge

Authority to terminate resides with the City Administrator unless the employee is hired by City Council pursuant to state law or this Manual. The City Administrator shall consult with the employee's supervisor, Human Resources Director and the City Attorney prior to termination. During an investigation related to discipline or discharge, the City Administrator may place the employee on paid or unpaid administrative leave. Either the City or employees may terminate the employment relationship, for any reason, or no reason (so long as the reason is not discriminatory, as established by this Manual).

A non-exhaustive list of grounds for discipline or discharge of an employee by the City include (but is not limited to) the following:

(a) Insubordination
(b) Neglect of Duty
(c) Violation of City Policy, City Ordinance, State Law, or Federal Law
(d) Failure to conduct self in a courteous and proper manner while on duty.
(e) Misappropriation of Funds, Equipment, or Supplies
(f) Persistent tardiness or truancy
(g) Carelessness or Recklessness
(h) Misconduct
(i) Misuse of City equipment or information
(j) Dishonesty
(k) Violation of Personnel Manual
(l) Incompetency
(m) Harassment
(n) Discourteous Conduct towards other employees, officials, or the public
(o) Failure to attend mandatory meetings or trainings without cause

13.04 Return Items

On or before the last day of employment with the City, all departing employees must return all equipment, supplies, files, and resources provided to the employee by the City during the employee's tenure with the City.

13.05 Payment for Leave

The City will pay separated employees for untaken vacation leave of up to 120 hours if the employee has worked for the City for at least 1 year. Compensatory time will be paid-out upon termination for all exempt employees. Employees who are terminated or do not provide adequate notice of resignation shall not receive accrued vacation leave.

13.06 Reference

All reference inquiries are to be directed to the City Administrator or the City Administrator's designee. The City Administrator may designate an employee or former employee's supervisor or director as the appropriate individual to provide a reference.

Under state law, the City is allowed to provide a truthful employment reference regarding a current or former employee. However, the City is not required to provide an employment reference to or about a current or former employee.

City of Dripping Springs

ACKNOWLEDGEMENT

I, _____ (*printed name*), hereby acknowledge that I have received a copy of the City of Dripping Springs's ***Personnel Manual***. I have read and understood the information presented to me. If I have questions about anything I have read, I have asked my Supervisor for and received clarification. Specifically, I understand the following:

- My employment status is *at-will,* and either I or the City of Dripping Springs may terminate my employment at any time, with or without reason.
- I do not have a contract or term of office with the City of Dripping Springs unless it is through a separate written and signed agreement.
- My supervisor does not have the authority to enter into a contract with me. o Harassment and discrimination are not tolerated in the workplace.
- I share with my fellow employees a duty to prevent and report violations of the policies set forth in the Personnel Manual.
- My employer will promptly and thoroughly investigate all claims and take remedial measures, up to and including termination.

_____ _____

Employee's Signature Witness's Signature

_____ _____

Date Date

City of Dripping Springs

ELECTION REGARDING PERSONAL INFORMATION

TO THE CITY SECRETARY:

I, _____(*printed name*), hereby make the following election with respect to allowing public access to information in the custody of the City of Dripping Springs that relates to my home address, home telephone number, and social security number or that reveals whether I have family members.

I do ***not*** want the City of Dripping Springs to disclose or allow public access to the following (*check all that apply*):

_____ My home address

_____ My home telephone number
_____ Information that reveals whether I have family members

_____
Employee's Signature

_____
Date

Attachment "A"
EMPLOYEE TRAINING AND REIMBURSEMENT AGREEMENT

THIS EMPLOYEE TRAINING AND REIMBURSEMENT AGREEMENT (the "Agreement") dated _____, 20__, ("Effective Date") is by and between, the City of Dripping Springs, a municipality in Hays County, and _____, a current employee of the City ("Employee").

RECITALS

WHEREAS, Employee has requested and the City has agreed to pay for the Employee to attend a conference, meeting, seminar, workshop, training, educational course, or similar instructional class (collectively, "Training"); and

WHEREAS, in consideration for the City's payment for the Training, Employee acknowledges that through attendance at such Training, Employee will acquire skills and enhance his or her professional skills or knowledge making the Employee more marketable; and

WHEREAS, Employee agrees to reimburse the City for the cost of such Training in the event that employment with the City is terminated in accordance with the terms of this Agreement.

AGREEMENT

NOW THEREFORE, in consideration of the above recitals and the individual and mutual covenants of the parties hereinafter set forth, and for other good and valuable consideration, it is hereby agreed by and between the parties hereto:

1. Cost of Training and Expenses. The City agrees to pay a total of $_____ ("Cost") for the following Training:

Name of Training: _____

Training Provided by: _____

Training Location: _____

Date(s) of Training: _____

In addition to the Cost of the Training, the City agrees to reimburse additional reasonable expenses related to attendance at such Training up to $_____ for travel, food, and incidentals; provided that the Employee submits the appropriate expense reports and all receipts for the expenses associated with the Training and such expenses are reimbursable.

2. Reimbursement for Cost of Training. Except as provided below, Employee agrees to reimburse the City for the Cost of the Training paid by the City if the Employee's employment terminates within two (2) years of completion of the Training. Employee agrees to reimburse the City within thirty (30) days of termination.

3. Salary Deduction. Employee agrees and authorizes the City to deduct the amount owed hereunder, to the extent permissible by law, from Employee's pay following notification of termination of employment with the City. The City, in its sole discretion, may determine whether to deduct any amount owed from the Employee's pay. If the amount owed under this Agreement exceeds the amount deducted from the Employee's pay, in accordance with Section 2, Employee agrees to reimburse the City any remaining amount due to the City within thirty (30) days of terminating employment.

4. Continuation of Employment-at-Will Relationship. Employee and the City understand and agree that this Agreement does not constitute an employment agreement and nothing in this Agreement shall replace the Employee and the City's at-will employment arrangement. Both Employee and the City understand that the employment relationship may be terminated by either party for any or no reason at any time prior to the termination of this Agreement.

5. Term. This Agreement shall be in effect from the Effective Date until all reimbursement, if any, is due under this Agreement.

6. Entire Agreement; Amendments. This Agreement contains the entire understanding of the parties. Employee and the City may mutually agree to modify the terms of this Agreement at any time; provided, however, that any such modification must be in writing and signed by both parties to this Agreement.

7. Governing Law. This Agreement shall be governed by and construed under the laws of the State of Texas and any dispute shall have venue in Hays County.

8. Severability. If any provision of this Agreement is held to be invalid by a court of law, the remaining provisions shall remain in full force and effect.

9. Counterparts. This Agreement shall be executed in one or more counterparts and all such counterparts shall constitute one and the same instrument.

10. Headings. Headings of provisions of this Agreement are solely for the convenience of reference and are not a part of this Agreement and shall not affect the meaning, construction, operation, or effect hereof.

IN WITNESS WHEREOF, the City and Employee hereto have caused this Agreement to be executed on the date and year first above written.

EMPLOYEE

_____

Employee Name: _____ (Printed)

CITY OF DRIPPING SPRINGS

_____

Michelle Fischer, City Administrator

Attachment "B"
KEY CONTROL POLICY

The purpose of this ***Key Control Policy*** is to establish reasonable personal security for the staff of the City of Dripping Springs and to ensure the protection of personal and city property through the control of keys (including fobs) to city facilities.

In return for the loan of a key, employees: 1) shall not give or loan the key to others; 2) shall not make any attempts to copy, alter, duplicate, or reproduce the key; 3) shall use the key for authorized purposes only; 4) shall safeguard and store the key securely; 5) shall immediately report any lost or stolen keys; and 6) shall produce or surrender the key upon official request.

If a key is lost, stolen, or not surrendered when officially requested, a charge that reflects the cost of changing any and all locks and keys affected may be assessed. ***Misuse of City Equipment including City keys may result in discipline up to and including discharge pursuant to Section 12.02 of the*** **CITY OF DRIPPING SPRINGS PERSONNEL MANUAL.**

KEY DISTRIBUTION & RETURN

EMPLOYEE NAME: _____ DEPARTMENT: _____

ISSUE DATE: _____ ISSUER'S SIGNATURE: _____

RETURN DATE: _____ RECEIVER'S SIGNATURE: _____

REQUESTED ACTION/RECORD *(circle those that apply)*

KEY ISSUANCE RETURNED KEY LOCK OPENING

LOCK/HARDWARE CHANGE REPORT OF LOST/STOLEN KEY

DESCRIPTION OF KEY(S)

1. _____ 6. _____
2. _____ 7. _____
3. _____ 8. _____
4. _____ 9. _____
5. _____ 10. _____

DETAILS

_____

_____

_____

ACKNOWLEDGEMENT AND AGREEMENT

I, _____ *(printed name)*, hereby acknowledge that I have received a copy of the City of Dripping Springs's ***Key Control Policy.*** I have read and understood the information presented to me. I agree to return any City of Dripping Springs keys/fobs to the City upon my separation from the City on or before the last day of my employment or upon request of the City Administrator.

In return for the loan of this key(s), I agree to: 1) not give or loan the key(s) to others; 2) not make any attempt to copy, alter, duplicate, or reproduce the key(s); 3) use the key(s) for authorized purposes only; 4) safeguard and store the key(s) securely; 5) immediately report any lost or stolen key(s); and 6) produce or surrender the key(s) upon official request. I also agree that if the key is lost, stolen, or not surrendered when officially requested, a charge that reflects the cost of changing any and all locks affected may be assessed.

_____ _____

Employee's Signature City Administrator's Signature

_____ _____

Date Date

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78602

Submitted By: Shane Pevehouse, Building Official

Council Meeting Date: 18 September, 2025

Agenda Item Wording: **Public hearing and consideration of an Ordinance Approving a Master Sign Plan for Village Grove.** I*Applicant: Taylor Morrison*

Agenda Item Sponsor: Applicant:

Summary/Background: Taylor Morrison is building Village Grove sub-division and is requesting several variances through a Master Sign Plan.

The total sign count for is 25 signs and 2 flag poles. 22 of the signs are temporary and will be removed when construction is complete. The variances included in the plan are for (1) over height, (1) oversize, and (20) additional signs.

After our initial meeting, the applicant reduced heights on all temporary, off-premise, and secondary entry signs, and reduced the flagpole height. Additionally, the landscape area of the large community sign exceeds requirements, and the applicant is installing an additional Sports and Recreation Park sign on behalf of Parks and Community Services.

Commission Recommendations: Parks and Recreation Commission is voting on the additional "Village Grove/ Taylor Morrison" sign on the Sports and Recreation Park Sign on 15 October.

Recommended Council Actions: Recommend Approval of the Master Sign Plan with the Village Grove/ Taylor Morrison sign approval pending PRC decision.

Attachments: PowerPoint presentation

Draft Ordiance

Next Steps/Schedule: Send to City Secretary for execution

CITY OF DRIPPING SPRINGS

ORDINANCE No. 2025-___

MASTER SIGN PLAN *for* VILLAGE GROVE P.D.D.

AN ORDINANCE ENACTING CHAPTER 26, APPENDIX "L", OF THE DRIPPING SPRINGS CODE OF ORDINANCES; ESTABLISHING REGULATIONS FOR A MASTER SIGN PLAN FOR A PORTION OF THE VILLAGE GROVE SUBDIVISION; PROVIDING FOR THE FOLLOWING: RULES; STANDARDS; PROCEDURES; AND FINDINGS OF FACT; CODIFICATION; REPEALER; SEVERABILITY; PROPER NOTICE AND MEETING; ENFORCEMENT INCLUDING CRIMINAL PENALTIES INCLUDING CRIMINAL FINES NOT TO EXCEED $500.00 AND CIVIL FINES OF UP TO $500.00

WHEREAS, the City Council of the City of Dripping Springs ("City Council") seeks to promote uniform regulations and specifications for signs throughout the city limits and extraterritorial jurisdiction in order to uphold and further the intent and purposes of the City's Sign Ordinance; and

WHEREAS, the owners of the property more fully described in Attachment A (the "Property"), have asked for a series of approvals for signage as part of the development of the subdivision; and

WHEREAS, the City Council concludes that the proposed sign locations, configurations, design, materials, and colors are harmonious with the hill country setting; and

WHEREAS, the City Council finds that approval of this Master Sign Plan is reasonable and more efficient than individual consideration and approval of particular variances; and

WHEREAS, the intent of this Ordinance is to provide for consistent and compatible signage for the Property, in order to provide a uniform look and feel throughout the subdivision that is appropriate for the subdivision's location in the city limits; and

WHEREAS, the City Council has determined that the standards and specifications set forth in this Ordinance are consistent with the intent of the City's Sign Ordinance, and spirit of the City's Comprehensive Plan; and

WHEREAS, pursuant to Texas Local Government Code Section 51.001, the City has general authority to adopt an ordinance or police regulation that is for the good government, peace or order of the City and is necessary or proper for carrying out a power granted by law to the City; and

WHEREAS, pursuant to Chapter 216 of the Texas Local Government Code, the City has the specific authority to regulate signs; and

WHEREAS, the City Council finds that it is necessary and proper for the good government, peace or order of the City of Dripping Springs to adopt an ordinance approving the Master Sign Plan for the VILLAGE GROVE Subdivision.

NOW, THEREFORE, BE IT ORDAINED by the Dripping Springs City Council:

1. FINDINGS OF FACT

The foregoing recitals are incorporated into this Ordinance by reference as findings of fact as if expressly set forth herein.

2. ENACTMENT

Chapter 26, Appendix "L" of the City of Dripping Springs Code of Ordinances is hereby established so to read in accordance with *Attachment "A"*, and all exhibits, which are attached hereto and incorporated into this Ordinance for all intents and purposes. Any underlined text shall be inserted into the Code and any struck-through text shall be deleted from the Code, as stated in *Attachment A*.

3. REPEALER

To the extent reasonably possible, ordinances are to be read together in harmony. However, all ordinances, or parts thereof, that are in conflict or inconsistent with any provision of this Ordinance are hereby repealed to the extent of such conflict, and the provisions of this Ordinance shall be and remain controlling as to the matters regulated, herein.

4. SEVERABILITY

Should any of the clauses, sentences, paragraphs, sections, or parts of this Ordinance be deemed invalid, unconstitutional, or unenforceable by a court of law or administrative agency with jurisdiction over the matter, such action shall not be construed to affect any other valid portion of this Ordinance.

5. CODIFICATION

The City Secretary is hereby directed to record and publish the attached rules, regulations and policies in the City's Code of Ordinances as authorized by Section 52.001 of the Texas Local Government Code.

6. EFFECTIVE DATE

This Ordinance shall be effective immediately upon passage and publication of caption.

7. PROPER NOTICE & MEETING

It is hereby officially found and determined that the meeting at which this Ordinance was passed was open to the public, and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Texas Government Code, Chapter 551. Notice was also provided as required by Chapter 52 of the Texas Local Government Code.

PASSED & APPROVED this, the ___ day of _____, 2025, by a vote of ____ (*ayes*) to ____ (*nays*) to ____ (*abstentions*) of the City Council of Dripping Springs, Texas.

CITY OF DRIPPING SPRINGS:

by: _____
Mayor Bill Foulds, Jr.

ATTEST:

_____
Diana Boone, City Secretary

Attachment "A"

City of Dripping Springs

CODE OF ORDINANCES

CHAPTER 26: SIGNS

APPENDIX ""L":
MASTER SIGN PLAN FOR THE VILLAGE GROVE P.D.D.

SECTION 1. ENACTMENT PROVISIONS

1.1 Popular Name

This Appendix to Chapter 26 of the Dripping Springs Code of Ordinances shall be commonly cited as the "Master Sign Plan for the Village Grove P.D.D."

1.2 Purpose

This Appendix provides standards for consistent and compatible signage for the complex as a whole, and signage utilized by individual tenants, in order to provide a uniform look and feel throughout the complex that is appropriate for the complex's location in the city limits.

1.3 Scope

1.3.1 This Appendix applies to all property at VILLAGE GROVE, BEING A 112.4-ACRE TRACT OUT OF THE C.H. MALOTT SURVEY, ABSTRACT NUMBER 693 AND THE PHILIP A. SMITH SURVEY, ABSTRACT NO. 415, HAYS COUNTY, TEXAS, SAID 112.4-ACRE TRACT BEING COMPRISED OF FIVE (5) TRACTS OF LAND: 1) A CALLED 79.0723-ACRE TRACT, DESCRIBED AS TRACT 1, CONVEYED TO ROBERT MOKHTARIAN, INDIVIDUALLY, ROBERT MOKHTARIAN TRUSTEE FOR EDWARD MOKHTARIAN, AND ROBERT MOIGITARIAN TRUSTEE FOR EDMUND MOKHTARIAN, ALL IN JOINT TENANCY WITH RIGHT OF SURVIVORSHIP, RECORDED IN VOLUME 1128, PAGE 849 OF THE DEED RECORDS OF HAYS COUNTY, TEXAS [D.R.H.C.T.], 2. A CALLED 1.18-ACRE TRACT, DESCRIBED AS TRACT 2, CONVEYED TO ROBERT MOKHTARIAN, INDIVIDUALLY, ROBERT MOKHTARIAN TRUSTEE FOR EDWARD MOKHTARIAN, AND ROBERT MOKHTARIAN TRUSTEE FOR EDMUND MOKHTARIAN, RECORDED IN INSTRUMENT NO. 17041438 OF THE OFFICIAL PUBLIC RECORDS OF HAYS COUNTY, TEXAS [O.P.R.H.C.T.], 3. A CALLED 17.038-ACRE TRACT, DESCRIBED AS TRACT 1, CONVEYED TO 740 SPORTS PARK, LLC, RECORDED IN DOCUMENT NO. 21001644, O.P.R.H.C.T., 4. A CALLED 5.000-ACRE TRACT, DESCRIBED AS TRACT 1, CONVEYED TO CLINTON D. CUNNINGHAM AND DAWN CUNNINGHAM, RECORDED IN VOLUME 4258, PAGE 618, O.P.R.H.C.T. AND 5. A CALLED 10.00-ACRE TRACT, DESCRIBED AS TRACT II, CONVEYED TO CLINTON D. CUNNINGHAM AND DAWN CUNNINGHAM, RECORDED IN VOLUME 4258, PAGE 618, O.P.R.H.C.T.

1.3.2 This appendix applies to the owner, builder within the subdivision, and to any individual Tenant occupying the Property at Village Grove. Owner shall provide each Tenant or Builder with a copy of this Appendix. The Owner, Builder, and any Tenants are Responsible Parties under Chapter 26 for purposes of Enforcement of this Appendix and Chapter 26.

1.4 Applicability

1.4.1 The standards set forth in this Appendix, along with the illustrations identified as ***Exhibit D***, which are included herein for all intents and purposes, shall govern the signage erected on the Property.

1.4.2 Permit applications for signs proposed to be erected and maintained at the Property at Village Grove shall be evaluated for compliance with the standards set forth in this Appendix, Chapter 26 (Signs), Chapter 24-Article 24.06 (Lighting), and the Code of Ordinances (generally).

1.4.3 Variance applications for signs proposed to be erected at the Property at Village Grove shall be evaluated in accordance with the standards set forth in this Appendix, Chapter 26 (generally), Chapter 24-Article 24.06 (Lighting), and the Code of Ordinances (generally).

1.4.4 If the standards in this Appendix conflict with specific provisions of Chapter 26, this Appendix shall govern. Chapter 26 shall apply to all signage not specifically addressed in this Appendix.

1.5 Administration

1.5.1 Sign permit applications under this Appendix are subject to the general rules and procedures for sign permits set forth in Chapter 26.

1.5.2 Sign permit applications must include the written consent of the Owner stating that the Owner has reviewed the specifications of the proposed sign and supports the permit application.

SECTION 2. DEFINITIONS

2.1 Rules of Interpretation

Words and phrases used in this Appendix shall have the meanings set forth in this section. Terms that are not defined below, but are defined in Chapter 26 of the Code of Ordinances, or elsewhere in the Code, shall be given the meanings set forth in the Code. Words and phrases not defined in the Code of Ordinance shall be given their common, ordinary meaning unless the context clearly requires otherwise. When not inconsistent with the context, words used in the present tense shall include the future tense; words in the plural number shall include the singular number (and *vice versa*); and words in the masculine gender shall include the feminine gender (and *vice versa*). The word "shall" is always mandatory, while the word "may" is merely directory. Headings and captions are for reference purposes, only.

2.2 Specific Terminology

City: the City of Dripping Springs, an incorporated municipality located in Hays County, Texas.

Owner: the person who owns property at Village Grove, or the property management agent operating on the owner's behalf pursuant to a written contract, agency letter, or power of attorney. As applied by this Appendix, the term applies regardless of whether the person is operating in the capacity of an investor, owner, landlord, or developer.

Person: a human individual, agency, association, business, corporation, partnership or sole proprietorship.

Tenant: a person with a leasehold interest in a designated unit within the Property at Village Grove. Subtenants shall not be treated as separate Tenants for purposes of calculating the maximum allowable signage under this Appendix.

SECTION 3. PROPERTY SIGNAGE

3.1 General Consistency

3.1.1 Architectural. All signs and supporting structures shall be designed in accordance with the overall architectural theme of the property.

3.1.2 Renderings. All signs and supporting structures shall be designed in accordance with the drawings included herein as ***Exhibit D.***

3.1.3 Logos. Graphic symbols or logos that represent a business entity or organization shall be permitted to be displayed on all signs within the property, and the outline area of the graphic symbol counts against the maximum area allowed for each sign location that the symbol is present.

3.1.4 Static. Signs will not have moving parts, changing colors, flashing parts or intermittent illuminated segments to mimic or create movement. The sign shall remain static and evenly illuminated.

3.2 Temporary Sign

3.2.1 Owner may erect up to nineteen (19) Temporary Signs at the approximate location shown in ***Exhibit D***. These include the following:

i. Model Homes Ahead (A-1, A-2)
ii. Model Homes (B-1, B-2, B-3)
iii. New Phase (C-1, C-2, C-3, C-4, C-5)
iv. Burma Sign (D-1, D-2, D-3, D-4, D-5, D-6)
v. Park Sign (E-1)
vi. Amenity Sign (F-1, F-2)

3.2.2 Building Materials: The Temporary signs shall include all or a combination of the following materials: Stained/painted wood posts & framing, Flatbed, E-Panel,

MDO (Medium Density Overlay) plywood, polymer, and/or a lettering and/or logos comprised of direct print graphics with gloss lamination.

3.2.3 Dimensions: Temporary sign sizes shall be as follows:

i. Model Homes Ahead Signs shall not exceed 4'0" wide and 10'0" in height, and sign area shall not exceed thirty-two (32) square feet, as shown on ***Exhibit D-1 (A)***.
ii. Model Homes Sign shall not exceed 4'0" wide and 6'0" in height, and sign area shall not exceed sixteen (16) square feet, as shown on ***Exhibit D-1 (B)***.
iii. New Phase Signs shall not exceed 4'0" wide and 10'0" in height, and sign area shall not exceed thirty-two (32) square feet, as shown on ***Exhibit D-2 (C).***
iv. Burma Signs shall not exceed 4'0" wide and 6'0" in height, and sign area shall not exceed sixteen (16) square feet, as shown on ***Exhibit D-3 (D).***
v. Park Signs shall not exceed 4'0" wide and 6'0" in height, and sign area shall not exceed sixteen (16) square feet, as shown on ***Exhibit D-4 (E).***
vi. Amenity Signs shall not exceed 4'0" wide and 10'0" in height, and sign area shall not exceed thirty-two (32) square feet, as shown on ***Exhibit D-4 (F).***

3.2.4 Signs subject to this section shall **NOT be** illuminated.

3.2.5 Temporary Signs under this subsection must be removed when the final phase of subdivision construction is complete. Model Homes Ahead and Model Homes Signs shall be removed before the builder can request the final Certificate of Occupancy for the buyer.

3.3 Monument Sign

3.3.1 Owner may erect two (2) Monument Signs at the approximate location shown in ***Exhibit D***. These include the following.

i. Monument Identification Sign (Large) (I-1)
ii. Sports Field Sign (G-1)

3.3.2 Building Materials:

i. Monument Identification Sign (Large) signs shall consist of all or a few of the following materials: A base wall comprised of stone masonry, painted metal for the sign cabinet, painted metal lettering and/or logos comprised of painted metal/Acrylic Accents and painted metal roofing. The two accent columns shall be comprised of stone and/or masonry with painted metal accents embedded into the veneer. Adjacent accent tower shall be comprised of masonry and wood framing with faux decorative windows. Painted metal beams for the decorative arches, as shown on ***Exhibit D-6 (I).***
ii. Sports Field Sign: Materials and structures shall be modeled from current and approved City of Dripping Springs parks and community services signs. A

metal pin-mounted logo as shown on ***Exhibit D-5 (G)*** for the Village Grove community shall be allowed to be mounted to the base of the sign.

3.3.3 Dimensions: Monument sign sizes shall be as follows:

i. Monument Identification Sign (Large) base shall not exceed thirty (30'0") feet and a maximum height of the accent tower shall not exceed fourteen feet and two inches (14'2"), both heights measured from final finish grade per the landscape improvement plans. The maximum overall length of the sign lettering shall not exceed twelve feet and ten inches (12'10"), as shown on ***Exhibit D-6***. Sign area shall not exceed twenty-six (26) square feet, and logo area shall be a total of eight (8) square feet for two (2) logos mounted on columns, for a total of thirty-four (34) square feet of sign area, as shown on ***Exhibit D-6.***

ii. Sports Field Sign shall not exceed 8'4" wide and 7'-0" in height, and sign area shall not exceed thirty-six (36) square feet, as shown on ***Exhibit D-5 (G).***

3.3.4 Monument Identification Sign (Large) area sign may be illuminated, subject to Chapter 24-Article 24.06 (Lighting). Sports Field Sign shall **NOT be** illuminated.

3.4 Construction/Development Signs

3.4.1 Owner may erect up to four (4) Construction/Development Signs at the approximate location shown in ***Exhibit D***. These include the following.

i. Construction Development Sign – Sales Center Monument (L-1)
ii. Construction Development Sign – Now Open (J-1)
iii. Construction Development Sign – Coming Soon (H-1, H-2)

3.4.2 Building Materials: The Construction/Development Signs shall include all or a combination of the following materials:

i. Sales Center Monument shall consist of combination of primed and painted metal cabinet, wood textured siding, direct print graphics onto a MDO with gloss lamination, painted metal lettering and/or logos comprised of painted metal/Acrylic Accents.
ii. Construction Development Sign – Now Open sign shall consist of stained/painted wood posts & framing and, Flatbed, E-Panel, MDO (Medium Density Overlay) plywood, polymer, and a lettering and/or logos comprised of direct print graphics with gloss lamination.
iii. Construction Development Sign – Coming Soon sign(s) shall consist of stained/painted wood posts & framing and, Flatbed, E-Panel, MDO (Medium Density Overlay) plywood, polymer, and a lettering and/or logos comprised of direct print graphics with gloss lamination.

3.4.3 Dimensions: Construction/Development Sign sizes shall be as follows:

i. Sales Center Monument shall not exceed 6'6" wide and 4'8" in height, and sign area shall not exceed a total of twenty-five (25) square feet, and sign area shall not exceed twenty-five (25) square feet, as shown on ***Exhibit D-8 (L).***
ii. Construction Development Sign – Now Open sign shall not exceed 8'0" wide and 7'-0" in height, and sign area shall not exceed a total of forty (40) square feet, as shown on ***Exhibit D-7 (J).***
iii. Construction Development Sign – Coming Soon sign shall not exceed 8'0" wide and 7'-0" in height, and sign area shall not exceed a total of forty (40) square feet, as shown on ***Exhibit D-5 (H).***

3.4.4 Signs subject to this section shall **NOT be** illuminated.

3.4.5 Construction/Development Signs shall be temporary. Signs under this subsection must be removed when the final phase of subdivision construction is complete.

3.5 Off-Premises Signs

3.5.1 Owner may erect up to three (3) Off-Premises Signs at the approximate locations shown in ***Exhibit D***, with a written agreement from the property owner and any co-tenant who shares the property, if any. This includes the following locations.

i. Temporary Sign – Model Homes Ahead (A-2)
ii. Monument Sign - Sports Field Sign (G-1)
iii. Construction Development Sign – Coming Soon (H-2)

3.5.2 The building materials used, overall dimensions of sign, sign area, and lighting for Off-Premise Signs must comply with general sign category requirements defined for each sign type described in sections 3.2, 3.3 and 3.4 above.

3.6 Flag Poles

3.6.1 Owner may erect up to two (2) Flag Poles at the approximate location shown in ***Exhibit D*** (K-1 and K-2).

3.6.2 Building Materials: The Flag Poles shall include all or a combination of the following materials: A primed and painted metal pole.

3.6.3 Dimensions: Flag Pole sizes will be as follows:
i. Flag Poles shall not exceed 25'0" in height.

3.6.4 Flag Poles with a height greater than 20 feet above ground level shall be illuminated from above, if illuminated at all.

3.6.5 Flag Poles shall be temporary. Flag Poles under this subsection must be removed when the final phase of subdivision construction is complete. Flag Poles shall be removed before the builder can request the final Certificate of Occupancy for the buyer.

SECTION 4. PROHIBITION

It is an offense for any person to erect, install or place signage at VILLAGE GROVE Subdivision in violation of this Appendix.

SECTION 5. ENFORCEMENT

5.1 Civil & Criminal Penalties

The City shall have the power to administer and enforce the provisions of this Appendix as may be required by governing law. Any person violating any provision of this Appendix is subject to suit for injunctive relief as well as prosecution for criminal violations. Any violation of this Appendix is hereby declared to be a nuisance.

5.2 Offense

(a)A person who violates, causes, allows, or permits a violation a section of this Appendix or Chapter 26 of the code of ordinances designated as an offense commits a misdemeanor punishable by a fine not exceeding $500.00.

(b)Each violation of this Appendix or Chapter 26 designated as an offense constitutes a separate offense.

(c)No culpable mental state is required to prove an offense under this Appendix or Chapter 26 if the offense involves:

(1) placement of a sign in the right-of-way;

(2) placement of a sign in another person's property without the person's permission;

(3) placement of a sign that encumbers access to a person's property or encumbers use of a street, sidewalk, trail, path, or driveway.

5.3 Civil Remedies

Nothing in this Appendix or Chapter 26 shall be construed as a waiver of the City's right to bring a civil action to enforce the provisions of this Appendix or Chapter 26 and to seek remedies as allowed by law, including, but not limited to the following:

(1) Injunctive relief to prevent specific conduct that violates this Appendix or Chapter 26 or to require specific conduct that is necessary for compliance with this Appendix or Chapter 26, including removal of signs that violate this Appendix or Chapter 26 at the expense of the responsible party;

(2) A civil penalty up to $1,000.00 a day when it is shown that the defendant was notified of the provisions of this Appendix or Chapter 26 and after receiving notice committed acts in violation of this Appendix or Chapter 26 or failed to take action necessary for compliance with this Appendix or Chapter 26; and

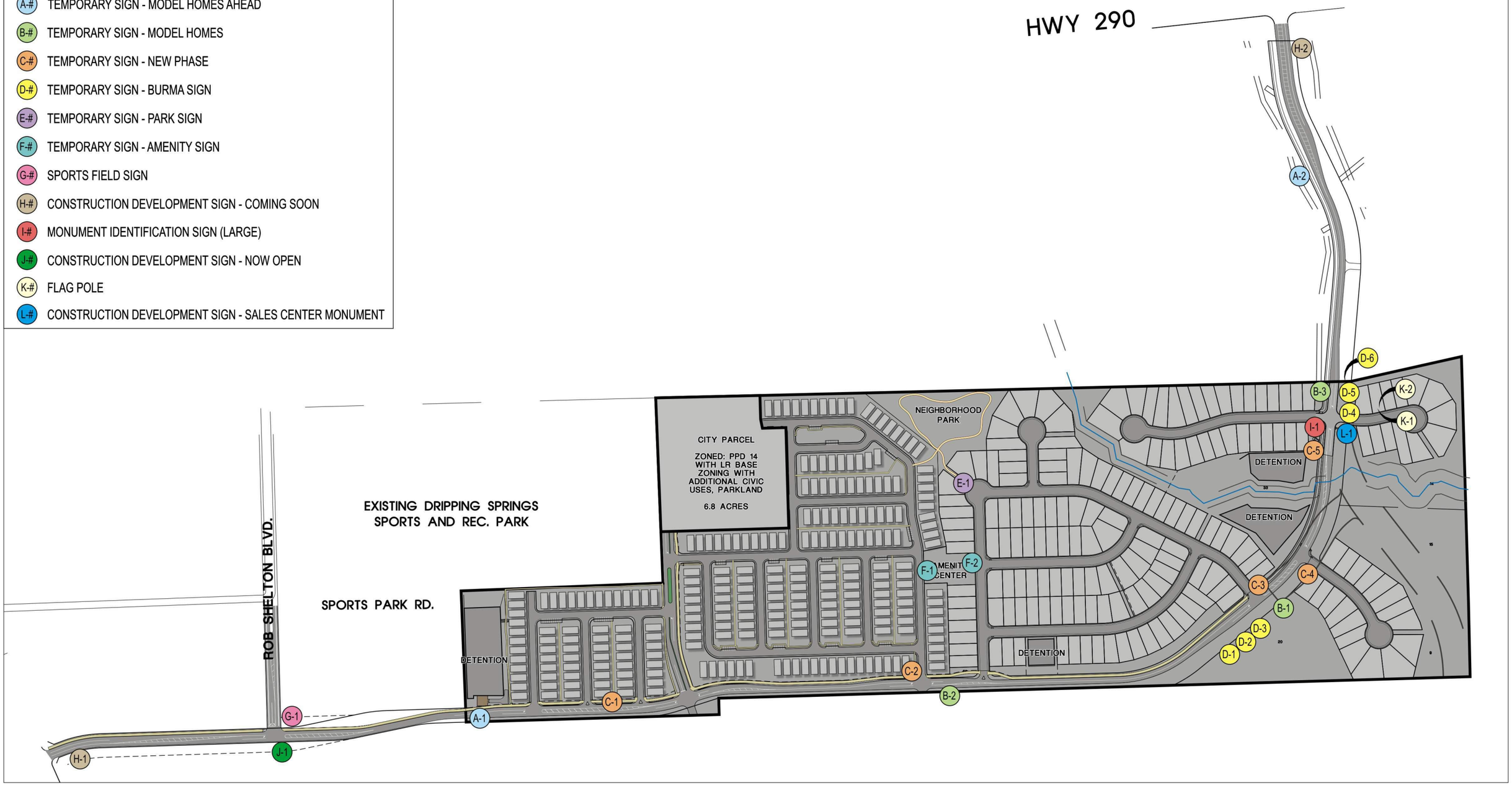
other available relief; and

(3) An impoundment fee may be charged to recover a sign that has been impounded based on the current city fee schedule.

(4) In the event work is not being performed in accordance with this Appendix or Chapter 26, the City shall issue a stop work order and all work shall immediately cease. No further work shall be undertaken on the project as long as a stop work order is in effect.

SIGN LEGEND

- A-# TEMPORARY SIGN - MODEL HOMES AHEAD
- B-# TEMPORARY SIGN - MODEL HOMES
- C-# TEMPORARY SIGN - NEW PHASE
- D-# TEMPORARY SIGN - BURMA SIGN
- E-# TEMPORARY SIGN - PARK SIGN
- F-# TEMPORARY SIGN - AMENITY SIGN
- G-# SPORTS FIELD SIGN
- H-# CONSTRUCTION DEVELOPMENT SIGN - COMING SOON
- I-# MONUMENT IDENTIFICATION SIGN (LARGE)
- J-# CONSTRUCTION DEVELOPMENT SIGN - NOW OPEN
- K-# FLAG POLE
- L-# CONSTRUCTION DEVELOPMENT SIGN - SALES CENTER MONUMENT



SEC Planning, LLC

Land Planning + Landscape Architecture + Community Branding

AUSTIN, TEXAS
t 512.246.7003
www.secplanning.com + info@secplanning.com

EXHIBIT D
MASTER SIGN PLAN

VILLAGE GROVE

DRIPPING SPRINGS, TEXAS

North

0 200 400 800

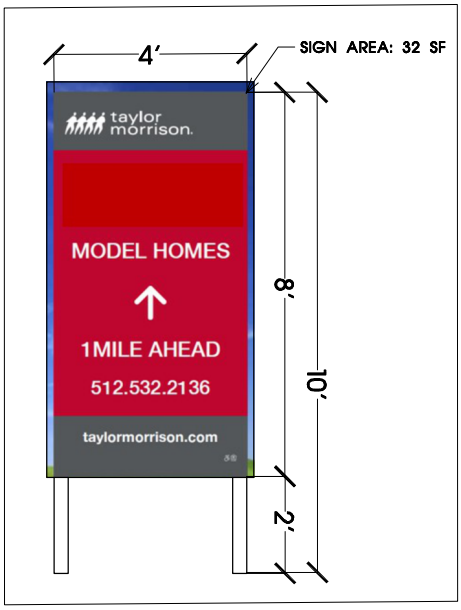
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Date: August 8, 2025

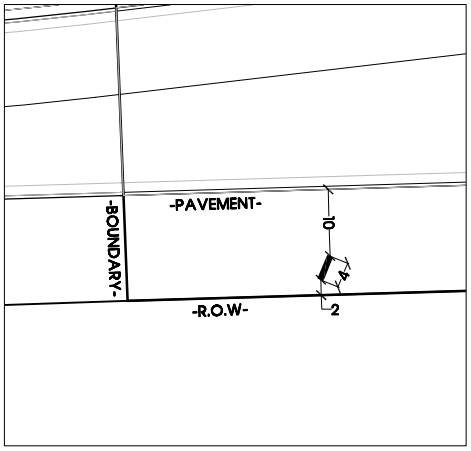
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Base mapping compiled from best available information. All map data should be considered as preliminary, in need of verification, and subject to change. This land plan is conceptual in nature and does not represent any regulatory approval. Plan is subject to change.

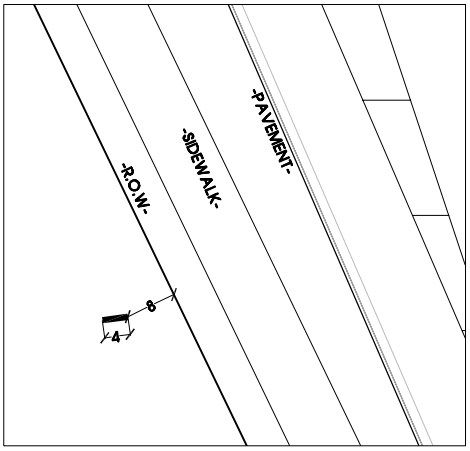
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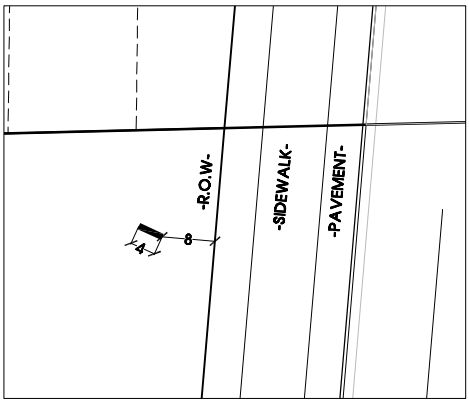
A TEMPORARY SIGN
MODEL HOMES AHEAD



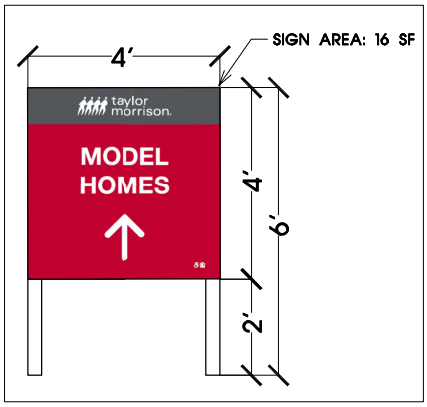
A-1 MODEL HOMES AHEAD
LOCATION 1



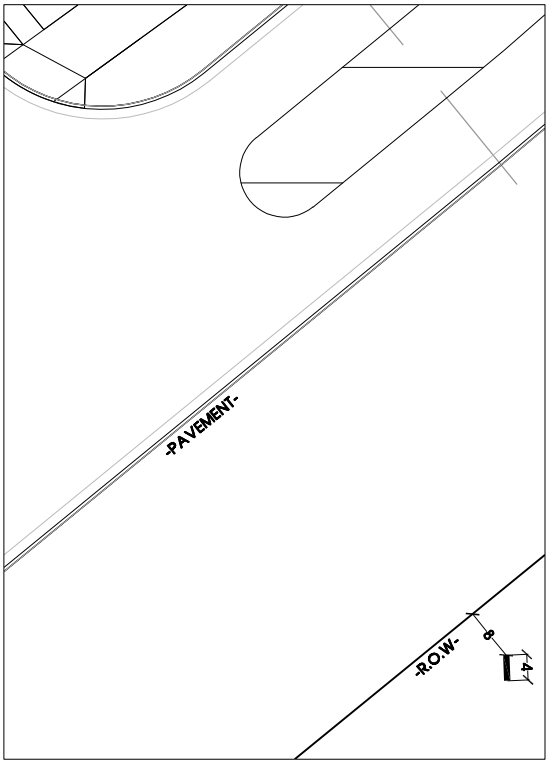
A-2 MODEL HOMES AHEAD
LOCATION 2



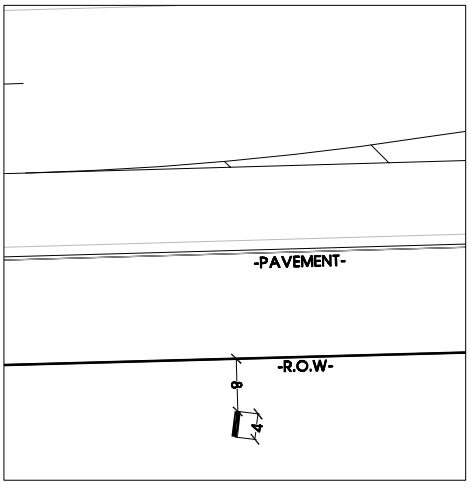
B-3 MODEL HOMES
LOCATION 3



B TEMPORARY SIGN
MODEL HOMES



B-1 MODEL HOMES
LOCATION 1



B-2 MODEL HOMES
LOCATION 2

VILLAGE GROVE

SEC Planning, LLC
Land Planning + Landscape Architecture + Community Branding

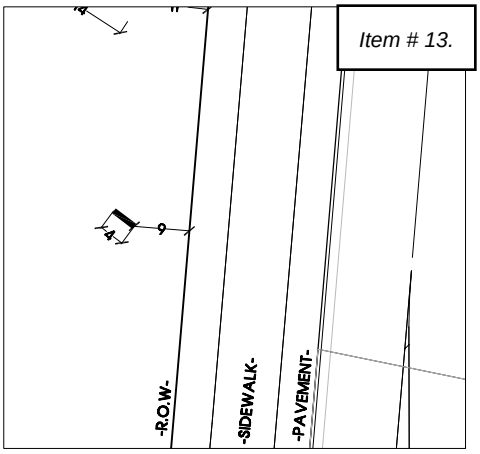
AUSTIN, TEXAS
t 512.246.7003 + f 512.246.7703
www.secplanning.com + info@secplanning.com

Exhibit D-1
Community Signage

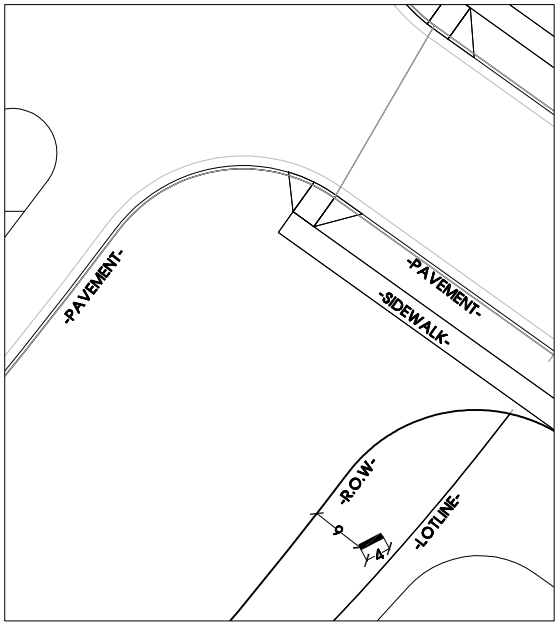
Date: August 8, 2025

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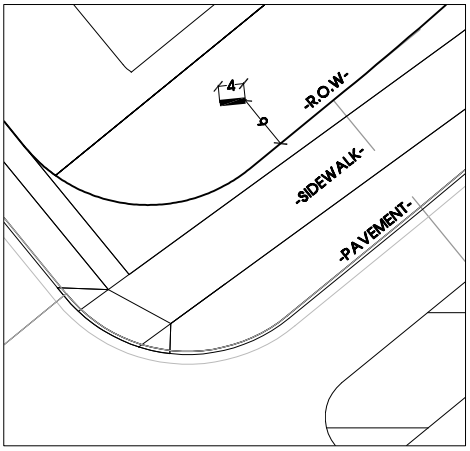
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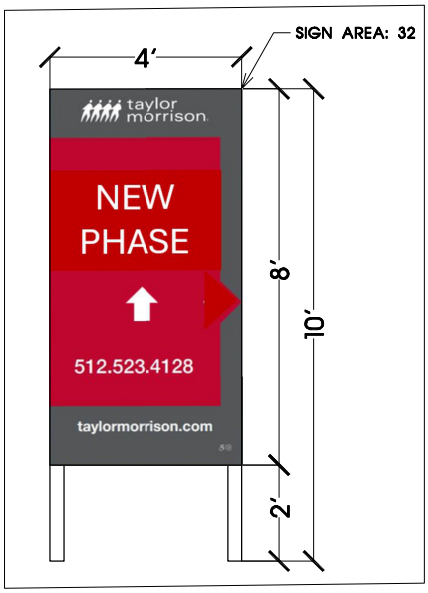
C-5 NEW PHASE
LOCATION 5



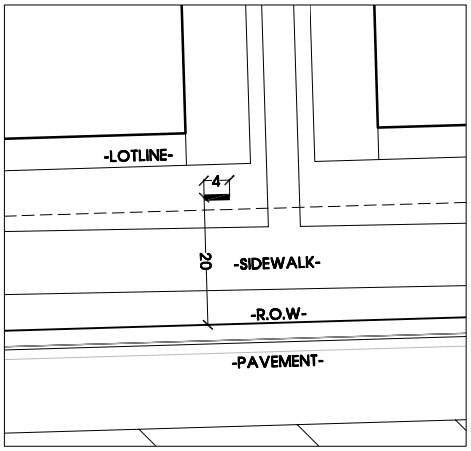
C-4 NEW PHASE
LOCATION 4



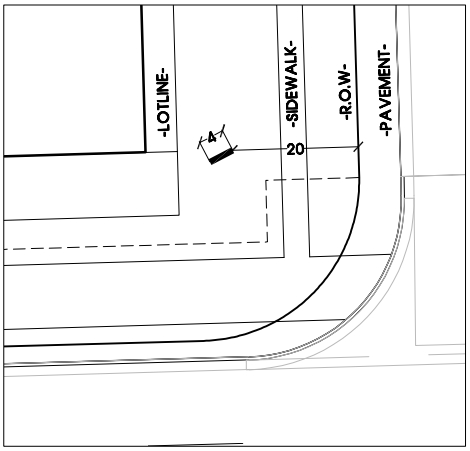
C-3 NEW PHASE
LOCATION 3



C TEMPORARY SIGN
NEW PHASE



C-1 NEW PHASE
LOCATION 1



C-2 NEW PHASE
LOCATION 2

VILLAGE GROVE

SEC Planning, LLC
Land Planning + Landscape Architecture + Community Branding

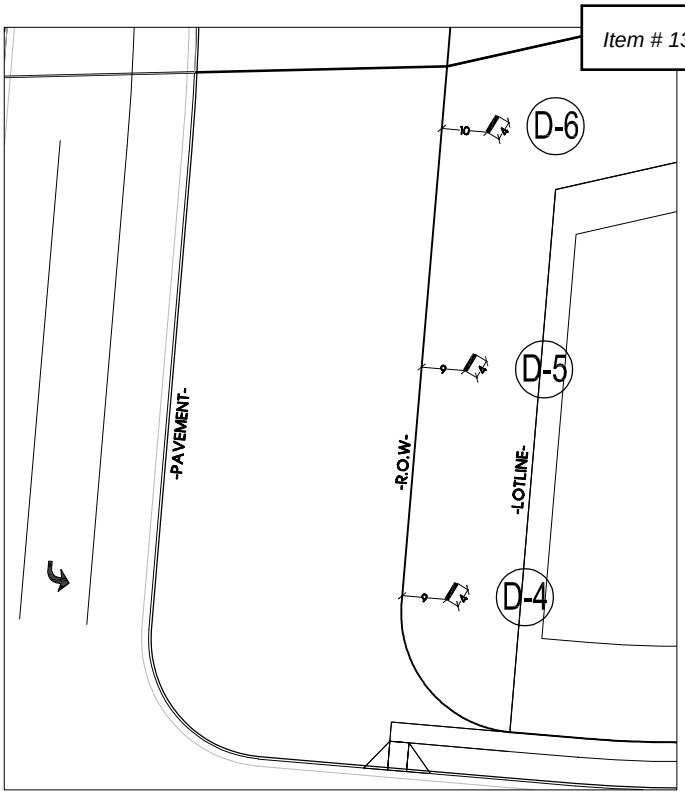
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Exhibit D-2
Community Signage

Date: August 8, 2025

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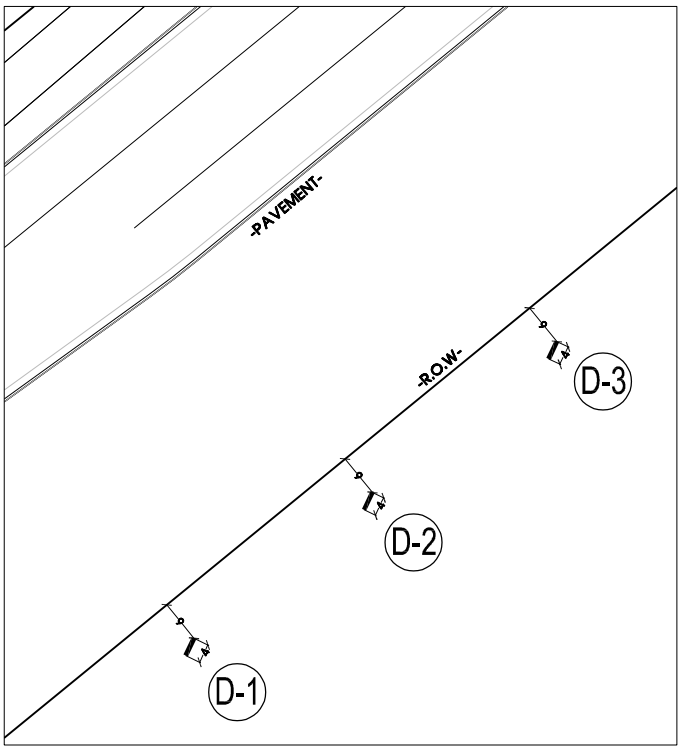
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BURMA SIGNS
LOCATION 4-6

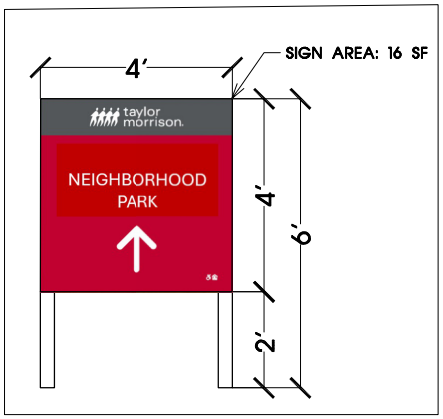


D **TEMPORARY SIGN**
BURMA SIGN

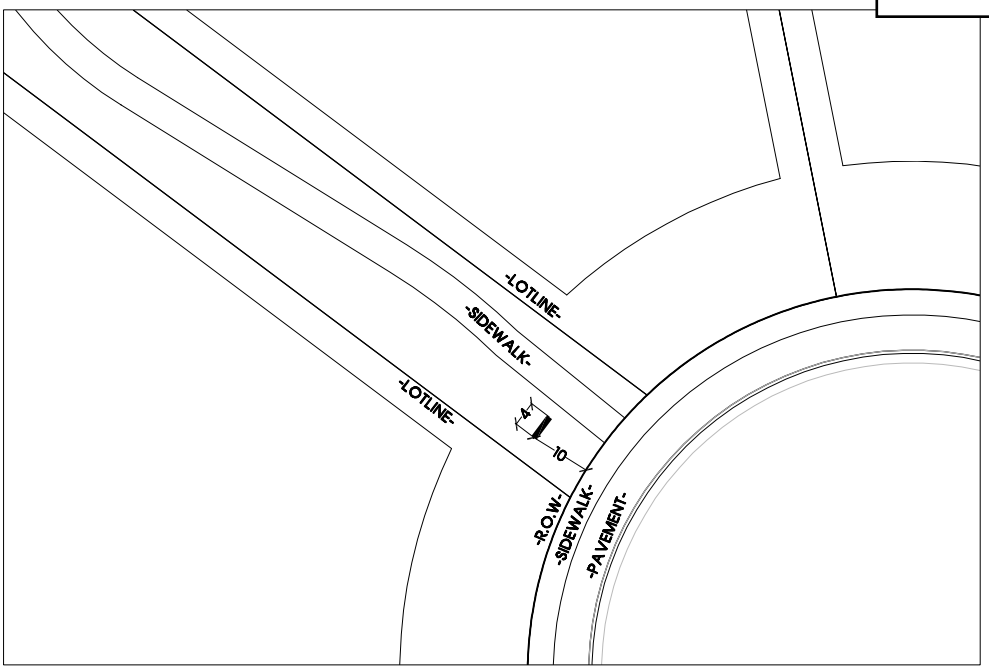


BURMA SIGNS
LOCATION 1-3

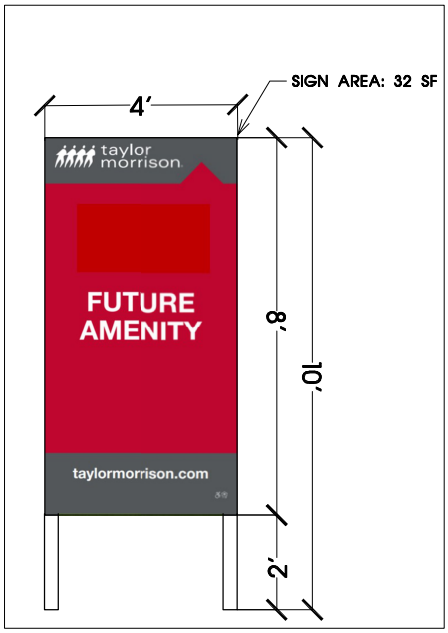
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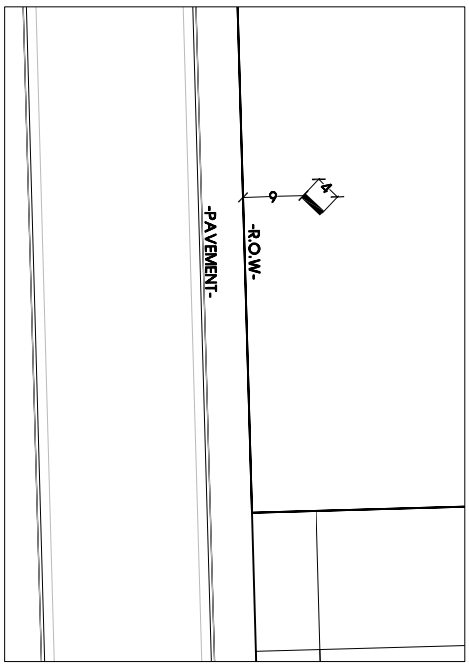
E **TEMPORARY SIGN**
PARK SIGN



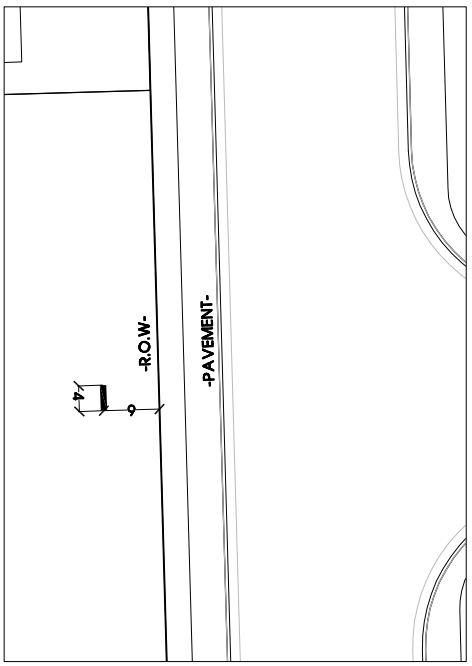
E-1 **PARK SIGN**
LOCATION 1



F **TEMPORARY SIGN**
AMENITY SIGN

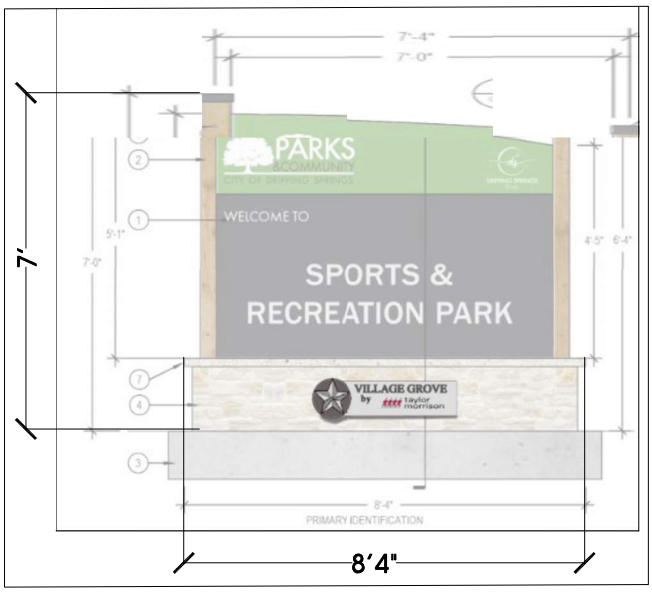


F-1 **AMENITY SIGN**
LOCATION 1

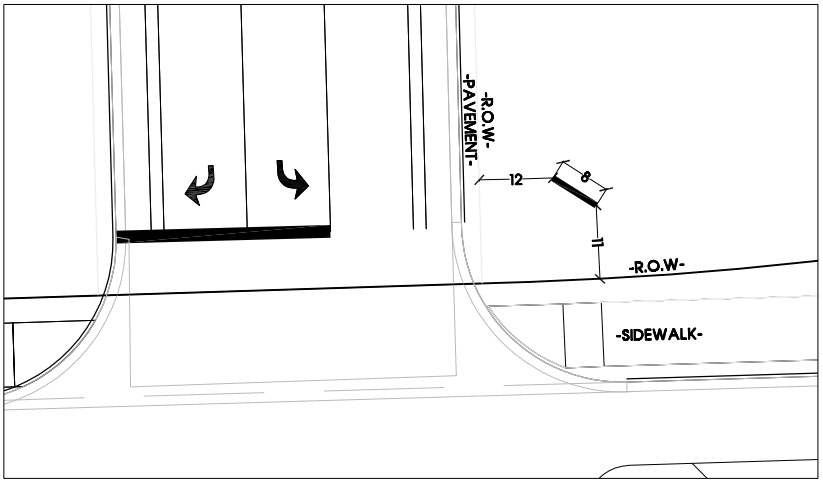


F-2 **AMENITY SIGN**
LOCATION 2

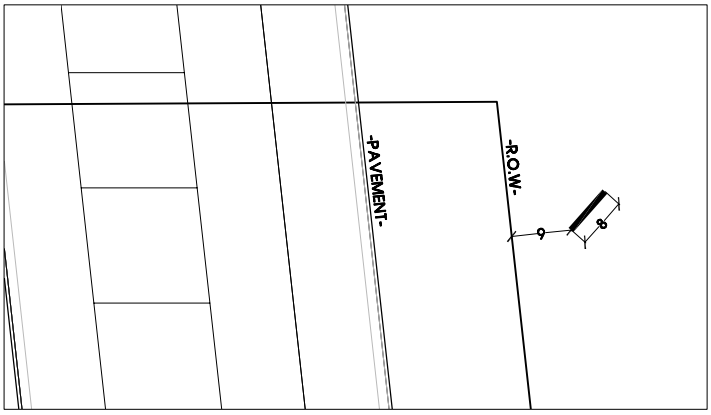
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G **SPORTS FIELD SIGN**



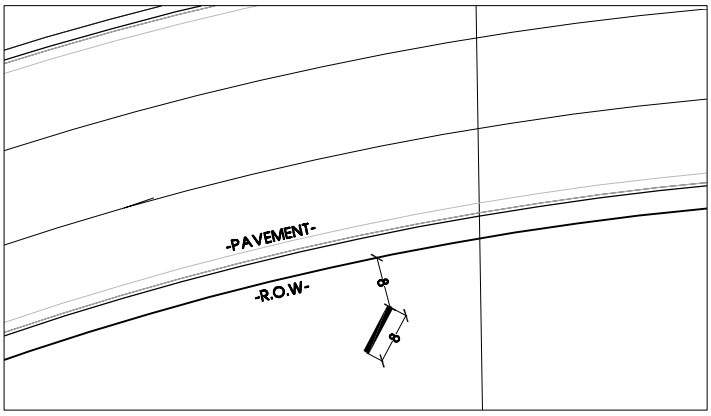
G-1 **SPORTS FIELD SIGN**
LOCATION 1



H-2 **COMING SOON SIGN**
LOCATION 2

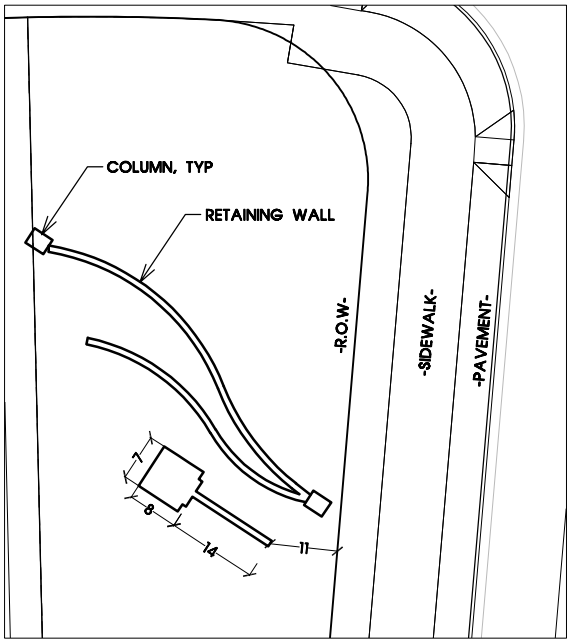


H **CONSTRUCTION DEVELOPMENT SIGN**
COMING SOON SIGN

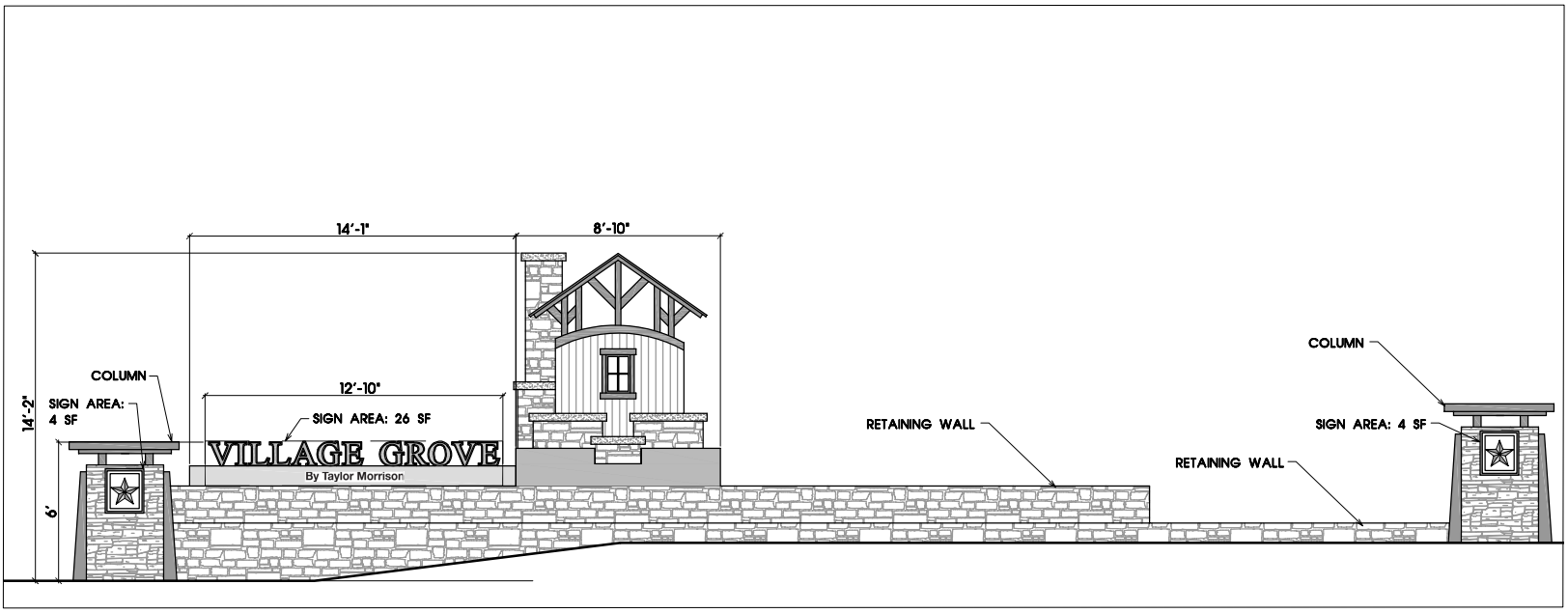


H-1 **COMING SOON SIGN**
LOCATION 1

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I-1 MONUMENT IDENTIFICATION SIGN LOCATION 1



I MONUMENT IDENTIFICATION SIGN

VILLAGE GROVE

SEC Planning, LLC

Land Planning + Landscape Architecture + Community Branding

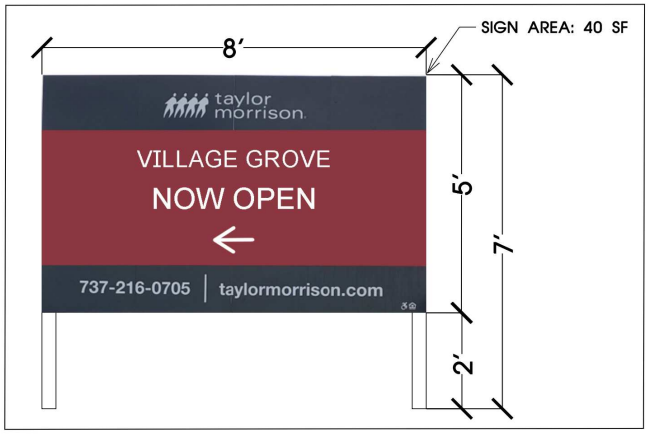
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Exhibit D-6
Community Signage

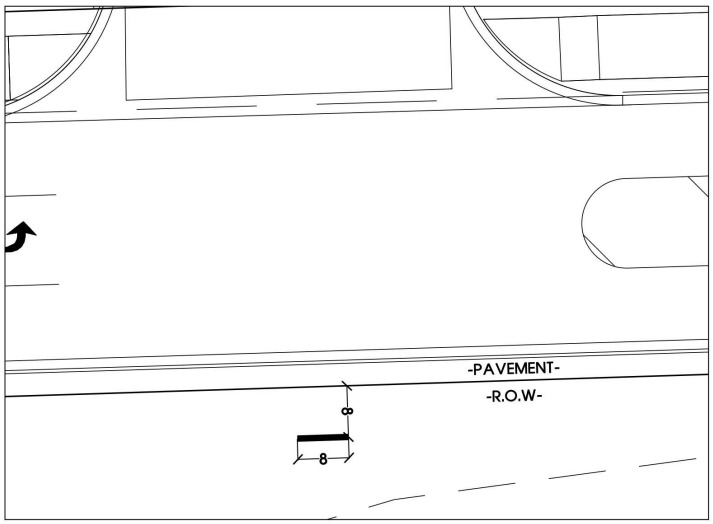
Date: August 8, 2025

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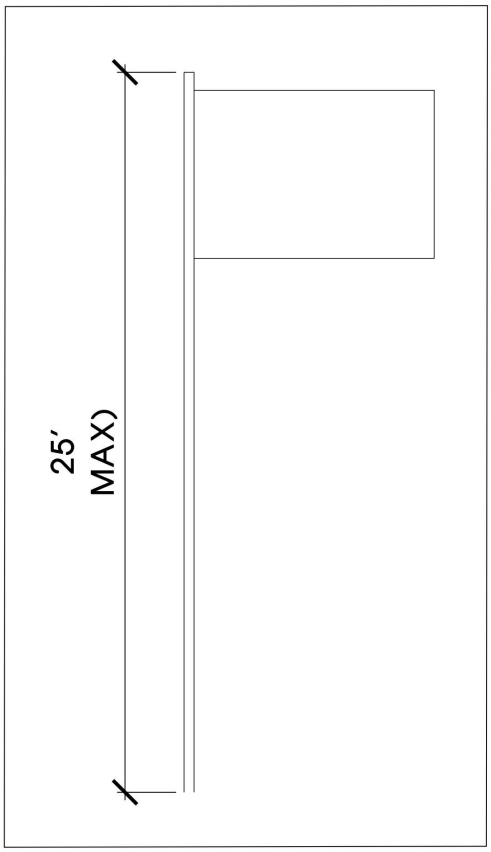
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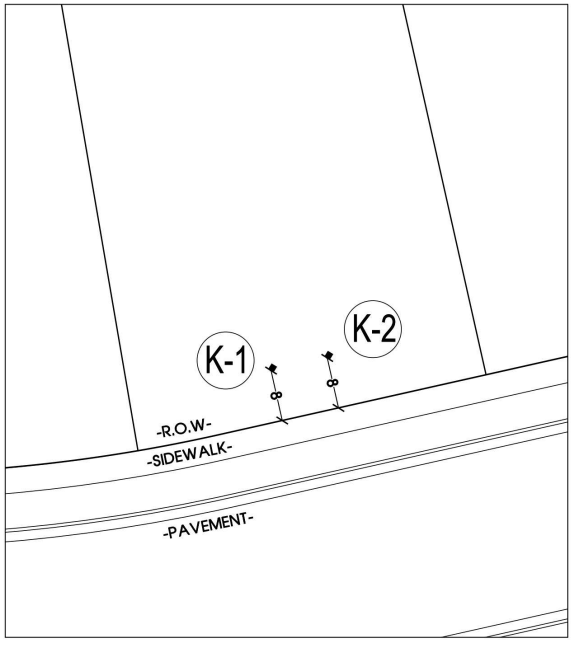
J CONSTRUCTION DEVELOPMENT SIGN
NOW OPEN SIGN



J-1 NOW OPEN SIGN
LOCATION 1



K FLAG POLE



FLAG POLE
LOCATIONS 1-2

VILLAGE GROVE

SEC Planning, LLC
Land Planning + Landscape Architecture + Community Branding

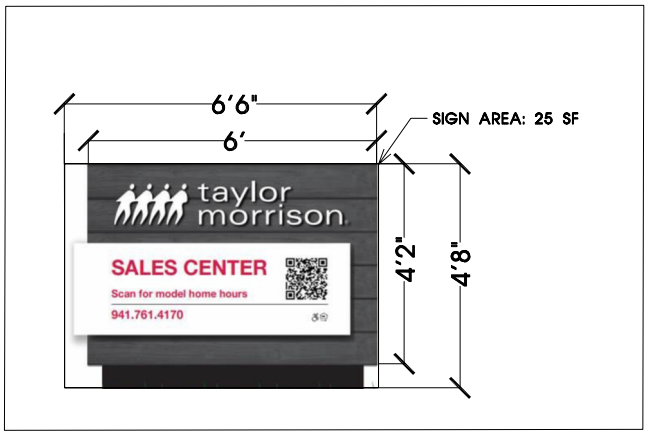
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Exhibit D-7
Community Signage

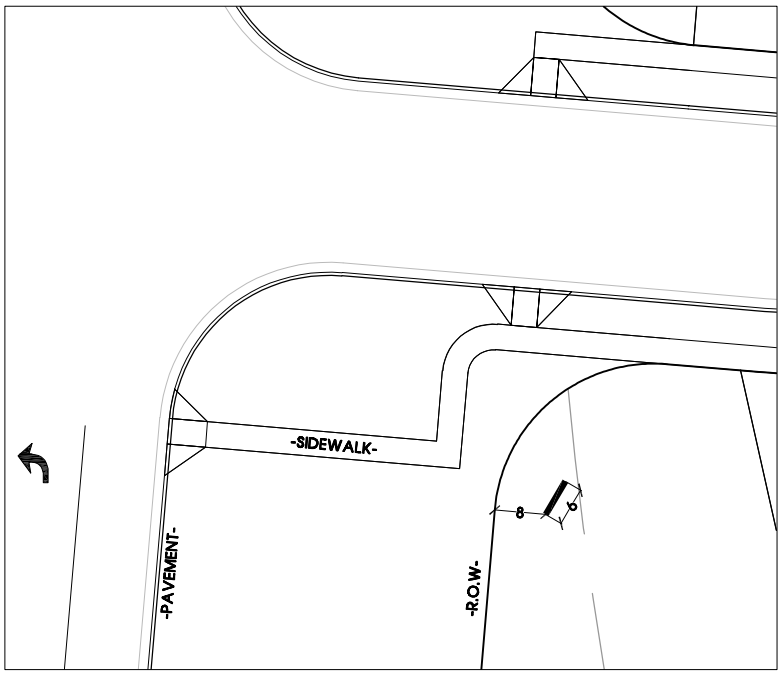
Date: August 8, 2025

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L **CONSTRUCTION DEVELOPMENT SIGN**
SALES CENTER MONUMENT



L-1 **SALES CENTER MONUMENT**
LOCATION 1

VILLAGE GROVE

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Land Planning + Landscape Architecture + Community Branding

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Exhibit D-8
Community Signage

Date: August 8, 2025

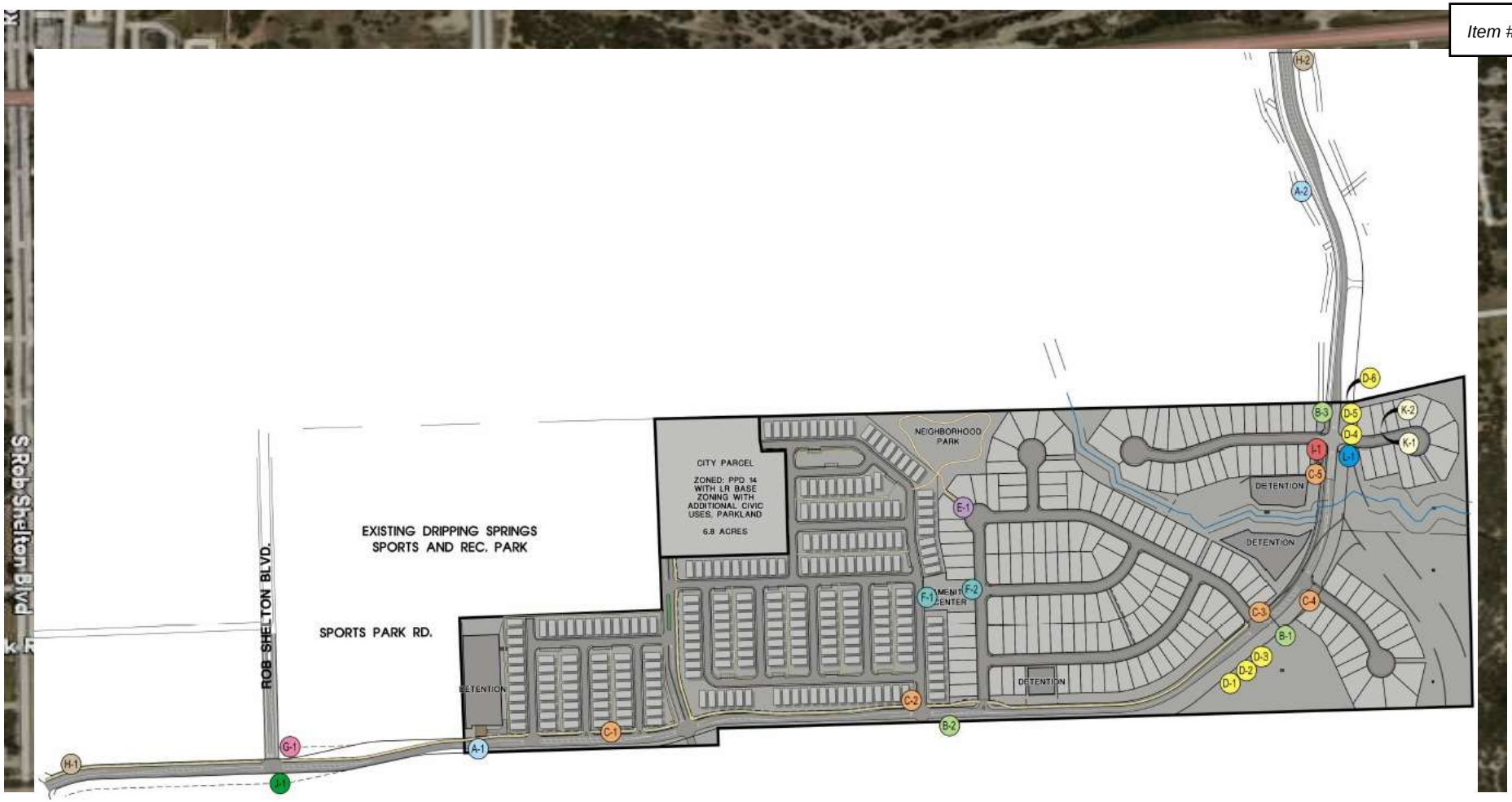
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DRIPPING SPRINGS
Texas

Village Grove Master Sign Plan

Village Grove Master Sign Plan



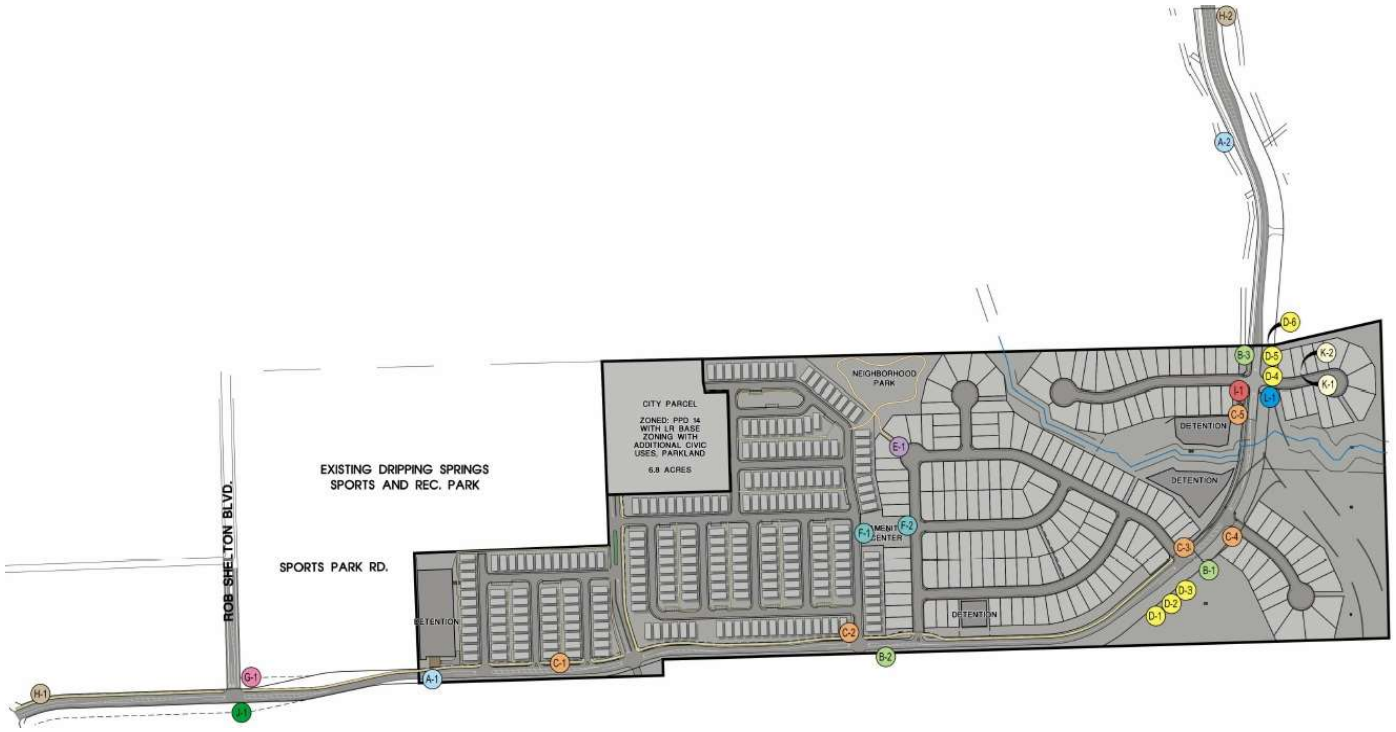
Site Details

Zoning: PDD-14 Single Family - 5 (262) Single Family - 3 (180) Local Retail	Phase I improvements accepted. No active construction permits.	Located Southeast of Highway 290 and Ranch Road 12 intersection and surrounded by a mix of residential and commercial.

DRIPPING SPRINGS
Texas

Village Grove Master Sign Plan

Overview



Taylor Morrison is proposing a Master Sign Plan for Village Grove.

The project includes 2 flag poles and 25 total signs, 22 of which are temporary

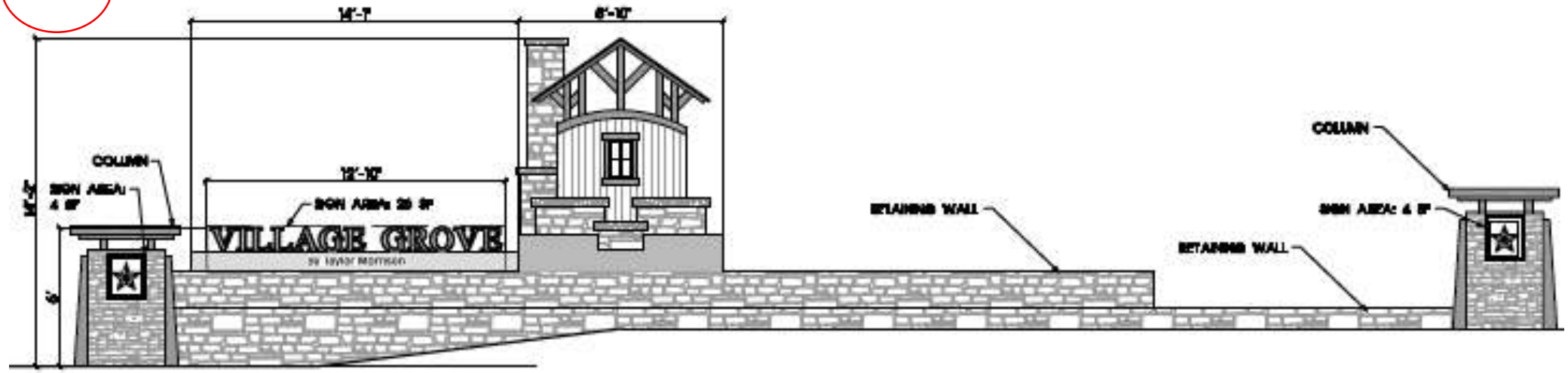
The Master Sign Plan includes variances for the following:
26.02.001 - Residential Districts
(iv) One additional Construction/Development sign Directional signs
26.04.008 – Additional Temporary Signs
21 additional temporary signs to remain through completion of the final phase of subdivision construction.

DRIPPING SPRINGS
Texas

Village Grove Master Sign Plan

Proposed permanent signs

I-1



L-1



G-1



DRIPPING SPRINGS
Texas

Village Grove Master Sign Plan

Proposed temporary signs and flag poles

A-2



B-3



C-5



D-6



E-1



F-2



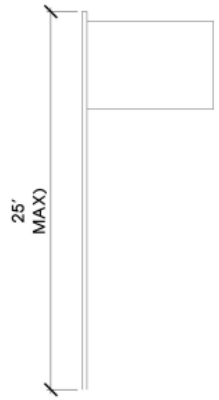
H-2



J-1



K-2



DRIPPING SPRINGS
Texas

Mitigation strategy

Village Grove Master Sign Plan

- Applicant reduced heights on all temporary, off-premise, and secondary entry signs, and reduced the flagpole height.
- Landscaped area of the large community sign exceeds code requirements.

DRIPPING SPRINGS
Texas

Village Grove Master Sign Plan

Variance Criteria

1.	Special or unique hardship because of the size or shape of the property on which the sign is to be located, or the visibility of the property from public roads.
2.	Hardship claim based on the exceptional topographic conditions or physical features uniquely affecting the property on which a sign is to be located.
3.	Proposed sign location, configuration, design, materials and colors are harmonious with the hill country setting.
4.	Natural colors (earth tones) and muted colors are favored. Color schemes must be compatible with the surrounding structures. Predominate use of bold and/or bright colors is discouraged under this section.
5.	The sign and its supporting structure is in architectural harmony with the surrounding structures.

DRIPPING SPRINGS
Texas

Village Grove Master Sign Plan

Variance Criteria

6.	Mitigation measures related to the sign in question or other signs on the same premises. to the sign in question or other signs on the same premises.
7.	Demonstrated and documented correlation between the variance and protecting the public health and safety.
8.	The stage at which the variance is requested. The city will be more inclined to consider a variance request when it is sought during an earlier stage of the construction approval process, for instance when the responsible party is submitting/obtaining a plat, planned unit development, development agreement, or site plan.
9.	Whether the sign could have been included in a master signage plan. Master signage plans are highly encouraged. The city will be more inclined to favorably consider a variance request when the variance is part of a master signage plan. There will be a presumption against granting variances piecemeal, ad hoc, on a case-by-case basis when the sign for which a variance is sought could have been included in a master sign plan and considered in the course of a comprehensive review of the entire project's signage.
10.	The sign administrator may authorize the remodeling, renovation, or alteration of a sign when some nonconforming aspect of the sign is thereby reduced.

DRIPPING SPRINGS
Texas

Village Grove Master Sign Plan

Staff Recommendation

Parks and Recreation Commission has not discussed or approved the Village Grove/ Taylor Morrison sign being placed on the Sports & Recreation Park sign.

Staff recommends approval of the Master Sign Plan with the Village Grove/ Taylor Morrison sign approval pending PRC decision on 15 October.

DRIPPING SPRINGS
Texas

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78602

Submitted By: Shane Pevehouse, Building Official

Council Meeting Date: 8 September, 2025

Agenda Item Wording:

Agenda Item Sponsor:

Summary/Background: Proposing updated Residential and Commercial Fees (Updated)

Background:

On 2 September, new Building Department Fees were presented at City Council, but were rescheduled to a future date based on suggested revisions.

To recap, new Permit Fees are being requested based on current fees not covering department operating costs.

Using data from May of 2024 to May of 2025, the total Department Operating Costs were $2,099,737.00 and total revenue (not including reinspection or impact fees) was $1,237,476.40, leaving a deficit of $862,260.00.

The recommended change to New Residential Construction permits was reduced from $1.20/sqft to $1.00/sqft. Additions, Remodels, and Accessory Structures are $0.50/sqft plus inspections required for the Scope of Work. As proposed, these changes will increase fees, but do not fully fund the department. Based on the information above and fee revisions, there would be a funding shortfall of $305,184.00.

Using $1.00/sqft of conditioned space, most homes below 3,000sqft would pay near the same amount or less under the new fees. For example, a home that reported 2,017 square feet under the existing method paid $0.84/sq ft for a total of $1,700. However, the conditioned spaced was 1,595. Using the new method, the fee would be $1,595 - $105 less.

Proposal:

I recommend adopting all proposed fees with the Residential Permit Fee set at $1.00/sqft of conditioned space only.

I recommend phasing out the doubling reinspection fee and replacing it with the proposed flat fee of $150 for Residential and $250 for Commercial.

Conclusion:

We recommend the City Council's approval of this update.

Commission Recommendations:

Recommended Council Actions: Approval

Attachments: Proposed Fee Schedule changes

Power Point presentation

Fee Study backup data

Next Steps/Schedule: Send to City Secretary for execution

CITY OF DRIPPING SPRINGS

ORDINANCE No. 2025-28

AN ORDINANCE REPEALING AND REPLACING APPENDIX A: ARTICLE Al.000 (GENERAL PROVISIONS) OF THE DRIPPING SPRINGS CODE OF ORDINANCES; AMENDING BUILDING FEES; AND UPDATING FEE SCHEDULE FORMATS; PROVIDING FOR THE FOLLOWING: FINDINGS OF FACT; ENACTMENT; REPEALER, SEVERABILITY; PUBLICATION; EFFECTIVE DATE; AND PROPER NOTICE AND MEETING.

WHEREAS, the City Council of the City of Dripping Springs ("City Council") seeks to provide for reasonable fees, including updating fees for building and sign code fees; and

WHEREAS, the City Council finds that the attached schedule of fees and updated format is reasonable and prudent considering the municipal resources expended in the provision of building services; and

WHEREAS, the fees approved and instituted by this ordinance are consistent with, and in accordance with, the annual budget for the City; and.

WHEREAS, pursuant to Texas Local Government Code Section 51.001, the City has general authority to adopt an ordinance or police regulation that is for the good government, peace or order of the City and is necessary or proper for carrying out a power granted by law to the City.

NOW, THEREFORE, BE IT ORDAINED by the Dripping Springs City Council:

1. FINDINGS OF FACT

The foregoing recitals are incorporated into this Ordinance by reference as findings of fact as if expressly set forth herein.

2. ENACTMENT

Appendix A, Article Al .000 of the City of Dripping Springs Code of Ordinances as it relates to Building Fees, is repealed and replaced by Attachment "A", which is attached hereto and incorporated into this Ordinance for all intents and purposes.

3. REPEALER

All ordinances, or parts thereof, that are in conflict or inconsistent with any provision of this

Ordinance are hereby repealed to the extent of such conflict, and the provisions of this Ordinance shall be and remain controlling as to the matters regulated, herein.

4. SEVERABILITY

Should any of the clauses, sentences, paragraphs, sections, or parts of this Ordinance be deemed invalid, unconstitutional, or unenforceable by a court of law or administrative agency with jurisdiction over the matter, such action shall not be construed to affect any other valid portion of this Ordinance.

5. CODIFICATION

The City Secretary is hereby directed to record and publish the attached rules, regulations and policies in the City's Code of Ordinances as authorized by Section 52.001 of the Texas Local Government Code.

6. EFFECTIVE DATE

This Ordinance shall be effective on January 1, 2025.

7. PROPER NOTICE & MEETING

It is hereby officially found and determined that the meeting at which this Ordinance was passed was open to the public, and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Texas Government Code, Chapter 551. Notice was also provided as required by Chapter 52 of the Texas Local Government Code.

PASSED & APPROVED this, the _____ day of October, 2025, by a vote of __ (ayes) to __ (nays) to _0_ (abstentions/recusals) of the City Council of Dripping Springs, Texas.

CITY OF DRIPPING SPRINGS:

_____
Bill Foulds, Jr., Mayor

ATTEST:

_____
Diana Boone, City Secretary

City of Dripping Springs, Texas
Schedule of Rates, Fines, Fees, and Charges
Approved Fiscal Year 2025-2026 Budget

Building (Residential, Commercial and Multi-family, and Signs) Permit Fees				
	Dept	**Residential**	**FY 2025**	**FY 2026**
	Building	One- and Two-Family New Residential Permit	Varies	$1.00/ft2
	Building	Mobile/Modular Home Permit	$450	$0.50/ft2
	Building	Construction Trailer Permit (Plus inspections for Scope of Work)	N/A	$0.50/ft2
	Building	Addition/Alteration/Remodel (Plus inspections for Scope of Work)	$120	$0.50/ft2
	Building	Accessory Building (Plus inspections for Scope of Work)	$192	$0.50/ft2
	Building	Additional Dwelling Unit	Varies	$1.00/ft2
	Building	Stand Alone Trade Permit (Plus inspections for Scope of Work)	$120	$200
	Building	Inspection Fee (for inspections not covered by the Residential Permit Fee)	$100	$100
	Building	After Hours Inspection Fee	N/A	$200
	Building	Remote Virtual Inspection Fee	N/A	$100
	Building	Reinspection Fee (Including Remote Virtual Reinspection)	Varies	$150
	Building	Expired Permit Renewal Fee (Site visit inspection and plan review)	Varies	$250
	Building	Pre-Construction Meeting (only upon request and limited to 1 hour max)	N/A	$180/hour
	Building	Swimming Pool Permit	$450	$450
	Building	Swimming Pool Review (for pools not requiring building review with certain Development Agreements)	$75	$100
	Building	Plan reviews requiring more than 3 rounds of comments ($50/additional review)	N/A	$50
	Building	Plan Review $95/hour	N/A	$95
	Building	Plan Revision for Approved Permit ($50/additional review)	N/A	$50
	Building	Unauthorized Occupancy	$750	$2,000
	Building	Waiver/Variance	$500	$500
	Building	Demolition Permit	$100	$250
	Building	On Site Sewage Facility Permit	Varies	$600
	Building	Child/Adult Care Sanitation Permit (renewed annually)	$200	$300
	Building	Double permit fees for project started without a permit	Varies	Varies

	Dept	**Commercial and Multi-Family**	**FY 2025**	**FY 2026**
	Building	Building Permit Fee - per ICC Building Valuation Data Table and fees below		
	Building	$1.00 - $10,000 valuation	$160	$200

Building	$10,000.01 - $25,000.00 valuation ($200+ $17.00 for each additional $1,000.00, or fraction thereof, to and including $25,000.00)	Varies	Varies
Building	$25,000.01 - $50,000.00 valuation ($455+ $13.00 for each additional $1,000.00, or fraction thereof, to and including $50,000.00)	Varies	Varies
Building	$50,000.01 - $100,000 valuation ($780+ $9.00 for each additional $1,000.00, or fraction thereof, to and including $100,000.00)	Varies	Varies
Building	$100,000.01 - $500,000.00 valuation ($1,230+ $8.00 for each additional $1,000.00, or fraction thereof, to and including $500,000.00)	Varies	Varies
Building	$500,000.01 - $1.000,000.00 valuation ($4,430+ $7.00 for each additional $1,000.00, or fraction thereof, to and including $1,000,000.00)	Varies	Varies
Building	Valuation more than $1,000,000.00 ($7,930+ $5.00 for each additional $1,000.00, or fraction thereof	Varies	Varies
Building	Construction Trailer/Modular Building Permit (Plus inspections for Scope of Work)	Varies	$0.50/ft2
Building	Stand Alone Trade Permit (Plus inspections for Scope of Work)	$120	$300
Building	Inspection Fee (for inspections not covered by the Commercial Permit Fee)	N/A	$200
Building	After Hours Inspection Fee	N/A	$300
Building	Remote Virtual Inspection Fee	N/A	$150
Building	Reinspection Fee (Including Remove Virtual Reinspection)	Varies	$250
Building	Expired Permit Renewal (Site visit inspection and plan review)	Varies	$500
Building	Pre-Construction Meeting (only upon request and limited to 1 hour max)	$180/hour	$180/hour
Building	Swimming Pool Annual Inspection	$240	$240
Building	Plan Review requiring more than 3 rounds of comments ($100/additional review)	N/A	$100
Building	Plan Revisions ($100/additional review)	N/A	$100
Building	Certificate of Occupancy (Includes Plan Review and 1 inspection)	$60	$180
Building	Unauthorized Occupancy	$750	$2,000
Building	Outdoor Lighting Review	N/A	$138/hour
Building	Outdoor Lighting Inspection	N/A	$138/hour
Building	Waiver/Variance	$500	$500
Building	Demolition Permit	$200	$400
Building	On Site Sewage Facility Permit	$800	$1,250
Building	Food Establishment Permit (renewed annually)	Varies	$450
Building	Food Establishment Compliance Inspection Fee	$200	$200
Building	Mobile Food Unit Permit (restricted and unrestricted)	$200	$200
Building	Food Permit Change of Name/Ownership	$100	$100
Building	Temp Food Event (fee per day)	$30	$30
Building	Child/Adult Care, Church, School Establishment Permit (renewed annually)	Varies	$300
Building	Double permit fees for project started without a permit	Varies	Varies

Dept	Signs	FY 2025	FY 2026
Building	Real Estate Sign (12-month permit; requires annual renewal)	$50	$150
Building	Real Estate - Individual Lease Units (12-month permit; requires annual renewal)	$0	$100
Building	Monument Sign ($7.50/ft2)	Varies	Varies
Building	Building Sign (Wall, Fence, Awning, Hanging) ($4.50/ft2)	Varies	Varies
Building	Banner	$25	$25
Building	Construction Development Sign (12-month permit; requires annual renewal)	$50	$150
Building	Restaurant Menu ($7.50/ft2)	$225	Varies
Building	Tenant Panel on Multi-Unit Monument ($7.50/ft2)	$250	Varies
Building	Master Sign Plan and Ordinance Review (does not include sign or variance fees)	$300	$500
Building	Impounded Sign Recovery Fee	$25	$25
Building	Waiver/Variance	$150	$500
Building	Plan Review requiring more than 3 rounds of comments ($50/additional review)	N/A	$50
Building	Plan Revisions ($50/additional review)	N/A	$50
Building	Double permit fees for project started without a permit	Varies	Varies

Administrative and General Fees & Charges

Fee Schedule change proposal (updated)

Shane Pevehouse, Building Official

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Revisions based on City Council meeting on 2 September, 2025

New Residential Construction reduced to $1.00/ft^2

Addition/Alteration/Remodel/Accessory structure reduced to $0.50/ft^2 (Plus reinspection fees for Scope of Work)

Additional slides demonstrating fee increase impact to Residential and Commercial Construction projects

As proposed, permit fees will not cover operating costs

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

City costs for permitting

Description	Costs
Direct	
Permitting Software	$1,600/month
Tracers Investigative Software	$100/month
Bluebeam Software	$40/month
Administrative time for permit processing (2-4 hours for the life of the permit, including email and phone call support)	$65-$425
Plan Review (Building (3rd party), Planning, Lighting, Fire, Environmental Health)	$170-$700
Field Inspections (Building (3rd party and in-house), Lighting, Fire, Environmental Health, Public Works, Landscape, Exterior Architecture)	$800-$2,700
Indirect	
Facilities and Utilities	$2,116/month
Supporting Staff (City Administrators, Legal Department, Human Resources, Finance, City Secretary, City Engineer, IT, People and Comms, Administrative Assistant/Receptionist, Public Works)	$11,105/month
Vehicles (acquisition, fuel, preventive and corrective maintenance, equipment)	$2,340/month
Inspection Equipment (tablets, markers, flashlights, bore scopes, tool bag w/tools, ladders, books, etc.)	$75/month
Training and Education to maintain a certified, professional, and knowledgeable staff	$2,000/month
Clothing	$300/month
Salaries and Benefits	$56,561/mont
IT Equipment and Software (laptops and peripherals, desk phones, cell phones, Microsoft Office, Adobe Pro, Ring Central, City Website host)	$1,241/month

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Texas

Fee Schedule change proposal

Department Operating Costs May '24 – May '25

Category	Details of Category	
3rd Party	Costs for 3rd Party Residential and Commercial Plan Review and Inspections	$1,146,020.00
Salary and Compensation	Salaries, Overtime, Health, Dental, Medicare, Social Security, Unemployment, and Retirement	$735,291.00
Supporting Staff	City Administrators, Legal Department, Human Resources, Finance Department, City Secretary, City Engineer, IT, People and Communications, Administrative Assistant/Receptionist, Public Works	$144,625.00
Vehicles	Acquisition, Fuel, Preventive and Corrective maintenance, and Equipment	$30,420.00
IT Equipment and Software	Laptops and Peripherals, Tablets, Desk Phones, Cell Phones, Microsoft Office, Adobe Pro, Ring Central, City Website Host, MGO	$16,133.00
Permit Fees Collected	Permit Fees collected based on report living area, covered porches, garages, and driveways. Reinspection fees and connection fees are not included	$1,237,476.40
	Total:	-$862,260.00

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Department Operating Costs May '24 – May '25 using proposed permit fees

Category	Details of Category	
3rd Party	Costs for 3rd Party Residential and Commercial Plan Review and Inspections	$1,146,020.00
Salary and Compensation	Salaries, Overtime, Health, Dental, Medicare, Social Security, Unemployment, and Retirement	$735,291.00
Supporting Staff	City Administrators, Legal Department, Human Resources, Finance Department, City Secretary, City Engineer, IT, People and Communications, Administrative Assistant/Receptionist, Public Works	$144,625.00
Vehicles	Acquisition, Fuel, Preventive and Corrective maintenance, and Equipment	$30,420.00
IT Equipment and Software	Laptops and Peripherals, Tablets, Desk Phones, Cell Phones, Microsoft Office, Adobe Pro, Ring Central, City Website Host, MGO	$16,133.00
	Total:	$2,099,737.00
Permit Fees Collected	Permit Fees collected based on conditioned space only for New Residential Construction and all other proposed fee changes	$1,794,553.00
	Total:	-$305,184.00

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Residential Fee schedule

Dept	Residential	FY 2025	FY 2026
Building	One- and Two-Family New Residential Permit	Varies	$1.00/ft2
Building	Mobile/Modular Home Permit (Plus inspections for Scope of Work)	$450	$0.50/ft2
Building	Construction Trailer Permit (Plus inspections for Scope of Work)	N/A	$0.50/ft2
Building	Addition/Alteration/Remodel (Plus inspections for Scope of Work)	$120	$0.50/ft2
Building	Accessory Building (Plus inspections for Scope of Work)	$192	$0.50/ft2
Building	Additional Dwelling Unit	Varies	$1.00/ft2
Building	Stand Alone Trade Permit (Plus inspections for Scope of Work)	$120	$200
Building	Inspection Fee (for inspections not covered by the Residential Permit Fee)	$100	$100
Building	After Hours Inspection Fee	N/A	$200
Building	Remote Virtual Inspection Fee	N/A	$100
Building	Reinspection Fee (Including Remote Virtual Reinspection)	Varies	$150
Building	Expired Permit Renewal Fee (Site visit inspection and plan review)	Varies	$250
Building	Pre-Construction Meeting (only upon request and limited to 1 hour max)	N/A	$180/hour
Building	Swimming Pool Permit	$450	$450
Building	Swimming Pool Review (for pools not requiring building review with certain Development Agreements)	$75	$100
Building	Plan reviews requiring more than 3 rounds of comments ($50/additional review)	N/A	$50

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Residential Fee schedule

Dept	Residential	FY 2025	FY 2026
Building	Plan Review $95/hour	N/A	$95
Building	Plan Revision for Approved Permit ($50/additional review)	N/A	$50
Building	Unauthorized Occupancy	$750	$2,000
Building	Waiver/Variance	$500	$500
Building	Demolition Permit	$100	$250
Building	On Site Sewage Facility Permit	Varies	$600
Building	Child/Adult Care Sanitation Permit (renewed annually)	$200	$300
Building	Double permit fees for project started without a permit	Varies	Varies

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Current fees vs. All inclusive @ $1.00/sqft

* If fee increases to $1.00/ft^2 without changing to conditioned space only

Reported square feet	Current price per square foot	Price difference at $1.00/ft^2
2,017	$0.84	$317
3,022	$0.59	$1,227
4,092	$0.50	$1,618
8,934	$0.40	$5,290
13,615	$0.32	$9,193
18,337	$0.27	$13,301

* Same homes as above using reported conditioned space only

Reported conditioned space	Current price for conditioned space	Price difference at $1.00/ft^2 conditioned
1,595	$1.00	-$105
1,668	$1.07	-$127
3,106	$0.80	$632
6,041	$0.60	$2,397
7,085	$0.62	$2,663
7,944	$0.62	$2,908

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Texas

Fee Schedule change proposal

Current fees vs. proposed increase

Project type	Square feet	Current fees paid	Fees as proposed
Deck and patio	240	$192	$320
Deck and pergola	378	$192	$489
Workout room addition	288	$192	$344
Remodel	442	$552	$621
Sales Office conversion	420	$390	$510
Remodel and addition	825	$624	$1,413
Repair damaged garage	100	$192	$550
Workshop and garage	1,193	$192	$1,500
ADU	600	$192	$600
ADU	1,337	$192	$1,337
ADU	518	$192	$518
ADU	1,160	$192	$1,160

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Commercial Fee schedule

Dept	Commercial and Multi-Family	FY 2025	FY 2026
Building	Building Permit Fee - per ICC Building Valuation Data Table and fees below		
Building	$1.00 - $10,000 valuation	$160	$200
Building	$10,000.01 - $25,000.00 valuation ($200+ $17.00 for each additional $1,000.00, or fraction thereof, to and including $25,000.00)	Varies	Varies
Building	$25,000.01 - $50,000.00 valuation ($455+ $13.00 for each additional $1,000.00, or fraction thereof, to and including $50,000.00)	Varies	Varies
Building	$50,000.01 - $100,000 valuation ($780+ $9.00 for each additional $1,000.00, or fraction thereof, to and including $100,000.00)	Varies	Varies
Building	$100,000.01 - $500,000.00 valuation ($1,230+ $8.00 for each additional $1,000.00, or fraction thereof, to and including $500,000.00)	Varies	Varies
Building	$500,000.01 - $1.000,000.00 valuation ($4,430+ $7.00 for each additional $1,000.00, or fraction thereof, to and including $1,000,000.00)	Varies	Varies
Building	Valuation more than $1,000,000.00 ($7,930+ $5.00 for each additional $1,000.00, or fraction thereof	Varies	Varies
Building	Construction Trailer/Modular Building Permit	Varies	$0.50/ft2
Building	Stand Alone Trade Permit	$120	$300
Building	Inspection Fee (for inspections not covered by the Commercial Permit Fee)	N/A	$200
Building	After Hours Inspection Fee	N/A	$300
Building	Remote Virtual Inspection Fee	N/A	$150
Building	Reinspection Fee	Varies	$250

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Commercial Fee schedule

Dept	Commercial and Multi-Family	FY 2025	FY 2026
Building	Expired Permit Renewal (Site visit inspection and plan review)	Varies	$500
Building	Pre-Construction Meeting (only upon request and limited to 1 hour max)	$180/hour	$180/hour
Building	Swimming Pool Annual Inspection	$240	$240
Building	Plan Review requiring more than 3 rounds of comments ($100/additional review)	N/A	$100
Building	Plan Revisions ($100/additional review)	N/A	$100
Building	Certificate of Occupancy (includes plan review and 1 inspection)	$60	$180
Building	Unauthorized Occupancy	$750	$2,000
Building	Outdoor Lighting Review	N/A	$138/hour
Building	Outdoor Lighting Inspection	N/A	$138/hour
Building	Waiver/Variance	$500	$500
Building	Demolition Permit	$200	$400
Building	On Site Sewage Facility Permit	$800	$1,250
Building	Food Establishment Permit (renewed annually)	Varies	$450
Building	Food Establishment Compliance Inspection Fee	$200	$200
Building	Mobile Food Unit Permit (restricted and unrestricted)	$200	$200
Building	Change of Name/Ownership	$100	$100
Building	Temp Food Event (fee per day)	$30	$30
Building	Child/Adult Care, Church, School Establishment Permit (renewed annually)	Varies	$300
Building	Double permit fees for project started without a permit	Varies	Varies

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Current fees vs. proposed increase

Project type	Valuation	Current fees paid	Fees as proposed
Remodel	$90,000	$1,325	$1,590
Remodel	$191,479	$2,024	$2,762
Remodel	$794,868	$5,575	$9,994
Tenant Finish Out	$48,700	$1,065	$1,088
Tenant Finish Out	$375,000	$3,384	$4,230
Tenant Finish Out	$2,000,000	$10,943	$17,930
New Construction	$158,769	$1,899	$2,500
New Construction	$1,700,000	$10,405	$16,430
New Construction	$7,500,000	$32,975	$45,430

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Sign Fee schedule

Dept	Signs	FY 2025	FY 2026
Building	Real Estate Sign (12-month permit; requires annual renewal)	$50	$150
Building	Real Estate - Individual Lease Units (12-month permit; requires annual renewal)	$0	$100
Building	Monument Sign ($7.50/ft2)	Varies	Varies
Building	Building Sign (Wall, Fence, Awning, Hanging) ($4.50/ft2)	Varies	Varies
Building	Banner and Temporary Sign	$25	$25
Building	Construction Development Sign (12-month permit; requires annual renewal)	$50	$150
Building	Restaurant Menu ($7.50/ft2)	$225	Varies
Building	Tenant Panel on Multi-unit monument ($7.50/ft2)	$250	Varies
Building	Master Sign Plan and Ordinance Review (does not include sign or variance fees)	$300	$500
Building	Impounded Sign Recovery Fee	$25	$25
Building	Waiver/Variance	$150	$500
Building	Plan Review requiring more than 3 rounds of comments ($50/additional review)	N/A	$50
Building	Plan Revisions ($50/additional review)	N/A	$50
Building	Double permit fees for project started without a permit	Varies	Varies

DRIPPING SPRINGS
Texas

Fee Schedule change proposal

Current fees vs. proposed increase

Project type	Size	Current fees paid	Fees as proposed
Banner	32sqft	$25	$25
Real Estate Sign	18sqft	$50	$150
Monument	23.73sqft	$225	$178
Monument	32sqft	$225	$240
Tenant Panel	2.6sqft	$250	$19
Wall Sign	25sqft	$275	$113
Wall Sign	64sqft	$275	$288

DRIPPING SPRINGS
Texas

Staff Recommendation and Next Steps

- Staff recommends adopting the fee schedule as proposed with New Residential Permits being assessed at $1.00/sq ft conditioned space.
- Staff recommends phasing out the doubling reinspection fee and replacing it with a fixed reinspection fee.
- Staff recommends adopting the new fee schedule format and all other fees as proposed.

If approved,

- Proposed changes will be implemented 90-days after adoption. Notification will be via:
  - Newspaper announcement
  - Notification on Dripping Springs Website
  - Notification on Building Department Website
  - Notification on MGO generated documents
  - Notifications posted in the lobby at City Hall and Development Services
  - Notification on Building Department Staff email signatures
  - Mass email to all builders and trades

QUESTIONS?

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78620

Submitted By: Aniz Alani, Deputy City Attorney

Council Meeting Date: October 7, 2025

Agenda Item Wording: **Consideration and approval of an ordinance amending Chapter 2, Article 2.03, Division 4 of the City of Dripping Springs Code of Ordinances to update the Electronic Signature Policy, specifically to include provisions governing the limited acceptance of digital seals on bonds.**

Agenda Item Sponsor: Mayor Bill Foulds, Jr.

Summary/Background: This item proposes an update to the City's existing Electronic Signature Policy, codified in Chapter 2, Article 2.03, Division 4 of the Code of Ordinances. The amendment responds to recent inquiries and practical issues regarding the acceptance of digital seals, particularly on bonds submitted to the City.

Under this ordinance, the City will continue to modernize its business practices while also implementing safeguards to mitigate the risk of fraudulent documents. Specifically, the update:

- **Adds digital surety seals on bonds** as a permitted form of electronic signature, and
- **Limits acceptance** to cases where the digital seal is accompanied by a link to an **independent credentialling service provider** acceptable to the City

These revisions are consistent with the Texas Uniform Electronic Transactions Act (Business & Commerce Code Chapter 322) and reflect industry trends and risk management best practices.

Recommended Council Actions: Approval

Attachments: Draft ordinance

CITY OF DRIPPING SPRINGS

ORDINANCE No. 2025-_____

AN ORDINANCE OF THE CITY OF DRIPPING SPRINGS AMENDING CHAPTER 2, ARTICLE 2.03, DIVISION 4 OF THE CODE OF ORDINANCES TO PROVIDING FOR LIMITED CIRCUMSTANCES IN WHICH DIGITAL SEALS WILL BE ACCEPTED AS ELECTRONIC SIGNATURES ON BONDS ISSUED IN FAVOR OF THE CITY; PROVIDING FOR FINDINGS OF FACT, ENACTMENT, REPEALER, SEVERABILITY, CODIFICATION, EFFECTIVE DATE, AND PROPER NOTICE AND MEETING.

WHEREAS, the City has received inquiries regarding the acceptance of bonds submitted with digital seals rather than traditional embossed or wet-seal formats; and

WHEREAS, digital seals are becoming more common in commercial transactions, but in some instances may be unverifiable and susceptible to fraud if not authenticated through appropriate channels; and

WHEREAS, the City Council finds it necessary to adopt a policy to permit digital seals only in limited circumstances, and to require verification of such seals through a recognized independent credentialling service acceptable to the City; and

WHEREAS, pursuant to Texas Local Government Code Section 51.001, the City has general authority to adopt an ordinance that is for the good government, peace, or order of the City and is necessary or proper for carrying out a power granted by law to the City;

NOW, THEREFORE, BE IT ORDAINED by the Dripping Springs City Council:

FINDINGS OF FACT

The foregoing recitals are incorporated into this Ordinance by reference as findings of fact as if expressly set forth herein.

ENACTMENT

Chapter 2, Article 2.03, Division 4 of the City of Dripping Springs Code of Ordinances is hereby amended as set forth in Attachment A, which is attached hereto and incorporated herein for all purposes. Any underlined text shall be added to Article 2.04 and any text that is struck through shall be removed.

REPEALER

All ordinances, or parts thereof, that are in conflict or inconsistent with any provision of this Ordinance are hereby repealed to the extent of such conflict, and the provisions of this Ordinance shall be and remain controlling as to the matters regulated herein.

SEVERABILITY

Should any of the clauses, sentences, paragraphs, sections, or parts of this Ordinance be deemed invalid, unconstitutional, or unenforceable by a court of law or administrative agency with jurisdiction over the matter, such action shall not be construed to affect any other valid portion of this Ordinance.

CODIFICATION

The City Secretary is hereby directed to record and publish the attached rules, regulations, and policies in the City's Code of Ordinances as authorized by Section 52.001 of the Texas Local Government Code.

EFFECTIVE DATE

This Ordinance shall be effective immediately upon passage and publication.

PROPER NOTICE & MEETING

It is hereby officially found and determined that the meeting at which this Ordinance was passed was open to the public, and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Texas Government Code, Chapter 551. Notice was also provided as required by Chapter 52 of the Texas Local Government Code.

PASSED & APPROVED this, the ___ day of _____, 2025, by a vote of ___ (ayes) to ___ (nays) to ___ (abstentions/recusals) of the City Council of Dripping Springs, Texas.

CITY OF DRIPPING SPRINGS:

_____
Bill Foulds, Jr., Mayor

ATTEST:

_____
Diana Boone, City Secretary

ATTACHMENT "A"

Division 4: Electronic Signature Policy

Sec. 2.03.100. Title.

This division shall be commonly cited as the "Electronic Signature Policy."

Sec. 2.03.101. Purpose.

This division establishes guidelines for the use and acceptance of electronic signatures in City transactions, ensuring compliance with the Texas Uniform Electronic Transactions Act (Chapter 322, Texas Business and Commerce Code).

Sec. 2.03.102. Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Electronic record: A record created, generated, sent, communicated, received, or stored by electronic means.

Electronic signature: An electronic sound, symbol, or process attached to or logically associated with a document and executed or adopted by a person with the intent to sign.

Sec. 2.03.103. Use of Electronic Signatures.

(a) Electronic signatures are deemed legally equivalent to handwritten signatures for all City transactions unless otherwise prohibited by law.

(b) The City may utilize approved electronic signature platforms to ensure the authenticity, security, and integrity of signatures.

(c) The use of electronic signatures for transactions must comply with the approval authorities and financial thresholds established in the City's purchasing policy.

(d) The City may require a wet signature at any time if an electronic signature is not appropriately obtained, cannot be authenticated, or is needed for any other municipal purpose.

Sec. 2.03.104. Examples of Electronically Signed Documents Permitted.

Without limiting the generality of section 2.03.103, but subject to sections 2.03.105 and 2.03.106, documents which may be electronically signed on behalf of the City and on which electronic signatures are accepted by the City include but are not limited to the following:

(a) application forms;

(b) contracts;

(c) correspondence;

(d) expenditure approvals;

(e) internal forms;

(f) internal policies and procedures;

(g) invoices;

(h) permits;

(i) purchase orders; ~~and~~

(j) timesheets; and

~~(j)~~(k) bonds issued in favor of the City.

Sec. 2.03.105. Authentication Requirements.

(a) Signers must authenticate their identity using secure methods, such as email verification or multi-factor authentication.

(b) Systems used for electronic signatures must maintain a record of the signer's identity, date, and time of the transaction.

Sec. 2.03.106. Limitations.

(a) Electronic signatures may not be used for any of the following:

(i) documents requiring notarization unless the electronic notarization complies with state law;

(ii) the certification of City ordinances or resolutions; or

(iii) negotiable financial instruments issued by the City, including checks.

(b) Real estate transactions involving property records must adhere to Texas Property Code Section 12.001.

~~(b)~~(c) An electronic signature in the form of a digital seal applied by a surety on a bond or similar guarantee of a financial guarantee issued in favor of the City must be accompanied by a link to authentication of the electronic signature by an independent credentialling service provider in a form acceptable to the City.

Sec. 2.03.107. Retention.

Electronic records, including those with electronic signatures, shall be maintained in accordance with the City's Records Retention Schedule and applicable state law.

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78620

Submitted By: Aniz Alani, Deputy City Attorney

Council Meeting Date: October 7, 2025

Agenda Item Wording: **Public hearing, discussion, and consideration of approval of proposed amendments to an Ordinance of the City of Dripping Springs, Chapter 20, implementing the enforcement provisions of the City's Drought Contingency Plan.**

a. Staff Report

b. Public Hearing

c. Ordinance

Agenda Item Sponsor: Mayor Bill Foulds, Jr.

Summary/Background: The City purchases wholesale water from the West Travis County Public Utility Agency (WTCPUA) and retails to several subdivisions. Under the City's contract obligations with the Lower Colorado River Authority (LCRA), the City must maintain and enforce a Drought Contingency Plan (DCP). The DCP sets rules for public education, notice, permanent restrictions, stage-based restrictions, and enforcement of water use.

On August 5, 2025, Council approved and adopted the City's DCP for municipal water use. The enforcement ordinance before Council is the next step to carry out that plan and align municipal enforcement with the DCP.

The ordinance implements administrative enforcement authority provided by Texas Local Government Code §54.044 for water conservation measures (e.g., watering restrictions), adding a flexible, due-process-compliant pathway in addition to traditional civil or criminal enforcement.

Consistent with regional suppliers and regulators, the ordinance confirms that City retail customers must follow the most stringent applicable conservation and drought rules among the City's DCP/Water Conservation Plan, the WTCPUA plans, and LCRA plans.

What the Ordinance Does

- **Codifies DCP Enforcement:** Amends Article 20.06 to implement the DCP and authorizes enforcement through notice, fines, service actions, and judicial remedies.

- **Graduated Penalties for Retail Customers:**
    - Written notice after a first observed violation;
    - Misdemeanor up to $500 for a subsequent violation after notice of violation within the previous year;
    - Misdemeanor up to $1,000 for a further violation after a prior conviction/plea within one year of receiving a notice of violation and having been previously convicted of a misdemeanor;
    - Service discontinuation after repeated violations, with $500 reconnection and $500 deposit to restore service.
    - Each day is a separate offense.

- **Administrative & Judicial Tools:** Designated City officials may enforce the DCP; Municipal Court may issue administrative warrants/process as needed; fines/civil penalties may be pursued in municipal/district/county court; injunctive relief is available.

- **Wholesale Users:** Must maintain enforcement provisions no less stringent than the City's; non-compliance is subject to civil penalties and notices similar to retail enforcement.

- **Appeal Process before Disconnection:** The draft ordinance includes provision for notice and an opportunity to be heard before a water utility disconnection occurs. As well, customers are notified at the time a notice of violation is issued about ways in which they can monitor their water usage and who they can contact at the City for more information.

Commission Recommendations: N/A

Recommended Council Actions: Approve the Ordinance amending Chapter 20, Article 20.06 to implement the DCP enforcement framework and associated penalties.

Attachments: **Drought Contingency Plan Enforcement Ordinance** (with Exhibit A amendments to Article 20.06).

Drought Contingency Plan (DCP) – approved by Council on **08/05/2025**

Staff Report: Drought Contingency Policy (August 5, 2025)

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78602

Submitted By: Dane Sorensen, Utilities Director

Council Meeting Date: 08/05/2025

Agenda Item Wording: **Approval of a Resolution of the City of Dripping Springs consenting to the Drought Contingency Plan for municipal water use.** *Sponsor:*

Agenda Item Requestor:

Summary/Background: The City of Dripping Springs purchases wholesale water from the WTCPUA (West Travis County Public Utility Agency) and retails it to customers in several subdivisions in the area. Per the City's contract with WTCPUA the City was obligated to obtain raw water rights from the LCRA (Lower Colorado River Authority). One of the requirements for maintaining raw water rights with the LCRA, is to have and enforce a DCP (Drought Contingency policy). This policy sets rules for public education, notice requirements, permanent water restrictions, drought stage restrictions, and enforcement of rules pertaining to water usage.

Commission Recommendations:

Recommended Council Actions: City Staff recommends accepting resolution consenting to drought contingency policy for municipal water use.

Attachments:

Next Steps/Schedule: Implement drought policy

Pass City Ordinance pertaining to penalties associated with Drought Policy

City of Dripping Springs

Drought Contingency Plan Enforcement Ordinance

ORDINANCE NO. 2025-_____

AN ORDINANCE OF THE CITY OF DRIPPING SPRINGS, TEXAS, AMENDING CHAPTER 20, ARTICLE 20.06 OF THE DRIPPING SPRINGS CODE OF ORDINANCES; IMPLEMENTING THE CITY'S DROUGHT CONTINGENCY PLAN; MAKING SUCH OTHER FINDINGS AND PROVISIONS RELATED TO THE SUBJECTS; ESTABLISHING PENALTIES; INCLUDING A SEVERABILITY CLAUSE; AND DECLARING AN EFFECTIVE DATE.

WHEREAS, Section 54.044 of Subchapter C of Local Government Code Chapter 54 allows cities to adopt procedures to administratively enforce ordinances relating to water conservation measures, including watering restrictions; and

WHEREAS, the administrative enforcement process is in addition to, but more informal and flexible than, civil or criminal enforcement, but must have the procedural and due process safeguards set forth in Section 54.044 of the Texas Local Government Code; and

WHEREAS, the City Council finds that creating an administrative enforcement process as allowed by Subchapter C of Chapter 54 of the Texas Local Government Code will protect the health, safety, and welfare of the citizens of the City; and

WHEREAS, given the potential for frequent and severe drought conditions in Central Texas, and rapid and significant population growth, the City Council finds that it is essential to continue to develop policies and regulations that recognize water is a limited resource and conserve water so that water is available for critical public health and safety needs, including but not limited to domestic use, sanitation, fire-fighting, fire suppression, and natural disasters; and

WHEREAS, the City Council finds that Article 20.06 of the City Code of Ordinances should be updated to streamline and clarify the temporary restrictions on water use for certain types of activities to help the City cope with temporary shortages in water supply when the City is in a drought phase under its Drought Contingency Plan; and

WHEREAS, the City Council approved and adopted the Drought Contingency Plan for municipal water use on August 5, 2025;

WHEREAS, Appendix B of the Drought Contingency Plan contains enforcement provisions for the city's retail water customers and wholesale treater water customers;

NOW, THEREFORE, BE IT ORDAINED by the City Council of Dripping Springs:

1. FINDINGS OF FACT

The foregoing recitals are incorporated into this Ordinance by reference as findings of fact as if expressly set forth herein.

2. ENACTMENT

Chapter 20, Article 20.06 is amended to read in accordance with "**Exhibit A",** which is attached hereto and incorporated into this Ordinance for all intents and purposes. Any underlined text shall be added to Article 20.06 and any text that is struck through shall be removed.

3. REPEALER

All ordinances, or parts thereof, that are in conflict or inconsistent with any provision of this Ordinance are hereby repealed to the extent of such conflict, and the provisions of this Ordinance shall be and remain controlling as to the matters regulated herein.

4. SEVERABILITY

Should any of the clauses, sentences, paragraphs, sections, or parts of this Ordinance be deemed invalid, unconstitutional, or unenforceable by a court of law or administrative agency with jurisdiction over the matter, such action shall not be construed to affect any other valid portion of this Ordinance.

5. CODIFICATION

The City Secretary is hereby directed to record and publish the attached rules, regulations, and policies in the City's Code of Ordinances as authorized by Section 52.001 of the Texas Local Government Code.

6. EFFECTIVE DATE

This Ordinance shall be effective immediately upon passage and publication as provided for by law.

7. PROPER NOTICE & MEETING

It is hereby officially found and determined that the meeting at which this Ordinance was passed was open to the public, and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Texas Government Code, Chapter 551. Notice was also provided as required by Chapter 52 of the Texas Local Government Code.

PASSED & APPROVED this, the 16th day of September, 2025, by a vote of ___ (ayes) to _____ (nays) to ____ (abstentions) of the City Council of Dripping Springs, Texas.

CITY OF DRIPPING SPRINGS:

by: _____
Bill Foulds, Jr., Mayor

ATTEST:

_____
Diana Boone, City Secretary

Exhibit "A"

ARTICLE 20.06. RETAIL WATER SERVICE

DIVISION 1. GENERALLY

Sec. 20.06.001. ~~Retail water~~Water service rules and policies.

This article sets forth the city's rules and policies that apply to any ~~retail~~ water service that is provided by the city.

Sec. 20.06.002. Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this article, except where the context clearly indicates a different meaning:~~-~~

Customer: An individual, business, or organization that applies for, and is granted, water service from the city or in whose name a service account is established.

DCP: The city's Drought Contingency Plan, as amended from time to time.

LCRA: The Lower Colorado River Authority.

MOU: That certain memorandum of understanding between LCRA and USFWS dated May, 2000.

New development: As that term is defined in the MOU.

TCEQ: The Texas Commission on Environmental Quality.

USFWS: The United States Fish and Wildlife Service.~~-~~

Wholesale user: A water service customer who receives treated water service subject to contractual terms other than those provided pursuant to this division for retail water customers.

WTCPUA: The West Travis County Public Utility Agency.

Sec. 20.06.003. Initiation and continuation of retail water service.

(a) The city has agreed by contract with its wholesale water provider to provide retail potable water utility service only in a manner that complies with the MOU. Any new development will only be provided with retail water service where the new development complies with:

(1) Measures approved by the USFWS through separate section 7 [sic] consultation, or other independent consultation;

(2) TCEQ optional enhanced measures, appendix A and appendix B to RG-348; or

(3) USFWS recommendations for Protection of Water Quality of the Edwards Aquifer dated September 1, 2000.

(b) As a condition to obtaining retail water service from the city, the landowner for any new development must provide for the development to the city an engineer's certification that the plat for the development contains enforceable restrictions against altering physical elements of any applicable water quality protection measures or alternatives, such as buffer zones and impervious cover, and the landowner must also provide an engineer's certification after completion of construction of a development or subdivision to ensure that the construction of the development or subdivision has been in accordance with the plat restrictions.

(c) All WTCPUA's service extension policies apply to retail water utility service provided by the city as if the WTCPUA were the retail service provider.

(d) The city hereby adopts by reference the same service availability and plumbing regulations as contained in the duly adopted WTCPUA tariff.

Sec. 20.06.004. Water rates and charges.

(a) Applicability. These rates and charges are applicable to all sales or service of water within and outside the corporate limits of the city~~.~~ other than sales or service of water to a wholesale user.

(b) Rates and charges. The city's rates and charges to customers for the sales or service of water shall consist of two parts: (i) base rates, (ii) Special charges, and (iii) administrative fee.

(1) Base rates. For customers who live within the city limits of the City of Dripping Springs, the city shall charge as its base rates the same rates, fees, and charges (including, but not limited to, water impact fees, connection fees, minimum monthly charges, capital charges, and volumetric charges), the same as what is charged by the Dripping Springs Water Supply Corporation.

(2) ~~Base~~Out-of-City base rates. For customers who live outside the city limits of the City of Dripping Springs, the city shall charge as its base rates the same rates, fees, and charges (including, but not limited to, water impact fees, connection fees, minimum monthly charges, capital charges, and volumetric charges), the same as what is charged by the Dripping Springs Water Supply Corporation plus an additional 20 percent for the rates, fees, and charges.

(3) Special charges. Each retail water customer shall be responsible to pay costs incurred that are attributable to a specific retail customer or retail customer account (such as, but not limited to, returned check fees, disconnect charges, and resumption of service charges).

(4) Administrative fee. Except for wholesale water impact fees, the city shall charge an administrative fee calculated as a percentage of the sum of the base rates and special charges charged pursuant to subsections (b)(1), (b)(2), and (b)(3) above. The applicable percentage shall initially be six percent and periodically reviewed and revised, as appropriate. The administrative fee will be shown separately on each customer's water bill.

(5) Reclaimed water fee. The reclaimed water fee is $5.00 per 1,000 gallons. In order to obtain reclaimed water, each customer must complete a reclaimed water use agreement form and be approved by the City.

Sec. 20.06.005. Water conservation.

(a) The city's ~~retail~~ water customers are subject to and must comply with the most stringent requirements from the following:

(1) The city's drought contingency plan (as amended from time to time);

(2) The city's water conservation plan (as amended from time to time);

(3) The WTCPUA's Water Conservation ~~And~~and Drought Contingency Plan;

(4) The LCRA's Drought Contingency Plan; or

(5) The LCRA's Water Conservation Plan.

(b) It shall be a violation of this chapter for any ~~retail~~ water customer to violate water use restrictions required through the implementation of any of the following:

(1) The city's ~~drought contingency plan~~Drought Contingency Plan (as amended from time to time);

(2) The city's ~~water conservation plan~~Water Conservation Plan (as amended from time to time);

(3) The WTCPUA's Water Conservation ~~And~~and Drought Contingency Plan;

(4) The LCRA's Drought Contingency Plan; or

(5) The LCRA's Water Conservation Plan.

Sec. 20.06.006. Drought response enforcement.

(a) A person commits an offense if the person knowingly or intentionally uses or allows the use of water from the city for residential, commercial, industrial, agricultural, governmental or any other purpose in a manner contrary to any provision of the DCP, or in an amount in excess of that permitted by the drought response stage in effect at the time.

(b) Any person who violates the DCP shall be subject to the following fines, penalties and/or conditions of service:

(1) Following the first observed violation, the violator shall be given a notice specifying the type of violation, the date and time it was observed, and a copy of this section setting out the fines and restrictions on service that may result from additional violations.

(2) A person commits a misdemeanor punishable by a fine of $500 if the person knowingly or intentionally violates the DCP within 365 days of having been given a notice pursuant to subsection 20.06.006(b)(1).

(3) A person who commits a misdemeanor punishable by a fine of $1,000 if the person knowingly or intentionally violates the DCP after having been found guilty or having entered a plea of nolo contendere in respect of an offense punishable pursuant to subsection 20.06.006(b)(2) above and within 365 days of having been given a notice pursuant to subsection 20.06.006(b)(1).

(4) Following an observed violation by a person after having been found guilty or having entered a plea of nolo contendere in respect of an offense punishable pursuant to subsection 20.06.006(b)(3) and within 365 days of having been given a notice pursuant to subsection 20.06.006(b)(1) above, the city shall, upon due notice to the customer, discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a reconnection charge, hereby established at $500, and any outstanding charges including late payment fees or penalties. In addition, suitable assurance in the amount of a deposit of $500 must be given to the city so that the same action shall not be repeated while the DCP is in effect. The city may apply the deposit to any surcharges or penalties subsequently assessed under the DCP against a customer. The deposit, if any, shall be returned to the customer at the time of the customer's voluntary disconnection from the utility system.

(c) Each day that one or more of the provisions in the DCP is violated shall constitute a separate offense. Any person, including one classified as a water customer of the city, in apparent control of the property where an offense occurs or originates, shall be presumed to be the violator. Any such persons, however, shall have the right to provide evidence that they did not commit the offense.

(d) The designated manager or official of City of Dripping Springs shall have the power to enforce the provisions of the DCP.

(e) The municipal court shall have the power to issue to the designated manager or official of City of Dripping Springs administrative search warrants, or other process allowed by law, where necessary to aid in the criminal enforcement of the DCP.

(f) Judicial enforcement of fines and civil penalties issued pursuant to the DCP may be sought through the municipal court, district court, or county court having jurisdiction over the matter.

(g) Compliance with the DCP also may be sought through injunctive relief in state district court or a county court having jurisdiction over the matter.

(h) Subject to an order issued by a court of competent jurisdiction, the discontinuation of water service pursuant to this section may only be performed in accordance with section Sec. 20.06.069.

(i) Any notice of violation or citation issued by the city under this section shall include contact information for the city employee or official with whom a customer can communicate regarding the violation as well as information on how to monitor water usage.

Sec. 20.06.007. Wholesale user requirements.

(a) Every wholesale user shall, as a condition of receiving wholesale water service:

(1) Enter into a wholesale water contract with the City incorporating terms no less stringent than the provisions of this division; and

(2) Provide the city with an order, ordinance or resolution to demonstrate adequate enforcement provisions for the wholesale user's drought contingency plan.

(b) Wholesale users that fail to comply with the drought contingency measures in the DCP may be subject to the following civil penalties, in addition to any other remedies available to the city by law or under the terms of the wholesale user's water contracts.

(c) Wholesale users are subject to the following civil penalties for non-compliance with the DCP:

(1) Following a first observed violation, the violator shall be given a notice specifying the type of violation, the date and time it was observed, and a copy of this division setting out the fines and restrictions on service that may result from additional violations.

(2) Following a second observed violation after having been given a notice pursuant to subsection 20.06.007(c)(1), the violator be subject to a civil penalty of up to $2,000.

(3) Following a third observed violation after having been given a notice pursuant to subsection 20.06.007(c)(2), the violator be subject to a civil penalty of up to $10,000.

Secs. 20.06.008—20.06.030. Reserved.

DIVISION 2. RECLAIMED WATER

Sec. 20.06.031. Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this division, except where the context clearly indicates a different meaning:

Reclaimed water: Effluent owned or controlled by the city that is produced from the treatment of the city's wastewater through a wastewater treatment plant and treated to the standards required in 30 Texas Admin. Code § 210 et seq.

Reclaimed water system: The distribution, transmission and storage facilities designed to meet the requirements of 30 Texas Admin. Code § 210 et seq. as described in this division for the distribution of reclaimed water to users.

Users: Entities or individuals that purchase reclaimed water from the city through the city's reclaimed water system.

Sec. 20.06.032. Prohibitions.

(a) It shall be unlawful to tap into, connect, or obtain reclaimed water from the reclaimed water system except in accordance with the terms of an executed reclaimed water use agreement with the city and this division.

(b) It shall be unlawful to use reclaimed water in a manner that violates this division or the rules and regulations of the Texas Commission on Environmental Quality.

Sec. 20.06.033. Construction standards for reclaimed water system.

The reclaimed water system shall be constructed in accordance with the following standards:

(1) Transmission lines. Any reclaimed water transmission lines shall be constructed with a minimum separation from potable waterlines of nine feet whenever possible. When it is not possible to maintain such separation, the reclaimed waterlines shall be constructed in accordance with 30 Texas Admin. Code ch. 290 concerning separation of potable and nonpotable water piping. A nondegradable warning tape shall be placed in the trench above the pipe to reduce the possibility of inadvertent connections. Pipe used for the construction of any additional reclaimed waterlines shall be purple, covered with a purple polywrap bag, or marked with purple tape. Construction plans for any additional reclaimed waterlines shall be submitted to the Texas Commission on Environmental Quality for review and approval in accordance with 30 Texas Admin. Code § 210.25(h).

(2) Internal lines. Users shall be responsible for the design of any internal reclaimed water distribution piping or irrigation piping. The user shall design all piping in accordance with 30 Texas Admin. Code § 210.25.

(3) Storage ponds. All reclaimed water storage ponds shall be designed and constructed in accordance with 30 Texas Admin. Code § 210.25(c).

Sec. 20.06.034. User responsibilities.

Reclaimed water users shall comply with the following requirements:

(1) Users shall post signs at all storage areas, hose bibs, faucets and other points of access to the reclaimed water that comply with the requirements of 30 Texas Admin. Code 210.25b.

(2) Users shall design all hose bibs, faucets, and valves in accordance with 30 Texas Admin. Code § 210.25a.

(3) Users shall ensure that irrigation activities occur during times that will minimize the risk of inadvertent human exposure.

(4) Users shall operate irrigation systems in a manner that will not cause any surface or airborne discharge of reclaimed water.

(5) Users shall not operate irrigation systems when the earth is frozen or saturated with water.

(6) Users shall utilize operational procedures for irrigation systems that will minimize wet grass conditions in unrestricted landscape areas during the periods the areas could be in use.

(7) Users shall maintain transmission mains, storage pond, pumping facilities and internal irrigation piping beyond the point of delivery.

(8) Users shall design a routine maintenance schedule that includes a routine check of the sprinkler heads, distribution piping, pumps, valves, and other mechanical equipment and shall conduct repairs as necessary. Preventive maintenance on all mechanical equipment shall be as specified by the manufacturer.

Sec. 20.06.035. Judicial enforcement remedies applicable to reclaimed water use.

(a) Criminal penalty. Any person who has violated any provision of this division regarding the use of reclaimed water shall be strictly liable for such violation and shall, upon conviction, be subject to a fine of not more than $2,000.00 per violation per day.

(b) Pursuant to Texas Local Government Code section 552.0025, the compensation due to the city shall be a delinquent cost of providing utility services, and the city may impose a lien on the landowner's real property, unless the property is a homestead as protected by the state constitution.

(c) Remedies nonexclusive. The remedies provided for in this division are not exclusive of any other remedies that the city may have under state or federal law or other city ordinances. The city may take any, all, or any combination of these actions against a violator. The city is empowered to take more than one enforcement action against any violator. These actions may be taken concurrently.

(d) Supplemental enforcement action.

(1) Whenever a user has violated or continues to violate any provision of this division, reclaimed water service to the user may be severed. Service will only recommence, at the user's expense, after he has satisfactorily demonstrated his ability to comply.

(2) The misuse of reclaimed water in violation of this division is hereby declared a public nuisance and shall be corrected or abated as directed by the city public works director. Any person creating a public nuisance shall be subject to the provisions of this code governing such nuisances, including reimbursing the city for any costs, including but not limited to, attorneys fees and costs of court, incurred in removing, abating, or remedying said nuisance.

(3) In addition to prohibiting certain conduct by natural persons, it is the intent of this division to hold a corporation or association legally responsible for prohibited conduct performed by an agent acting on behalf of a corporation or association and within the scope of his office or employment.

(4) Any user that violates any provision of this division and thereby causes the city to violate a rule or regulation of the Texas Commission on Environmental Quality or any other state or federal agency, and as a consequence causes the city to incur any civil or criminal penalty, shall be liable to the city for the amount of any such civil or criminal penalty, as well as any costs of compliance with any order issued by the Texas Commission on Environmental Quality or any state or federal court and, additionally, any costs and/or attorneys fees incurred by the city in defense or compliance with such judicial or administrative action.

Secs. 20.06.036—20.06.060. Reserved.

DIVISION 3. WATER CONNECTIONS

Sec. 20.06.061. Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in sections 20.06.062 through 20.06.068, except where the context clearly indicates a different meaning:

Air gap: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor, or other assembly and the flood level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet, never less than one inch (25 millimeters).

Approved: Accepted by the authority responsible as meeting an applicable specification stated or cited in this division or as suitable for the proposed use.

Auxiliary water supply: Any water supply on or available to the premises other than the city's approved public water supply. These auxiliary waters may include water from another purveyor's public potable water supply or any natural source, such as a well, spring, river, stream, harbor, and so forth; used waters; or industrial fluids. These waters may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which the city does not have sanitary control.

Backflow: The undesirable reversal of flow in a potable water distribution system as a result of a cross connection.

Backflow preventer or backflow prevention assemblies: An assembly or means designed to prevent backflow.

Backpressure: A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, or any other means that may cause backflow.

Backsiphonage: Backflow caused by negative or reduced pressure in the supply piping.

City administrator: The administrator of the city, and the agents, officers or employees of the city designated by the city administrator to be in charge of the water department of the city, and the designees of such agents and officers. The city administrator is invested with the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this division. The city administrator may further, with the approval of the city council, designate the county health department as an agent authorized to enforce this division.

Contamination: An impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard.

Cross connection: Connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemicals, waste products, steam, water from other sources (potable or nonpotable), or any matter that may change the color or add odor to the water.

Cross-connection control by containment: The installation of any approved backflow prevention assembly at the water service connection to any customer's premises, where it is physically and economically unfeasible to find and permanently eliminate or control all actual or potential cross connections within the customer's water system; or the term "cross-connection control by containment" means the installation of an approved backflow prevention assembly on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross connections that cannot be effectively eliminated or controlled at the point of the cross connection.

Cross connections, controlled: A connection between a potable water system and a nonpotable water system with an approved backflow prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

Double check valve assembly: The approved double check valve assembly consists of two internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shutoff valves and fittings with properly located resilient-seated test cocks. This assembly shall only be used to protect against a nonhealth hazard (i.e., a pollutant).

Hazard, degree of: The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

Hazard, health: A cross connection or potential cross connection involving any substance that could, if introduced in the potable water supply, cause death, illness, spread disease, or have a high probability of causing such effects.

Hazard, nonhealth: A cross connection or potential cross connection involving any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable, if introduced into the potable water supply.

Hazard, plumbing: A plumbing-type cross connection in a consumer's potable water system that has not been properly protected by an approved air gap or an approved backflow prevention assembly.

Hazard, system: An actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system or of a pollution of contamination that would have a protracted effect on the quality of the potable water in the system.

Industrial fluids system: Any system containing a fluid or solution that may be chemical, biologically, or otherwise contaminated or polluted in a form or concentration, such as would constitute a health, system, pollution or plumbing hazard, if introduced into an approved water supply. The term "industrial fluids system" may include, but not be limited to:

(1) Polluted or contaminated waters;

(2) All types of process waters and used waters originating from the public potable water system that may have deteriorated in sanitary quality;

(3) Chemicals in fluid form;

(4) Plating acids and alkalies;

(5) Circulating cooling waters connected to an open cooling tower;

(6) Cooling towers that are chemically or biologically treated or stabilized with toxic substances; and/or

(7) Contaminated natural waters, such as wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, and so forth; oils, gases, glycerine, paraffins, caustic and acid solutions, and other liquid and gaseous fluids used in industrial or other purposes for firefighting purposes.

Pollution: The presence of any foreign substance in the water that tends to degrade its quality so as to constitute a nonhealth hazard or impair the usefulness of the water.

Reduced-pressure backflow prevention assembly: The approved reduced-pressure principle backflow prevention assembly consisting of two independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and below the first check valve. These units are located between two tightly closing resilient-seated shutoff valves as an assembly and equipped with properly located resilient-seated test cocks.

Regulations: The provisions of any applicable ordinance, rule, regulation or policy.

Service connection: The terminal end of a service connection from the public potable water system, that is, where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. The term "service connection" means, if a meter is installed at the end of the service connection, the downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow prevention assembly located at the point of delivery to the customer's water system. The term "service connection" also includes water service connections from the public potable water system.

Water, nonpotable: Water that is not safe for human consumption or that is of questionable quality.

Water, potable: Water that is safe for human consumption as described by the public health authority having jurisdiction.

Water, used: Any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.

Sec. 20.06.062. Purpose.

The purpose of sections 20.06.061 through 20.06.068 of this division is the following:

(1) Protect public water. To protect the public potable water supply of the city from the possibility of contamination or pollution by isolation within the customer's internal distribution system or the customer's private water system such contaminants or pollutants that could backflow into the public water system;

(2) Eliminate cross connections. To promote the elimination or control of existing cross connections, actual or potential, between the customer's in-plant potable water system and nonpotable water systems, plumbing fixtures, and industrial piping systems; and

(3) Continuing program. To provide for the maintenance of a continuing program of cross-connection control that will systematically and effectively prevent the contamination or pollution of all potable water systems.

Sec. 20.06.063. Prohibitions and enforcement.

(a) General. No water service connection shall be made to any establishment where a potential or actual contamination hazard exists unless the water supply is protected in accordance with the Texas Commission on Environmental Quality rules and regulations for public water systems (the Texas Commission on Environmental Quality rules) and this division. The city shall discontinue water service if a required backflow prevention assembly is not installed, maintained and tested in accordance with the Texas Commission on Environmental Quality rules and this division.

(b) Enforcement. The city administrator shall be responsible for the enforcement of the Texas Commission on Environmental Quality rules and this division for the protection of the public potable water distribution system from contamination or pollution due to the backflow of contaminants or pollutants through the water service connection. If, in the judgment of the city administrator an approved backflow prevention assembly is required (at the customer's water service connection; or, within the customer's private water system) for the safety of the water system, the city administrator or his designated agent shall give notice in writing to said customer to install such an approved backflow prevention assembly at specific locations on his premises. The customer shall immediately install such approved assembly at his own expense; and, failure, refusal, or inability on the part of the customer to install, have tested, and maintain said assembly shall constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.

Sec. 20.06.064. Water system—Composition.

(a) The water system shall be considered as made up of two parts: The utility system and the customer system.

(b) The utility system shall consist of the source facilities and the distribution system, and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer's system begins.

(c) The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the distribution system.

(d) The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system.

(e) The customer's system shall include those parts of the facilities beyond the termination of the utility distribution system that are utilized in conveying utility-delivered domestic water to points of use.

Sec. 20.06.065. Requirements for connection.

(a) Protection required. No water service connection to any premises shall be installed or maintained by the city unless the water supply is protected as required by the Texas Commission on Environmental Quality rules and this division. Service of water to any premises shall be discontinued by the city if a backflow prevention assembly required by this division is not installed, tested, and maintained, or if it is found that a backflow prevention assembly has been removed, bypassed, or if an unprotected cross connection exists on the premises. Service will not be restored until such conditions or defects are corrected.

(b) Customer's system. The customer's system should be open for inspection at all reasonable times to authorized representatives of the city to determine whether cross connections or other structural or sanitary hazard, including violations of these regulations, exist. When such a condition becomes known, the city administrator shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the conditions in conformance with state, provincial and city statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto.

(c) Location. An approved backflow prevention assembly shall be installed on each service line to a customer's water system at or near the property line or immediately inside the building being served; but in all cases, before the first branch line leading off the service line wherever the following conditions exist:

(1) In the case of premises having an auxiliary water supply that is not or may not be of safe bacteriological or chemical quality and that is not acceptable as an additional source by the city administrator, the public water system shall be protected against backflow from the premises by installing an approved backflow prevention assembly in the service line, appropriate to the degree of hazard.

(2) In the case of premises on which any industrial fluids or any other objectionable substances are handled in such a fashion as to create an actual or potential hazard to the public water system, the public system shall be protected against backflow from the premises by installing an approved backflow prevention assembly in the service line, appropriate to the degree of hazard. This shall include the handling of process waters and waters originating from the utility system that have been subject to deterioration in quality.

(3) In the case of premises having:

(A) Internal cross connections that cannot be permanently corrected and controlled; or

(B) Intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross connections exist;

The public water system shall be protected against backflow from the premises by installing an approved backflow prevention assembly in the service line.

(4) In all cases where such device is required by the Texas Commission on Environmental Quality rules.

(d) Type of assembly required. The type of protective assembly required under subsections (c)(1), (2) and (3) of this section shall depend upon the degree of hazard that exists, as follows:

(1) In the case of any premises where there is an auxiliary water supply as stated in subsection (c)(1) of this section and it is not subject to any of the following rules, the public water system shall be protected by an approved air gap separation or an approved reduced-pressure principle backflow prevention assembly.

(2) In the case of any premises where there is water or substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by an approved double check valve assembly.

(3) In the case of any premises where there is any material dangerous to health that is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by an approved air gap separation or an approved reduced-pressure principle backflow prevention assembly. Examples of premises where these conditions will exist include sewage treatment plants, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries, and plating plants.

(4) In the case of any premises where there are uncontrolled cross connections, whether actual or potential, the public water system shall be protected by an approved air gap separation or an approved reduced-pressure principle backflow prevention assembly at the service connection.

(5) In the case of any premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impracticable to make a complete in-plant cross-connection survey, the public water system shall be protected against backflow from the premises by either an approved air gap separation or an approved reduced-pressure principle backflow prevention assembly on each service to the premises.

(6) In the case of any premises where, in the opinion of the city administrator, an undue health threat is posed because of the presence of extremely toxic substances, the city administrator may require an air gap at the service connection to protect the public water system. This requirement will be at the discretion of the city administrator and is dependent on the degree of hazard.

(7) In any case where the Texas Commission on Environmental Quality rules require a backflow prevention device or other provision to prevent contamination, the requirements of the Texas Commission on Environmental Quality rules shall govern and control if more stringent than the provisions of this subsection.

(e) Standards for approved device. Any backflow prevention assembly required herein shall be a model and size in compliance with the Texas Commission on Environmental Quality rules, and approved by the city administrator. The term "approved backflow prevention assembly" means an assembly that has been manufactured in full conformance with the standards established by the American Water Works Association titled: AWWA C510-89, Standard for Double Check Valve Backflow Prevention Assembly, and AWWA C511-89, Standard for Reduced-Pressure Principle Backflow Prevention Assembly, and have met completely the laboratory and field performance specifications of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California established by Specification of Backflow Prevention Assemblies, section ten of the most current issue of the Manual of Cross-Connection Control. The American Water Works Association and Foundation for Cross-Connection Control and Hydraulic Research standards and specifications have been adopted by the city administrator. Final approval shall be evidenced by a certificate of approval issued by an approved testing laboratory certifying full compliance with said American Water Works Association standards and Foundation for Cross-Connection Control and Hydraulic Research specifications. The backflow preventers approved and certified by the Texas Commission on Environmental Quality, or an agency certified by the Texas Commission on Environmental Quality to approve and certify such devices. Backflow preventers that may be subjected to backpressure or backsiphonage that have been fully tested and have been granted a certificate of approval by said qualified laboratory and are listed on the laboratory's current list of approved backflow prevention assemblies may be used without further testing or qualification.

(f) Customer inspections mandated. It shall be the duty of the customer-user at any premises where backflow prevention assemblies are installed to have certified inspections and operational tests made at least once per year. In those instances where the city administrator deems the hazard to be great enough, certified inspections may be required at more frequent intervals. These inspections and tests shall be at the expense of the water user and shall be performed by the assembly manufacturer's representative, water department personnel, or by a certified tester approved by the city administrator. It shall be the duty of the city administrator to see that these tests are made in a timely manner. The customer-user shall notify the city administrator in advance when the tests are to be undertaken so that the customer-user may witness the tests if so desired. These assemblies shall be repaired, overhauled, or replaced at the expense of the customer-user whenever said assemblies are found to be defective. Records of such tests, repairs, and overhaul shall be kept and made available to the city administrator.

(g) Compliance with West Travis County Public Utility Agency Requirements. Customers must comply with any applicable rules or regulations of the West Travis County Public Utility Agency.

Sec. 20.06.066. General installation and testing requirements.

(a) Installation. All backflow prevention assemblies shall be tested upon installation by a recognized backflow prevention assembly tester and certified to be operating within specifications. Backflow preventers which

are installed to provide protection against health hazards must also be tested and certified to be operating with specifications at least annually by a recognized backflow prevention assembly tester.

(b) Installation and testing requirements. All backflow prevention assemblies shall be installed and tested in accordance with the manufacturer's instructions, the American Water Works Association's Recommended Practice for Backflow Prevention and Cross-Connection Control (Manual M14) or the University of Southern California Manual of Cross-Connection Control.

(c) Replacement. Backflow preventers shall be repaired, overhauled, or replaced at the expense of the customer whenever said assemblies are found to be defective. The original documentation of each such test, repair, and overhaul shall be kept and submitted to the city within five working days of the test, repair or overhaul of each backflow prevention assembly.

(d) Removal and replacement. No backflow prevention assembly or device shall be removed from use, relocated, or other assembly or device substituted without the approval of the city. Whenever an existing assembly or device is moved from its location or cannot be repaired, the backflow assembly or device shall be replaced with a backflow prevention assembly or device that complies with this division, the American Water Works Association's Recommended Practice for Backflow Prevention and Cross-Connection Control (Manual M14), the University of Southern California Manual of Cross-Connection Control, or the current plumbing code of the city, whichever is more stringent.

(e) Test equipment. Test gauges used for backflow prevention assembly testing shall be calibrated at least annually in accordance with the American Water Works Association's Recommended Practice for Backflow Prevention and Cross-Connection Control (Manual M14), or the University of Southern California Manual of Cross-Connection Control. The original calibration form must be submitted to the city within five working days after calibration.

(f) Certification. A backflow prevention assembly tester must hold a current endorsement from the Texas Commission on Environmental Quality.

Sec. 20.06.067. Customer service inspections.

(a) Inspection required. A customer service inspection shall be completed prior to providing continuous water service to all new construction, or any existing service when the city has reason to believe that cross connections or other contaminant hazards exist, or after any material improvement, correction, or addition to the private water distribution facilities.

(b) Qualified inspectors. Only persons with the following credentials shall be recognized as capable of conducting a customer service inspection:

(1) Plumbing inspectors and water supply protection specialists that have been licensed by the state board of plumbing examiners.

(2) Certified waterworks operators, and members of other water related professional groups who have completed a training course, passed an examination administered by the Texas Commission on Environmental Quality or its designated agent, and hold a current endorsement issued by the Texas Commission on Environmental Quality.

(c) Required certifications. No direct connection between the city water system and a potential source of contamination is permitted. Potential sources of contamination shall be isolated from the public water system by a properly installed air gap or an appropriate backflow prevention assembly. The water service shall be discontinued unless the qualified inspector that inspects the customer's water system certifies that:

(1) There is no direct connection between the city water system and a potential source of contamination.

(2) No cross connection between the public water supply and the private water source exists. Where an actual properly installed air gap is not maintained between the public water supply and the private water supply, the inspector must certify that an approved reduced pressure-zone backflow prevention

assembly is properly installed and a service agreement exists for annual inspecting and testing by a recognized backflow prevention assembly tester.

(3) No connection exists which allows water to be returned to the public drinking water supply.

(4) No pipe or pipefitting which contains more than eight percent lead is used for installation or repair of plumbing at any connection that provides water for human use.

(5) No solder or flux which contains more than 0.2 percent lead is used for the installation or repair of plumbing at any connection that provides water for human use. A minimum of one lead test shall be performed for each inspection.

Sec. 20.06.068. Amendment and application.

The plumbing code of the city is hereby amended to the extent required to be read and construed in a manner to give effect to this division. In the event of a conflict between this division and any other ordinance or law, the most restrictive standard applies.

Sec. 20.06.069. Discontinuation of utility services.

(a) Required notice. A customer shall be given at least three (3) days' notice and an opportunity for a hearing before the customer's utility service is terminated by the city. The notice must include:

(1) the reasons for the disconnection of service;

(2) the date by which service will be discontinued if payment is not made or a specified breach of service terms is not remedied; and

(3) information regarding the procedure by which the customer may request a hearing to protest the proposed termination of service.

(b) Protest hearing. A hearing requested by a customer before the date of scheduled disconnection described in sec. 20.06.069(a)(2), the city must convene a hearing before the scheduled disconnection and delay termination until the hearing is held and a decision is rendered. The hearing shall be conducted by a deputy city administrator, city administrator, or another designated officer or city employee having authority to resolve the issue and rescind or amend the disconnection order.

(c) Bankruptcy. The city must not alter, refuse, or discontinue service to, or discriminate against, a trustee or a debtor solely on the basis of the commencement of bankruptcy proceedings or because of an unpaid pre-bankruptcy utility bill except in accordance with 11 U.S.C. § 366.(d)Health and Safety Exception. Despite subsection (a), the city may disconnect a customer's utility service with less than three (3) days' notice if needed due to a health and safety issue as determined by the city administrator, emergency preparedness and homeland security director, mayor, or utilities director. Notice of such immediate, emergency disconnection shall be provided in writing to the utility user at time of disconnection. Notice shall include who ordered the disconnection, the length of disconnection if known, and who the utility user can contact to discuss the disconnection.

Drought Contingency Plan For Municipal Water Use

For

City of Dripping Springs

Water Customer Name

Prepared By:

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235 Ledge Stone Dr.

Austin, Texas 78737

May 2025

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City of Dripping Springs

DROUGHT CONTINGENCY PLAN FOR MUNICIPAL WATER USE

1.0 Declaration of Policy, Purpose and Intent

The Lower Colorado River Authority (LCRA) provides contracts to firm customers for water supply. In cases of drought, periods of abnormally high usage or system contamination, or extended reduction in ability to supply water due to equipment failure, LCRA may require water customers to institute temporary restrictions to limit nonessential water usage. This Drought Contingency Plan (Plan) is designed to protect the available water supply and protect the integrity of water supply facilities, with regard for domestic water use, sanitation and fire protection during these periods or other water supply emergencies.

Water uses regulated or prohibited under this Plan are considered nonessential and continuation of such uses during times of water shortage or other emergency water supply conditions is deemed to constitute a waste of water.

2.0 Authorization

The designated manager or official of City of Dripping Springs is hereby authorized and directed to implement the applicable provisions of this plan upon determination that such implementation is necessary to protect public health, safety and welfare. The designated manager or official of City of Dripping Springs shall have the authority to initiate or terminate drought or other water supply emergency response measures as described in this Plan. This authorization was designated as part of the plan's approval by the City of Dripping Springs governing board (*See Appendix G*).

3.0 Public Education

The designated manager or official of City of Dripping Springs will periodically provide its employees, members, and the public with information about this Plan, including the importance of the Plan, information about the conditions under which each stage of the Plan is to be initiated, processes used to reduce water use, and impending or current drought conditions.

4.0 Coordination with Regional Planning Groups

City of Dripping Springs has provided a copy of this Plan to the Lower Colorado Regional Planning Group (Region K) by sending a copy to administrative@regionk.org.

5.0 Notice Requirements

City of Dripping Springs shall notify the executive director of the Texas Commission on Environmental Quality and LCRA General Manager in writing within five (5) business days of the implementation of any mandatory provisions of the Drought Contingency Plan.

6.0 Permanent Water Use Restrictions

The following restrictions apply to all City of Dripping Springs water utility system(s) on a year-round basis, regardless of water supply or water treatment plant production conditions. According to the restrictions, a water user **must not**:

1) Irrigate outdoors using an in-ground irrigation systems or hose-end sprinklers more than twice per week or outside scheduled days and times as indicated in Appendix A.

2) Fail to repair a controllable leak, including a broken sprinkler head, a leaking valve, leaking or broken pipes, or a leaking faucet.

3) Operate an irrigation system:
   - with a broken head;
   - with a head that is out of adjustment and the arc of the spray head is over a street or parking area;
   - with a head that is fogging or misting because of excessive water pressure; or
   - Except between 6 a.m. to 10 a.m. and 7 p.m. to 10 p.m.

4) During irrigation, allow water:
   - to run off a property and form a stream of water in a street for a distance of 50 feet or greater; or
   - to pool in a street or parking lot to a depth greater than one-quarter of an inch.

7.0 Initiation and Termination of Response Stages

The City of Dripping Springs's designated manager or official shall monitor water supply and demand conditions on a regular basis and shall determine when conditions warrant initiation and termination of each stage of this Plan in accordance with LCRA's Water Management Plan. Water supply conditions will be determined by the source of supply, system capacity and weather conditions. Water demand will be measured by the peak daily demands on the system.

Public notification of the initiation or termination of drought response stages shall be by a variety of ways (e.g., bill inserts, email, automated telephone calls, signs posted at entry points to the service area, social media posts, website content or a combination of these methods).

The following triggering criteria shall apply to City of Dripping Springs's water utility system(s) and customer service area.

7.1 Triggering Criteria for Initiation and Termination of Drought Response Stages

- **Drought Contingency Plan Stage 1 - Mild Water Shortage Conditions**

A. **Requirements for initiation** - Customers shall be requested to adhere to the Stage 1 Drought Response Measures when one or more these criteria occur:

1. When total daily water demand equals or exceeds
   i. 80 percent of the total design capacity of the water treatment plant for three consecutive days; or
   ii. 90 percent of the total design capacity of the water treatment plant for a single day;
2. Source water contamination results in comprised capacity of the treatment and delivery systems;
3. mechanical or electrical failure of a system component results in compromised treatment and/or delivery capacity.4. the combined storage of lakes Travis and Buchanan below 1.1 million acre-feet; or
5. the LCRA initiates Stage 1 of its DCP

B. **Requirements for termination** - Stage 1 of the plan may be rescinded when:
1. When water treatment plant capacity condition listed above as a triggering event are predicted to cease for an extended period;
2. The source water contamination event or mechanical or electrical failure of system component is resolved;
3. The combined storage of lakes Travis and Buchanan increases above 1.2 million acre-feet; or
4. LCRA announces that curtailment of water supplies to firm water customers is no longer required under the drought contingency measures of the LCRA DCP.

(2) STAGE 2 - Moderate Water Shortage Conditions (Mandatory Measures)

A. **Requirements for initiation** - Customers shall be required to adhere to the Stage 2 Drought Response Measures when one or more of these criteria occur:

1. When total daily water demand equals or exceeds:
   i. 85 percent of the total design capacity of the water treatment plant for three consecutive days; or
   ii. 95 percent of the total design capacity of the water treatment plant for a single day;
2. Source water contamination results in comprised capacity of the treatment and delivery systems;
3. mechanical or electrical failure of a system component results in compromised treatment and/or delivery capacity.
4. target reduction for the Stage 1 demand management measures is not

achieved;
5. the combined storage of lakes Travis and Buchanan below 900,000 acre-feet; or
6. the LCRA initiates Stage 2 of its DCP

B. **Requirements for termination** - Stage 2 of the Plan may be rescinded when:

1. The water treatment plant capacity condition listed above as a triggering event is predicted to cease for an extended period;
2. The source water contamination event or mechanical or electrical failure of system component is resolved;
3. The combined storage of lakes Travis and Buchanan increases above 1.1 million acre-feet; or
4. LCRA announces that curtailment of water supplies to firm water customers is no longer required under the drought contingency measures of the LCRA DCP.

Upon termination of Stage 2, Stage 1 becomes operative unless the criteria for terminating Stage 1 is also met.

(3) STAGE 3 - Severe Water Shortage Conditions (Mandatory Measures)

A. **Requirements for initiation** - Customers shall be required to adhere to the Stage 3 Drought Response Measures when one or more of these criteria occur:
   1. When the total daily water demand equals or exceeds:
      i. 90 percent of the total design capacity of the water treatment plant for three consecutive days; or
      ii. 100 percent of the total design capacity of the water treatment plant for a single day;
   2. Source water contamination results in comprised capacity of the treatment and delivery systems;
   3. mechanical or electrical failure of a system component results in compromised treatment and/or delivery capacity.
   4. target reduction for the Stage 2 demand management measures is not achieved;
   5. the combined storage of lakes Travis and Buchanan below 750,000 acre-feet; or
   6. the LCRA initiates Stage 3 of its DCP

B. Requirements for termination - Stage 3 of the Plan may be rescinded when:
   1. The water treatment plant capacity condition listed above as a triggering event is predicted to cease for an extended period;
   2. The combined storage of lakes Travis and Buchanan increases above 825,000 acre-feet; or

3. LCRA announces that curtailment of water supplies to firm water customers is no longer required under the drought contingency measures of the LCRA DCP.

Upon termination of Stage 3, Stage 2 becomes operative unless the criteria for terminating Stage 2 is also met.

(4) STAGE 4- Emergency Conditions

A. **Requirements for initiation** - Customers shall be required to adhere to the Stage 4 Drought Response Measures when one or more of these criteria occur:
   a) Major water line breaks, loss of distribution pressure or pump system failures that cause substantial loss in the ability to provide water service.
   b) Contamination of the water supple source;
   c) Any other emergency water supply or demand conditions that the City of Dripping Springs determines to constitute a water supply emergency; or
   d. The LCRA Board of Directors declares a Drought Worse than Drought of Record or other water supply emergency and orders the mandatory curtailment of firm water supplies.

Upon declaration of Stage 4- Emergency Water Conditions, water use restrictions outlined in Stage 4 Emergency Response Measures shall immediately apply and be in effect until lifted by the City of Dripping Springs.

B. **Requirements for termination** - Stage 4 of the Plan may be rescinded when:

1. <u>Treatment Capacity:</u>
   4. The water treatment plant capacity condition listed above as a triggering event for Stage 4 has ceased to exist for five consecutive days; or

2. <u>Water Supply:</u>
   5. LCRA announces that mandatory Stage 4 water restrictions for firm water customers are no longer required in accordance with the LCRA DCP.

Upon termination of Stage 4, Stage 3 becomes operative unless the criteria for terminating Stage 3 is also met.

8.0 Drought Response Measures

8.1 Targets for Water-Use Reductions

(1) STAGE 1 - Mild Water Shortage Conditions (Mandatory Measures)

System Capacity Reduction Target: Limit daily water demand to no more than 80% capacity for three consecutive days or 90% for one day.

Water Supply Reduction Target: Achieve a 10% reduction in water use.

(2) STAGE 2 - Moderate Water Shortage Conditions (Mandatory Measures)

System Capacity Reduction Target: Limit daily water demand to no more than 85% capacity for three consecutive days or 95% for one day.

Water Supply Reduction Target: Achieve a 20% reduction in water use.

(3) STAGE 3 - Severe Water Shortage Conditions (Mandatory Measures)

System Capacity Reduction Target: Limit daily water demand to no more than 90% capacity for three consecutive days or 100% for one day.

Water Supply Reduction Target: Achieve a 30% reduction in water use.

(4) STAGE 4 - Emergency Shortage Conditions (Mandatory Measures)

System Capacity Reduction Target: Limit daily water demand to no more than 90% capacity for three consecutive days or 100% for one day.

Water Supply Reduction Target: As determined by the City of Dripping Springs..

8.2 Residential and Retail Customers Measures

See Sections 28.06.082-83 in the City of Dripping Springs Landscape Ordinance No. 2024-11 for additional requirements for irrigation and drought conditions.

(1) STAGE 1 - Mild Water Shortage Conditions

A. Supply Management Measures:

1. City of Dripping Springs will apply water-use restrictions prescribed for Stage 1 of the Plan to facilities for which Stage 1 has been declared..

2. City of Dripping Springs discontinue water main and line flushing unless necessary for public health reasons.
3. City of Dripping Springs will keep customers informed about issues regarding current and projected water supply and demand conditions.

B. Demand Management Measures:

1. Irrigation of Landscaped Areas:

a. New landscapes may be installed and revegetation seeding performed under these specific criteria:

i. The mandatory twice weekly watering schedule is adhered to.
ii. If a deviation from the twice weekly schedule is required, that a completed variance form for new landscapes has been submitted to the City of Dripping Springs and has been approved prior to the installation of the landscape or revegetation seed application
iii. Irrigation of the new landscape or application follows the schedule identified in the new landscape variance:
    1. Once a day for the first 10 days after installation
    2. Once every other day from 6 a.m. to 10 a.m. and 7 p.m. to 10 p.m. for days 11 through 20 after installation
    3. Once every third day 6 a.m. to 10 a.m. and 7 p.m. to 10 p.m. for day 21 through 30 after installation
iv. Alternatives to revegetation may be available in times of low water supply. Specific information regarding such alternatives is available in the LCRA Highland Lakes Watershed Ordinance Technical Manual (sec 3.2.8)
v. Variances for new landscapes and revegetation will be issued for the shortest period necessary to reasonably assure the landscapes survival. A variance is not an exemption from compliance with the permanent water use restrictions under *Permanent Water Restrictions* of this plan other than schedule. Variances will not be granted for season “color bed” or temporary grass installation (over seeding).

2. Vehicle Washing:

a. Use of water to wash any motor vehicle, such as a motorbike, boat, trailer, or airplane is prohibited except on designated watering days between the hours of 6 a.m. to 10 a.m. and 7 p.m. to 10 p.m. Such activity, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle. A vehicle may be washed any time at a commercial car wash facility or commercial service station. Further, this activity is exempt from these regulations if the health, safety, and welfare of the public are served by washing the vehicle, such as a truck used to collect garbage or used to transport food and perishables.

3. Events:

    a. Events involving the use of water such as: car washes, festivals, parties, water slides, and other activities involving the use of water are permitted, if the water being used drains to a re-circulating device, or is used for a beneficial purpose such as watering landscape to prevent water waste.

4. Restaurants:

    a. All restaurants are encouraged to serve water to their patrons only upon request.

5. Recreational Areas (Includes Parks and Athletic Fields):

    a. The areas can only be used for designated or scheduled events or activities. Unnecessary foot traffic must be discouraged. Watering must follow irrigation of landscaped areas schedule. A variance can be applied for if necessary.

6. Water Waste:
    a. The following uses of water are prohibited at all times during periods in which restrictions have gone into effect unless a variance has been approved:
        i. Washing sidewalks, walkways, driveways, parking lots, street, tennis courts, and other impervious outdoor surfaces; except for immediate health and safety
        ii. Washing buildings, houses, or structures with a pressure washer or garden hose is prohibited for aesthetic purposes but permitting for surface preparation of maintenance work to be performed
        iii. Controlling dust, unless there is a demonstrated need to do so for reasons of public health and safety, or as part of a construction plan approved by a governmental entity
        iv. Flushing gutters or allowing a substantial amount of water to run off a property and accumulate in a gutter, street, or parking lot to a depth greater than one-fourth of an inch.

(2) STAGE 2 - Moderate Water Shortage Conditions (Mandatory Measures)

C. Supply Management Measures:

1. Apply all water-use restrictions prescribed for Stage 2 of the Plan for City of Dripping Springs's utility-owned facilities and properties.
2. City of Dripping Springs will explore ways to reduce system water loss by measures such as fixing leaks, replacing old meters and recycling line flush water, as appropriate.

3. City of Dripping Springs will explore ways to increase use of recycled wastewater to reduce irrigation of public parks with potable water, as appropriate.
4. City of Dripping Springs will actively share drought-related information, including current and projected water supply conditions, water supply restrictions and the need to conserve to its retail customers, including publicly posting notice of entering or exiting Stage 2 on City of Dripping Springs's website.
5. City of Dripping Springs's will actively enforce the irrigation watering restrictions.

D. Demand Management Measures:
Under threat of penalty, the following water-use restrictions shall apply to all retail water customers:

7. Irrigation of Landscaped Areas:

a. **I**rrigation of landscaped areas with hose-end sprinklers or automatic or manual irrigation systems shall be limited to no more than ONCE weekly as determined by City of Dripping Springs. Irrigation of commercial landscapes and recreational areas (including public parks) may apply for a variance but must still develop a schedule where no part of the landscape is watered more than once per week. (*See Appendix A - City of Dripping Springs Water System - Mandatory Watering Schedule.)*

b. Outdoor watering hours will be limited to **7 hours** per day from 6 a.m. to 10 a.m. and 7 p.m. to 10 p.m. on designated days as determined by City of Dripping Springs (see watering schedule in Appendix A). This prohibition does not apply to irrigation of landscaped areas if it is by means of:
   i. a hand-held hose with a positive shut-off device; or
   ii. a faucet-filled bucket or watering can of 5 gallons or less.

   i. c. New landscapes may only be installed if they do not require a variance to the mandatory watering schedule. No variances will be approved.

8. Vehicle Washing:

Use of water to wash any motor vehicle, such as a motorbike, boat, trailer or airplane, is prohibited. A vehicle may be washed anytime at a commercial car wash facility or commercial service station. This activity is exempt from these regulations if the health, safety and welfare of the public are served by washing the vehicle, such as a truck used to collect garbage or used to transport food and perishables.

9. Pools:

   a. Filling of all new and existing swimming pools, hot tubs, wading pools, is prohibited, unless application for variance is approved on a case by case basis. Replenishing to maintenance level is permitted. Draining is permitted only onto pervious surfaces or onto a surface where water will be transmitted directly to a pervious surface, and only if:
      i. Draining excess water from pool due to rain in order to lower water to maintenance level;
      ii. Repairing, maintaining or replacing pool components that have become hazardous; or
      iii. Repair of a pool leak.

   b. Refilling of public/community swimming pools permitted only if pool has been drained for repairs, maintenance, or replacement as outlined in items above.

10. Outside Water Features:

    a. Operation of outside water features, such as, but not limited to, fountains or outdoor misting systems, is prohibited, except where such features are designed and consistently maintained to sustain aquatic life or maintain water quality. The City of Dripping Springs may require proof of such design and consistent maintenance.

11. Ponds:

    Ponds used for aesthetic, amenity and/or storm water purposes may maintain water levels only as necessary to preserve the integrity of the liner and operating system. City of Dripping Springs may request specific design documentation regarding a pond and the intended purpose.

12. Golf Courses:

    Golf courses receiving any amount of treated water from a City of Dripping Springs utility must either develop a drought contingency plan that meets the minimum water reduction target set for Stage 2 or adopt the LCRA sample golf course drought contingency plan.

13. Events:

    Events involving the use of water such as: car washes, festivals, parties, water slides and other activities involving the use of water are prohibited.

14. Recreational Areas (includes municipal parks and common areas)

Irrigation of recreational areas with potable water must follow the seven-hour weekly irrigation schedule, and watering of recreational areas should be prioritized by frequency of use. Unnecessary foot traffic should be discouraged. Watering using an auxiliary source such as recycled water is exempt from these restrictions.

15. Athletic fields

Watering should follow a no more than once-per-week schedule per irrigated area unless the athletic fields are actively used for organized sports practice, competition or exhibition events when irrigation outside of the standard weekly schedule is necessary to protect the health and safety of the players, staff or officials present for the athletic event.

a) All ornamental landscape areas around facilities with athletic fields shall follow general landscape irrigation restrictions.
b) A variance must be filed with the City of Dripping Springs for watering outside of the once per week irrigation schedule stated in Appendix A.

(3) STAGE 3 - Severe Water Shortage Conditions (Mandatory Measures)

A. Supply Management Measures:
   1. City of Dripping Springs will aggressively reduce system water loss by measures such as fixing leaks, replacing old meters and recycling line flush water, as appropriate for the utility system.
   2. City of Dripping Springs will actively share drought-related information, including the current and projected water supply conditions, water supply restrictions and the need to conserve to its retail customers including publicly posting notice of entering or exiting Stage 3 on City of Dripping Springs's website.
   3. In addition to measures implemented in the preceding stages of the plan, City of Dripping Springs will explore additional emergency water supply options.

B. Demand Management Measures: Under threat of penalty, all retail customers are required to further reduce nonessential water uses as follows. All requirements of Stage 2 shall remain in effect during Stage 3, with the following modifications and additions.

   1. Irrigation of Landscaped Areas:

      a. Irrigation of landscaped areas with hose-end sprinklers or in-ground irrigation systems shall be limited to no more than **4 hours**, between the hours of 6 a.m. and 10 a.m., once weekly according to the Stage 2 designated days. (*See Appendix A - City of Dripping Springs Water System - Mandatory Watering Schedule.)* No irrigation with in-ground irrigation systems is allowed from November through February.

b. Outdoor watering hours for hand watering will be limited to between 6 a.m. and 10 a.m. on designated days as determined by [Water Customer Name] *(see watering schedule in Appendix A).* The allowed methods of irrigation of landscaped areas are:
   i. a hand-held hose;
   ii. a faucet-filled bucket or watering can of 5 gallons or less;
   iii. a soaker hose; or
   iv. tree gator watering bags.

c. New landscapes irrigated with spray irrigation are prohibited. New irrigated turf grass is prohibited. The City of Dripping Springs may issue new landscape variances for planting beds installed with drought-tolerant or native plants specified in the Grown Green Plant Guide as having low or very low water needs (http://austintexas.gov/department/grow-green/plant-guide) and irrigated with point source drip irrigation or hand-held hose. .

2. Fire Hydrants:

Use of water from fire hydrants shall be limited to firefighting and activities necessary to maintain public health, safety and welfare. Use of water from designated fire hydrants for construction purposes may be allowed under special conditions and will require a meter; a variance application must be submitted and approved before a hydrant meter will be provided.

3. Outside Water Features:

a) Operation of ornamental fountains is prohibited.
b) Operation of outside water features, is only allowed when such features are used for aeration necessary to sustain aquatic life or maintain water quality. (This provision includes fountains associated with aesthetic ponds and swimming pools.)
c)

4. Recreational areas (includes municipal parks and common areas):

Irrigation of recreational areas with potable water must follow the four-hour weekly irrigation schedule, and watering of recreational areas should be prioritized by frequency of use. Unnecessary foot traffic should be discouraged. Watering using an auxiliary source such as recycled water is exempt from these restrictions.

5. Athletic fields:

A variance including a map of active play areas that must be irrigated with automatic sprinkler systems for sports practice and competition must be filed with the City of Dripping Springs if irrigation falls outside of the normal

watering schedule listed in Appendix A. The irrigation must be necessary to protect the health and safety of the players, staff, and officials present for athletic events.

a) All ornamental landscape areas around facilities with athletic fields shall follow general landscape irrigation restrictions.
b) All athletic fields that are not actively used for sports practice and competition shall follow general landscape irrigation restrictions.

(4) STAGE 4 – Emergency Shortage Conditions

Under threat of penalty for violation, all retail customers are required to reduce non-essential water uses during an emergency. All requirements of stages 1 through 3 are also in effect during Stage 4, with the following modifications and additions:

A. Irrigation of any ornamental landscaped areas is prohibited. The use of hose-end sprinklers and automatic irrigation systems, including drip irrigation, are prohibited except as provided under item B below.

B. Irrigation of foundations, trees and vegetable gardens is allowed with a hand-held hose with a working on/off nozzle, bucket, drip irrigation or soaker hoses irrigation only for **four hours** between the hours of 6 a.m. and 10 a.m. one day per week on the designated outdoor water use day as determined by City of Dripping Springs.

C. Watering of athletic fields is allowed only with a variance filed with the City of Dripping Springs and must follow a no more than once-per-week schedule for no more than 4 hours per irrigated areas. The irrigated athletic fields must be actively in use for organized sports practice, competition or exhibition events to protect the health and safety of the players, staff or officials present for the athletic event..

D. Use of water from fire hydrants shall be limited to firefighting and activities necessary to maintain public health, safety, and welfare only.

E. No application for new, additional, expanded, or larger water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be allowed or approved..

F. Golf courses receiving any amount of treated water from a City of Dripping Springs utility must either develop a drought contingency plan in accordance with City of Dripping Springs Drought Contingency Plan and implement its Stage 4 mandatory restrictions in conjunction with the water provider or adopt the LCRA sample golf course drought contingency plan.

G. Additional measures may be added as needed.

Upon declaration of Stage 4, water use restrictions outlined in Stage 3 shall immediately apply.

8.3 Wholesale Treated Customers

All City of Dripping Springs wholesale treated water customers are required to develop and formally adopt drought contingency plans for their own systems in accordance with Title 30 Texas Administrative Code Sections 288.20 and 288.22. The water supply triggers, and target reduction goals must be consistent with the LCRA DCP. In addition, the measures of this plan must be at least as stringent as the drought response measures required by City of Dripping Springs for its retail customers. Wholesale treated water customers must include in their wholesale water supply contracts the requirement that each successive wholesale customer develop and formally adopt a drought contingency plan, consistent with the LCRA DCP.

(1) STAGE 1 - Mild Water Shortage Conditions

The City of Dripping Springs will keep wholesale treated water customers informed about demand and current and projected water supply conditions. The City of Dripping Springs will initiate discussions with wholesale treated water customers about potential curtailment and the implementation of mandatory measures to reduce water usage by 10%.

(2) STAGE 2 - Moderate Water Shortage Conditions (Mandatory Measures)

The City of Dripping Springs will contact its wholesale treated water customers to initiate additional mandatory measures to control water demand and to ensure capacity for emergency response requirements. Additional mandatory measures will include the curtailment of water use by a minimum of 20% in accordance with the wholesale treated water customer's own drought contingency plan.

(3) STAGE 3 - Severe Water Shortage Conditions (Mandatory Measures)

City of Dripping Springs will contact its wholesale treated water customers to initiate additional mandatory measures to control water demand and to ensure capacity for emergency response requirements. Additional mandatory measures will include the curtailment of water use by a minimum of 30% in accordance with the wholesale treated water customer's drought contingency plan.

(4) STAGE 4 - Emergency Water Conditions

The City of Dripping Springs will contact its wholesale treated water customers to initiate additional mandatory measures to control water demand and to ensure capacity for emergency response requirements. Additional mandatory measures will include the curtailment of non-essential water uses in accordance with the wholesale treated water customer's own drought contingency plan.

In addition, if the Stage 4 triggering criteria is based on a water supply shortage, LCRA will initiate the curtailment of water provided to wholesale treated water customers on a pro rata basis. The wholesale treated water customer's monthly allocation of water shall be based on a percentage of the customer's baseline water use. The percentage will be determined by the -LCRA Board and may be adjusted as conditions warrant.

9.0 Enforcement

9.1 Enforcement Provisions

The following enforcement provisions shall apply to all City of Dripping Springs water customers:

[✓] *Appendix B – Enforcement Provisions for Municipalities*
[ ] *Appendix C – Enforcement Provisions for Water Districts*
[ ] *Appendix D – Enforcement Provisions for Water Supply Corporations and Investor-Owned Utilities*

9.2 Variances

A. The City of Dripping Springs or it's designee may grant variances:
i. From specific applications of the outdoor water schedule, providing that the variances do not increase the time allowed for watering but rather alter the schedule for water; and,
ii. Allowing the use of alternative water sources that do not increase demand on potable water sources for outdoor use. Variance requests may be submitted to Water Customer Services and need not meet the requirements of subsection (2) below.

B. Exemption from specific applications of the outdoor water schedule, providing that the variances do not increase the time allowed for watering but rather alter the schedule for watering.

C. Allowing the use of alternative water sources (i.e., groundwater, reclaimed wastewater) that do not increase demand on potable water sources for outdoor use. Variance requests may be submitted to staff and need not meet the requirements of subsection below.

(2) The general manager, or his designee, may grant in writing temporary variances for existing water uses otherwise prohibited under this plan if it is determined that failure to do so would cause an emergency adversely affecting public health, sanitation or fire protection, and if one or more of the following conditions are met:

A. Compliance with this plan cannot be accomplished during the duration of the time the plan is in effect; or

B. Alternative methods can be implemented that will achieve the same level of reduction in water use.

(3) Persons requesting a variance from the provisions of this plan shall file a petition for variance with City of Dripping Springs any time the plan or a particular drought response stage is in effect. The general manager or his designee will review petitions for variances. The petitions shall include the following:

6. Name and address of the petitioner;
7. Purpose of water use;
8. Specific provision of the plan from which the petitioner is requesting relief;
9. Detailed statement as to how the specific provision of the plan adversely affects the petitioner or what damage or harm the petitioner or others will sustain if petitioner complies with this plan;
10. Description of the relief requested;
11. Period of time for which the variance is sought;
12. Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this plan and the compliance date; and
13. Other pertinent information.

(4) Variances granted by City of Dripping Springs shall be subject to the following conditions, unless waived or modified by the general manager, or his designee:

A. Variances granted shall include a timetable for compliance.

B. Variances granted shall expire when the plan, or its requirements, is no longer in effect, unless the petitioner has failed to meet specified requirements.

(5) No variance shall be retroactive or otherwise excuse any violation occurring before the variance was issued.

9.3 Plan Updates

The plan will be reviewed and updated as needed to meet both TCEQ and LCRA drought contingency plan rules.

Appendix A – Mandatory Watering Schedules

Permanent mandatory watering schedule

City of Dripping Springs

Irrigate outdoors using automatic or manual irrigation systems or hose-end sprinklers no more than **TWICE per week** for up to **14 hours** and only during scheduled days and times as indicated below:

Residential

Addresses ending:
0,1,2,3 Monday and Thursday
4,5,6 Tuesday and Friday
7,8,9 Wednesday and Saturday

Commercial (including large landscapes such as HOA common areas and public schools)
Tuesdays and Fridays

Watering Hours
6 a.m. to 10 a.m. and 7 p.m. to 10 p.m.

Stage 1 mandatory watering schedule

City of Dripping Springs

Irrigation of Landscapes Areas:

Residential

Addresses ending:
0,1,2,3 Monday and Thursday
4,5,6 Tuesday and Friday
7,8,9 Wednesday and Saturday

Commercial (including large landscapes such as HOA common areas)
Tuesdays
and Fridays

Watering Hours
6 a.m. to 10 a.m. and 7 p.m. to 10 p.m. This prohibition does not apply to irrigation of landscapes areas if it is by means of:

i. Hand-held hose; or
ii. Faucet-filled bucket or water can of five gallons or less.

Stage 2 mandatory watering schedule

City of Dripping Springs

Irrigate outdoors no more than **ONCE per week** for up to 7 **hour**s and only during scheduled days and times as indicated below.

Residential
Addresses ending:
1,3 Monday
2,4 Tuesday
5,7 Wednesday
6,8 Thursday
9,0 Friday

Commercial (including large landscapes such as HOA common areas and public schools)

Saturday

Watering Hours
6 a.m. to 10 a.m. and 7 p.m. to 10 p.m. This prohibition does not apply to irrigation of landscapes areas if it by means of:

i. Hand-held; or
ii. Faucet-filled bucket or water can of five gallons or less

Stage 3 mandatory watering schedule

City of Dripping Springs

Irrigate outdoors no more than **ONCE per WEEK** for up to **four hours** from 6 a.m. to 10 a.m. during the same designated days as Stage 2. No irrigation with in-ground irrigation systems is allowed from November through February.

Outdoor watering hours for hand watering will be limited to between 6 a.m. and 10 a.m. on the same designated days that apply to watering with hose-end sprinklers or irrigation systems. The allowed methods of hand watering landscaped areas are:

i. Hand-held hose
ii. Faucet-filled bucket or water can of five gallons or less
iii. Soaker house
iv. Tree gator watering bags

Appendix B – Enforcement Provisions for Municipalities

Enforcement for Retail Customers

The following enforcement provisions shall apply to all City of Dripping Springs retail water customers:

(1) No person shall knowingly or intentionally use or allow the use of water from a City of Dripping Springs for residential, commercial, industrial, agricultural, governmental or any other purpose in a manner contrary to any provision of this Plan, or in an amount in excess of that permitted by the drought response stage in effect at the time.

(2) Any person who violates this Plan shall be subject to the following fines, penalties and/or conditions of service:

A. Following the first documented violation, the violator shall be given a notice specifying the type of violation, the date and time it was observed, and fines and restrictions on service that may result from additional violations.

B. Following the second documented violation, the violator shall:

1. [*option 1*] be criminally responsible for the violation of this Plan, punishable by a fine of $500 [*not to exceed $500*];

C. Following the third documented violation, the violator shall:

1. [*option 1*] be criminally responsible for the violation of this Plan, punishable by a fine of $1,000

D. Following the fourth documented violation, City of Dripping Springs shall, upon due notice to the customer, discontinue water service to the premises where such violations occur. Services discontinued under such circumstances shall be restored only upon payment of a reconnection charge, hereby established at $500, and any outstanding charges including late payment fees or penalties. In addition, suitable assurance in the amount of a deposit of $500 must be given to City of Dripping Springs so that the same action shall not be repeated while the plan is in effect. City of Dripping Springs may apply the deposit to any surcharges or penalties subsequently assessed under this plan against a customer. The deposit, if any, shall be returned to the customer at the time of the customer's voluntary disconnection from the utility system.

(3) Each day that one or more of the provisions in this Plan is violated shall constitute a separate violation. Any person, including one classified as a water customer of City of Dripping Springs, in apparent control of the property where a violation occurs or originates, shall be presumed to be the violator. Any such persons, however, shall have the right to show that they did not commit the violation. (*See enforcement process diagram in Appendix E - Drought Response Retail Enforcement Process for Municipalities*.)

(4) The designated manager or official of City of Dripping Springs shall have the power to enforce the provisions of this Plan.

(5) The municipal court shall have the power to issue to the designated manager or official of City of Dripping Springs administrative search warrants, or other process allowed by law, where necessary to aid in enforcing this Plan.

(6) Judicial enforcement of fines and penalties issued pursuant to this Plan may be sought through a municipal court, district court or small claims court having jurisdiction over the matter.

(7) Compliance with this Plan also may be sought through injunctive relief in state district court.

Enforcement for Wholesale Customers

Wholesale treated water customers shall provide City of Dripping Springs with an order, ordinance or resolution to demonstrate adequate enforcement provisions for the wholesale customer's drought contingency plan.

In addition, wholesale treated water customers that fail to comply with the drought contingency measures in this Plan may be subject to the following civil penalties, in addition to any other remedies available to City of Dripping Springs by law or under the terms of the wholesale water contracts.

Penalties for wholesale treated water customers:

First documented violation: Written notice of violation

Second documented violation: Penalty fee up to $2,000 [*not to exceed $10,000*]

Third documented violation: Penalty fee up to $10,000 [*not to exceed $10,000*]

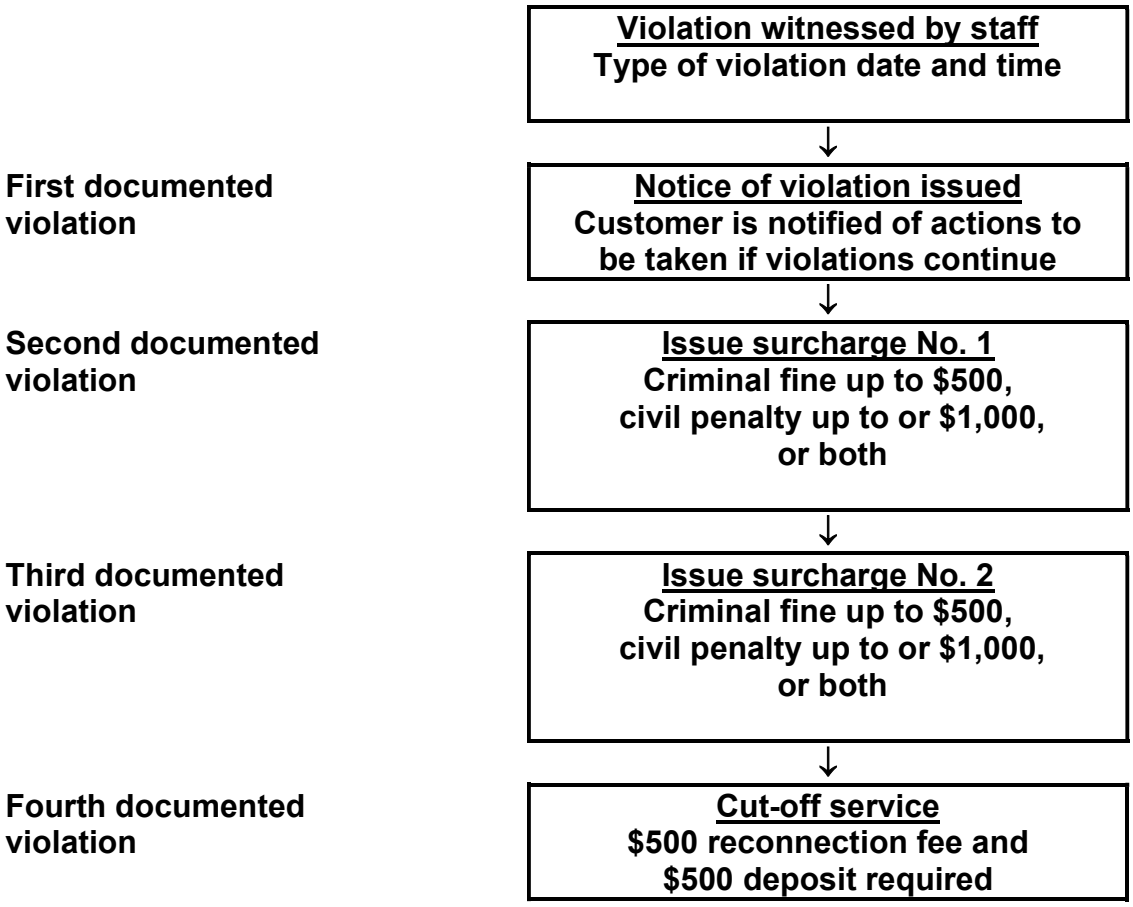
Legal Authority applicable to Municipalities in Regard to Drought Contingency Plan Enforcement

Please note that the following list is not intended to be exhaustive, and statutes listed below may not apply to all municipalities. Citations below may change following the publication date of this DCP template. Each municipality is encouraged to consult with legal counsel in regard to enforcement of drought contingency plans and specific enforcement authority available to each municipality.

Texas Local Government Code sec. 552.001
Texas Local Government Code Chapter 54

Texas Government Code Chapter 29

Appendix C – Drought Response Retail Enforcement Process for Municipalities



Appendix D – Authorization to Implement and Approve Drought Contingency Plans

Site Development Projects				
Site Development Project Name	**City Limits / ETJ**	**Location**	**Description**	**Status**
SD2021-0005 Dripping Springs WWTP Expansion	CL	23127 FM 150 W	Expansion of the Wastewater treatment plant.	HOLD
SD2021-0021 RR 12 Commercial Kitchen	CL	28707 RR 12	Commercial kitchen that will support a catering business, no on-site dining is proposed.	Approved w/ Conditions
SD2021-0033 Bell Springs Business Park, Sec 1&2 Rev	ETJ	4955 Bell Springs	A revision for minor adjustments on site layouts, rainwater, and overall drainage & water quality.	Approved w/ Conditions
SD2022-0001 Julep Commercial Park	ETJ	Northeast corner of W US 290 and Trautwein Rd	11.27 acre site of mixed-use commercial buildings with supporting driveways, water quality and detention pond, rainwater harvesting, and other utilities.	Waiting on Resubmittal
SD2022-0013 DS Flex Business Park	CL	28513 RR 12	Construction of two shell buildings with accompanying site improvements.	Waiting on Resubmittal
SD2022-0011 Skybridge Academy	CL	519 Old Fitzhugh Road	Remodel/repurpose of existing historic structures, add new construction to tie together the house and garage with additional parking and revised driveway.	Approved w/ Conditions
SD2022-0014 Bell Springs Site Plan (Travis Flake)	ETJ	5307 Bell Springs Rd	Office and Warehouse with drives, parking, waterline connection, and pond.	Approved w/ Conditions
SD2022-0018 Office 49	ETJ	241 Frog Pond Lane	The construction of eleven office buildings of varying sizes along with the related paving, grading, drainage, and utility improvements.	Waiting on Resubmittal
SD2022-0020 Merigian Studios	ETJ	105 Daisy Lane	Art studio with driveway, parking, and external structures.	Approved w/ Conditions
SD2022-0024 4400 US 290 SP	ETJ	4400 US 290	7 Commercial Buildings in the ETJ.	Approved w/ Conditions
SD2022-0025 Hardy Drive	ETJ	2901 US 290	Construction of a road for the Hardy and Bunker Ranch development to meet fire code.	Under Review
SD2022-0039 Big Sky Ranch WWTP	CL	Sue Peaks Loop	Adding storage tanks to existing approved site plan.	Under Review
SD2022-0032 Driftwood Ranch Clubhouse	ETJ	857 Driftwood Golf Club Drive	Revising previously approved site plan.	Waiting on Resubmittal
SD2023-0004 Austin Ridge Bible Church Revision	ETJ	31330 Ranch Road 12	Removal of the existing old house, the addition of 3 portable buildings and pavilion; additional parking.	Waiting on Resubmittal
SD2023-0007 Phase 4A Drip Irrigation System Improvements	ETJ	2581 E Hwy 290	The project is Phase 4A of the drip disposal fields and consists of 14.76 acres of drip irrigation fields only.	Approved w/ Conditions
SD2023-0008 102 Rose Drive	CL	102 Rose Dr	Construction of two additional duplexes w/ accompanying site improvments.	Waiting on Resubmittal
SD2023-0010 Creek Road Horse Farms	CL/ETJ	1225 Creek Rd	Horse training facility with covered riding arena, barn, storage building and open-air riding.	Waiting on Resubmittal
SD2023-0011 Amazing Explorers Academy	ETJ	Ledgestone	Daycare facility, including driveways, parking areas; and water, wastewater, and stormwater facilities.	Waiting on Resubmittal
SD2023-0014 BR Dripping Springs	CL	27010 RR 12	3 commercial buildings with parking, stormwater and water quality.	Waiting on Resubmittal
SD2023-0018 Sunset Canyon Storage Facility	ETJ	950 S. Sunset Canyon Drive	Proposed storage facility with associated parking and drive.	Waiting on Resubmittal
SD2023-0019 3980 US 290 Warehouse	ETJ	3980 US 290	Construction of 4 - 5k sq ft warehouse/office buildings.	Waiting on Resubmittal
SD2023-0020 Graveyard Cellars	ETJ	24101 RR 12	2800 sq ft building and parking.	Approved w/ Conditions
SD2024-001 Roxie's at Dripping Springs	CL	299 W. Mercer Street	Renovating and expanding site.	Approved w/ Conditions
SD2024-002 QuickTrip #4133	CL	HWY 290 and Sawyer Ranch Rd	Convenience store with fuel sales.	Waiting on Resubmittal
SD2024-004 Glass Business Park, Phase 2	ETJ	2560 W Hwy 290	Construction of 6 additional warehouse buildings with associated site improvements	Waiting on Resubmittal
SD2024-007 New Growth at Roger Hanks	CL	US 290 at Roger Hanks Pkwy	Mix land use and 240 residential units with parkland and roadway connections.	Waiting on Resubmittal
SD2024-008 AutoZone 5807 Dripping Springs	CL	US Hwy 290	Retail auto parts store.	Waiting on Resubmittal
SD2024-010 Austin Ridge Bible Church	ETJ	3100 E Hwy 290	Church campus, with worship center, driveways, parking, detention, and park area.	Under Review
SD2024-011 Patriot Erectors CZP	ETJ	3023 West Hwy 290	Detention pond.	Waiting on Resubmittal
SD2024-012 5285 Bell Springs Rd	ETJ	5285 Bell Springs Rd	Private religious educational facility and associated improvements.	Waiting on Resubmittal
SD2024-014 Pear Tree Commercial	ETJ	27322 RR 12	Existing commercial space. Pave the parking area and provide water quality treatment of that area.	Approved w/ Conditions
SD2024-020 Lost Lizard	ETJ	10730 FM 967	Four residential accessory structures and gravel parking.	Waiting on Resubmittal
SD2024-021 Genesis City - Glamping Hotel	ETJ	113 Concorde Circle	One main building with 9 cabins, and parking.	Approved
SD2024-022 Stephenson Building Addition and Parking Improvements	CL	101 Old Fitzhugh Rd	Phase 1:Stephenson building addition. Phase 2: parking lot improvements.	Approved w/ Conditions
SD2025-002 Ewald Kubota	ETJ	3981 E US 290	Kubota sales and service center with customer and display parking.	Waiting on Resubmittal

Site Development Project Name	City Limits / ETJ	Location	Description	Status
SD2025-003 The Ranch at Caliterra Amenity Center	ETJ	Whiskey Barrel Dr.	Office, bathrooms, remodel pavillion out of an existing barn, pool, pickleball courts, and parking.	Waiting on Resubmittal
SD2025-005 Big Sky Ranch Drip Field Addition	CL	Sue Peaks, Lost mine Peak, Apache Mt., Davis Mt.	Installation of additional subsurface drip disposal systems.	Approved
SD2025-006 AAA Storserv Dripping Springs LLC Phase 2	CL	1300 E US 290	Expansion of developed area including buildings, drives and parking.	Under Review
SD2025-007 Caster Studios Phase 2	CL	271 Sports Park Road	Adding two buildings to existing site, with parking, detention, rain water harvesting, and sidewalk.	Under Review
SD2025-009 Gracie Barra Dripping Springs Expansion	ETJ	261 Frog Pond Lane	Existing 2432 sq ft building w/ parking; adding 2354 sq ft space with grading and drainage improvements.	Waiting on Resubmittal
SD2025-008 Driftwood Utility Access Corridor	ETJ	FM 967 and RM 1826	Joint use access easement that will tunnel under existing TxDOT ROW.	Waiting on Resubmittal
SD2025-010 Dripping Springs High School No. 2	ETJ			Waiting on Resubmittal
SD2025-011 Hemphill 1862 Dripping Springs	ETJ			Waiting on Resubmittal
SD2025-012 West Travis County PUA 1340 Elevated Storage Tank	ETJ			Under Review
SD2025-013 Hays County ESD 6 Fire Station 72	CL			Under Review
Blue rows indicate new applications				

Subdivision Projects				
Subdivision Project Name	**City Limits / ETJ**	**Location**	**Description**	**Status**
SUB2021-0011 Double L Phase 1 Prelim Plat	ETJ	1.5 miles N of US 290 & RR 12	PP for 243 residential units and 1 amenity center	Approved w/ Conditions
SUB2022-0033 The Ranch at Caliterra	ETJ	Premier Park Loop	Preliminary plat of the Carter tract with 243 lots	Approved w/ Conditions
SUB2022-0043 Howard Ranch Sec 4 Lots 62 & 63 AP	ETJ	590 Cypress Creek Dr	An amending plat to remove a site parking area from the single family lot. This request is by the property owner.	Waiting on Resubmittal
SUB2022-0052 Village Grove Phase 1 Construction Plans	CL	Sports Park Rd	Approved- back in review for landscape revisions.	Approved w/ Conditions
SUB2022-0048 Wild Ridge Phase 1 CP	CL	E US 290	Construction plans for phase 1 of Wild Ridge	Waiting on Resubmittal
SUB2023-0001 Village Grove Phase 2B CP	CL	Sports Park Rd	Residential townhome infrastructure improvements. Construction of 16 Townhome lots and roadways.	Approved w/ Conditions
SUB2023-0003 The Ranch at Caliterra CP	ETJ	Soaring Hill Rd at HC Carter Way	Construction Plans for the Carter tract.	Approved w/ Conditions
SUB2023-0006 Wild Ridge Phase 1 FP	CL	E US 290	Approximately 62.1 acres to include 136 residential lots, roadways, and a commercial lot	Approved w/ Conditions
SUB2023-0008 Silver Creek Subdivision Construction Plans	ETJ	Silver Creek Rd	29 Single family residential lots with access, paving, OSSF, water supply well, and open space	Approved
SUB2023-0028 Arrowhead Commercial Final Plat	CL	US Hwy 290 W	Subdividing 6.6 acres as 1 lot.	Waiting on Resubmittal
SUB2023-0034 Lunaroya Subdivision Final Plat	ETJ	Silver Creek Rd	28 single family large residential lots with on site sewage for each lot	Approved w/ Conditions
SUB2023-0037 Amending Plat of Final Subdivision Plat of Roger Hanks Park	CL	US 290 at Roger Hanks Pkwy	Redesign to include north bound turn lane on Roger Hanks Pkwy, Improvements to Hamilton Crossing and Lake Lucy Loop	Waiting on Resubmittal
SUB2023-0038 The Ranch at Caliterra Final Plat	ETJ	HC Carter Way	234 single family lots on 200.024 acres	Approved w/ Conditions
SUB2023-0039 Wild Ridge Phase 2 Construction Plans	CL	Shadow Ridge Parkway	142 single family lots, minor arterial and local roadways, 2 water quality ponds, utilities, lift station, parkland and open space	Waiting on Resubmittal
SUB2023-0042 Hardy Construction Plans	CL	2901 West US 290	78.021 acres subdivided into 73 single family lots	Approved w/ Conditions
SUB2023-0048 Driftwood Falls Estates Subdivision	ETJ	609 S Creekwood Dr	Replat two lots in one.	Approved w/ Conditions
SUB2023-0050 Sanctuary Dripping Springs CP	ETJ	1111 Hays Country Acres	Revising approved construction plans.	Under Review
SUB2024-005 Roger Hanks Construction Plans	CL	US 290 at Roger Hanks Pkwy	Public improvements from southern boundary to intersection with 290.	Waiting on Resubmittal
SUB2024-008 Skylight Hills Final Plat	ETJ	13001 and 13111 High Sierra	Subdivide into 5 lots.	Approved w/ Conditions
SUB2024-012 St. Martin's Subdivision, Lots 1 & 2 Amending Plat	CL/ETJ	230 Post Oak Drive	Combine two existing lots into one.	Approved w/ Conditions
SUB2024-015 Gateway Village Phase 1	CL	US 290	Final plat for 144 single family subdivision.	Waiting on Resubmittal
SUB2024-017 Wild Ridge Phase 2 Final Plat	CL	Shadow Ridge Parkway	152 single family residential lots.	Approved w/ Conditions
SUB2024-019 Driftwood Subdivision, Phase 5, Preliminary Plat	ETJ	Thurman Roberts Way	13 lots. 10 residential, 2 open space, and 1 private.	Approved w/ Conditions
SUB2024-021 Village Grove Phase 2A Subdivision	CL	Village Grove Parkway	Infrastructure for 64 single family residential lots on 18.206 acres	Waiting on Resubmittal
SUB2024-024 Heritage Phase 4 Subdivision	CL	Sportsplex Drive	115 single family lots on 31.80 acres	Waiting on Resubmittal
SUB2024-025 Village Grove Phase 3 Subdivision	CL	Village Grove Parkway	115 single family lots on 30.04 acres	Waiting on Resubmittal
SUB2024-030 Heritage Phase 3 Final Plat	CL	Sportsplex Drive	164 lot subdivision plat	Waiting on Resubmittal
SUB2024-033 Village Grove Phase 1 Final Plat	CL	Village Grove Parkway	Plat of 1 roadway, 2 water quality ponds, and 1 drainage easement.	Approved w/ Conditions
SUB2024-034 Village Grove Phase 2A Final Plat	CL	Village Grove Parkway	Final plat for 165 single family lots.	Approved w/ Conditions
SUB2024-036 Mitchel Property Preliminary Plat	ETJ	Silver Creek Rd	33 residential lots.	Waiting on Resubmittal
SUB2025-001 Village Grove Phase 2B Final Plat	CL	Village Grove Parkway	262 single family residential lots.	Approved w/ Conditions
SUB2025-002 Lunaroya PH 3 Preliminary Plat	ETJ	13755 Silver Creek Dr	9 single family residential lots.	Waiting on Resubmittal
SUB2025-005 Ewald Kubota Minor Plat	ETJ	3981 E US 290	3.9 acre plat	Waiting on Resubmittal
SUB2025-006 Cannon Ranch Phase 3 and 4 Construction Plans	CL	Rushmore Drive at Lone Peak Way	Public roadways, utilities, and storm drainage infrastructure for 156 residential and 3 open space lots	Waiting on Resubmittal
SUB2025-007 Double L Ranch Reclaimed Water Production Facility and Pump and Haul	ETJ	Northwest of RR 12 and Event Center Dr	Reclaimed water facilty	Waiting on Resubmittal
SUB2025-008 Cannon Ranch Phases 3 & 4 Subdivision Final Plat	CL	Rushmore Drive	3 open space lots and 156 40', 45', or 60' residential lots.	Waiting on Resubmittal
SUB2025-009 Wild Ridge Subdivision Wastewater Treatment Plant Final Plat	CL	Goose Island Dr and Lost Maples Dr	0.8873 acre lot	Approved w/ Conditions
SUB2025-011 Double L Pod A1, A2, A3 Arterial Preliminary Plat	ETJ	Pecos River Xing	Public infrastructure.	Under Review
SUB2025-012 Double L Pod A3 Preliminary Plat	ETJ	Pecos River Xing	46 residential units.	Under Review
SUB2025-013 Double L Pod A1 and A2 Preliminary Plat	ETJ	Pecos River Xing	99 residential units.	Under Review
SUB2025-014 Village Grove Wastewater Treatment Plant	CL	S Rob Shelton Blvd	WWTP for the Village Grove Development.	Waiting on Resubmittal
SUB2025-015 Wild Ridge Wastewater Treatment Plant	CL	Goose Island Drive	Phase one of the temporary WWTP.	Waiting on Resubmittal
SUB2025-017 Lunaroya Phase 2 Construction Plans	ETJ	Silver Creek Road	28 single family residential lots (minimum 1.5 acre) with on site sewage, paving, utilites, and open space.	Waiting on Resubmittal
SUB2025-018 Double L Pod B4 Preliminary Plat	ETJ	153 El Capitan Lp	Plat for 62 residential lots	Waiting on Resubmittal
SUB2025-019 Double L Pod B4 Arterial Preliminary Plat	ETJ	153 El Capitan Lp	Single lot plat for arterial road adjacent to pod B4	Waiting on Resubmittal
SUB2025-020 Double L Pod A4 and B1 Preliminary Plat	ETJ	843 Pecos River Xing	Plat for 102 residential lots	Waiting on Resubmittal
SUB2025-021 Double L Pod A4 and B1 Arterial Preliminary Plat	ETJ	843 Pecos River Xing	Single lot plat for arterial road adjacent to pods A4 and B1	Waiting on Resubmittal
SUB2025-022 Sunset Canyon, Section 4, Lots 680 & 681 Amending Plat	ETJ	601 Cottonwood Creek	Adjusting lot line between 2 existing platted lots totaling 3.29 acres	Under Review
SUB2025-023 Double L Ranch Pod A3 Construction Plans	ETJ	29300 RR 12	46 residential units with paving, utilities, drainage, and water quality improvements.	Under Review
SUB2025-024 Double L Ranch Pod A1 & A2 Construction Plans	ETJ	29300 RR 12	99 residential units with paving, utilities, drainage, and water quality improvements.	Under Review
SUB2025-025 Double L Ranch Pod A1, A2, A3 Arterial Construction Plans	ETJ	29300 RR 12	46 residential units with paving, utilities, drainage, and water quality improvements.	Under Review
Blue rows indicate new applications				

In Administrative Completeness	Filing Date
SUB2024-034 Village Grove Phase 2A Final Plat	1-Oct
SD2022-0032 Driftwood Ranch Clubhouse Site Plan	1-Oct

Ongoing Projects	
Comprehensive Plan	Multiple Comp Plan Committee meetings for October
Cannon Mixed-Use	Awaiting Resubmittal
PDD2023-0001 Madelynn Estates	Awaiting PDD Resubmittal TCEQ-required public meeting on October 6.
PDD2023-0002 Southern Land	October DAWG meeting to trasnportation and tree preservation.
PDD2025-001 ATX RR 12 and Kopponen PDD Amendment	Project introduction at City Council on 10/21 and P&Z on 10/28.

City of Dripping Springs Sign Ordinance Update 2025

Location of Change	Change	Comments
26.01.002 Purpose and Findings	Added purpose and findings.	Assists with reasonable basis and municipal purpose for regulations.
26.01.004 Summary of Regulations by Type	Added sign chart reference – Appendix A.	Sign Chart has been available since the last comprehensive sign rewrite but this points to it at the beginning of the ordinance.
26.01.006 Administration	Added administration section for clarity related to sign administrator.	Sign Administrator handles most aspects of sign permitting.
26.01.007 Violations and Penalties	Violations and Penalties Reference	
26.01.009 Authorized Signs without a Permit	Clarified Vehicle Signs are allowed without a permit so long as it does not extend far above or around the vehicle Moved directional signs to signs that require permits	Makes it easier to regulate since many vehicles have wraps now. The point of this regulation is to avoid using vehicles that are non-functional as signs without a permit.
26.01.012 Compliance with Outdoor Lighting Ordinance	Expanded authorization to use lighting in signs as it relates primarily to menu boards so long as the changes are not too often to be distracting	Updated in line with new technology, especially considering that the majority of menu signs are not visible from the right-of-way.
26.01.016 Large Real Estate Signs	Large Real Estate Signs – Separate Large and Small Real Estate Signs – Large signs require a permit	This change was made so that homeowners and others who want

		to use a small sign do not need a permit, but larger signs that could cause safety or aesthetic issues do require a permit.
26.01.017 Small Real Estate Signs	Small Real Estate Signs – Separate Large and Small Real Estate Signs – Small signs do not require a permit and additional small signs can be used for each unit that is for lease or for sale	See above.
26.02.001 Residential Districts	Combined all types of Residential Monument Signs for ease of regulation and fees Allows additional extensions of construction/development signs at one year intervals as long as the residential development is under construction. Moved Traffic Control Signs to signs that do not require a permit.	Easier to regulate and fees are in line with how other building projects are treated. Recognizes that construction projects can take more than 24 months.
26.02.002 Multifamily Districts	Combined all types of Multifamily Monument Signs for ease of regulation and fees Allows additional extensions of construction/development signs at one year intervals as long as the residential development is under construction. Moved Traffic Control Signs to signs that do not require a permit.	Easier to regulate and fees are in line with how other building projects are treated. Recognizes that construction projects can take more than 24 months.
26.02.004 Commercial Districts	Clarifies what corner means for multiple signs – customer entrances. Allows additional extensions of commercial district construction/development signs at one year intervals as long as the residential development is under construction. Restaurant Menus – allows lighted signs in reference to technology that allows for screened restaurant menus. Also allows lanes for both	This helps with making sure it is clear where a "corner" is and to reflect the purpose of the additional signage – visibility.

	pedestrian and vehicular lanes. Finally, allows 2 restaurant menus by right because that is currently the norm and the menu signs are not facing the right-of-way.	
26.02.005 Industrial, light industrial, government, utility, institutional, public recreation, public park or preserve, and agriculture.	Allows daily display signs in industrial/gui/parks without permits	Matches other districts.
26.02.007 Banners	Allows Banners that are attached to buildings or fences to remain so long as they are in good condition rather than being limited to certain times per year. Banners that are attached to poles or similar items may only stay for up to three months a year. Added a small commercial banner of 24 sq ft all of the time so long as it is in on nonresidential property and securely fixed to a wall, fence, or building	Easier to regulate and assists businesses with allowing them to keep banners that are in good condition.
26.03.001 Permit Required	Removed reapplication process/fee for sign applications. Removed duplication of list of application materials, while eliminating the required site visit where that is not needed. References licensed electrician as needed only where a sign has electrical components.	Reapplication for signs takes less time and effort than other types of reviews.

26.03.003 Variances	Removes reference to changeable copy/led signs now that they are allowed by right with a permit. Added variances for fees as an item that the Sign Administrator can approve or deny. Any sign administrator decision on variances may be appealed to city council.	LED signs related to menus and gas stations are regularly approved so they will be allowed by right so long as they are not outward facing.
Throughout	Remove reference to permit stickers.	The building department does not use these anymore. Their software and in the field technology is able to judge whether a sign has a permit and when it was approved.

APPENDIX A. CHART OF SIGN DESIGN STANDARDS

Type of Sign	Maximum Area	Maximum Height	Maximum Number	Permit Required	Conditions (Section Number)
Government signs			n/a	no	26.01.0095
Small Real estate	6 sq. ft.	3 ft.	1 or 2	no	26.01.005017
Large Real estate	32 sq. ft.	8 ft.	1	yes	26.01.005016
Real estate — lease individual units	6 sq. ft.	6 ft.	For each unit for lease	no	26.01.005016; 26.01.017
Vending machine	Size of machine	Size of machine	Equal to number of machines on site	no	26.01.0095
Vehicle signs/mobile food vendors	32 sq. ft. size of vehicle	None size of vehicle	Not to exceed 32 sq. ft.	yesno	26.01.0095
Sports field signs	32 sq. ft.	6 ft.	None	no	26.01.0095
Memorial signs	6 sq. ft.	None	1 for each unit	no	26.01.0095
Window signs-limited[1]	5 sq. ft.	5 ft.	Limited by content	no	26.01.0095
Residential developments — monument identification sign (small)	18 sq. ft.	6 ft.	1	yes	26.02.001
Residential developments — monument identification sign (large)	24 sq. ft.	6 ft.	1	yes	26.02.001
Flags — noncommercial	5' X 8' ft.	Flagpole can be up to 25 ft.	2	no	26.02.001
Home occupation	4 sq. ft.	4 ft.	1	no	26.02.001

Residential — noncommercial signs	4 sq. ft.	4 ft.	None	no	26.02.001
Residential — address (required)	Letters and numbers 6" to 8"		One (required)	no	26.02.001
Residential — temporary sign	9 sq. ft.	9 ft.	One	no	26.02.001
Construction/ development sign	48 sq. ft.	8 ft.	One	yes — project completion ~~or 24 months~~ Annual Renewals	26.02.001; 26.02.002; 26.02.004
Traffic-control signs (not MUTCD)	2 sq. ft.	6 ft. from grade	As required	no	26.02.001
~~Multifamily residential complex monument sign — small~~	~~18 sq. ft.~~	~~6 ft.~~	~~One per entrance~~	~~yes~~	~~26.02.002~~
Multifamily residential complex monument sign ~~— large~~	24 sq. ft.	6 ft.	One per entrance	yes	26.02.002
Multi family identification wall sign	15 sq. ft.		One (if no hanging sign)	yes	26.02.002
Multifamily identification hanging sign	8 sq. ft.		One (if no wall sign)	yes	26.02.002
Manufactured home park identification monument sign	24 sq. ft.	6 ft.	One	yes	26.02.003

Commercial wall sign	64 sq. ft. — length limited to 75% of storefront width	Maximum building height	One or two depending on location of ~~business~~ entrances	yes	26.02.004
Commercial hanging signs	8 sq. ft. limited to 75% of storefront width	7 ft. clearance	One or two depending on location of ~~business~~ entrances	yes	26.02.004
Commercial construction/development sign	64 sq. ft.	8 ft.	One per entrance	yes	26.02.004
Commercial monument sign — individual business	32 sq. ft.	6 ft.	One	yes	26.02.004
Commercial awning sign (as part of wall sign)	See conditions		One or two depending on location of business	yes	26.02.004
Restaurant menus	32 sq. ft.	8 ft.	Two ~~One~~ per lane – vehicular and pedestrian	yes	26.02.004
Equipment signs	Size of equipment		None	no	26.02.004
Window signs	Cumulative of 24 sq. ft. or 48 sq. ft. depending on location of business		None	no	26.02.004

Noncommercial signs	36 sq. ft.	6 ft.	One	no	26.02.004
Flags — noncommercial	40 sq. ft.	Flagpole can be up to 25 ft.	Depends on frontage; up to 4 maximum	no	26.02.004
Daily displays		3 ft.	One	no	26.02.004; 26.02.005
Wall signs - industrial	64 sq. ft. cumulative			yes	26.02.005
Monument identification sign – industrial	48 sq. ft.	8 ft.	One	yes	26.02.005
Equipment signs	Size of equipment		None	no	26.02.005
Noncommercial signs	36 sq. ft.	6 ft.	One	no	26.02.005
Flags — noncommercial	40 sq. ft.	Flagpole can be up to 25 ft.	Depends on frontage; up to 4 maximum	no	26.02.005
~~Daily display~~		~~3 ft.~~	~~1~~	~~yes~~	~~26.02.005~~
Monument or wall identification sign -multi-unit complex	48 sq. ft.	6 ft.	Depends on location	yes	26.02.006
Banners – affixed to building, fence, wall	32 sq. ft.	15 ft.	~~Up to 4 a year; 30 days at a time per lot~~ One	~~yes~~ no	26.02.007
Banners – affixed to pipes, poles	32 sq. ft.	15 ft.	One up to 3 months per year	No	26.02.007
Banners—Commercial Banners	24 sq ft		At any time	No	26.02.004; 26.02.005; 26.02.007
Temporary signs	36 sq. ft.	6 ft.	Up to 3 a year, 14 days at a time per lot	yes	26.04.008

New Business Signs	32 sq ft	6 ft	One between building permit and CO – 60 days; and 60 days prior to opening	No	26.02.004

[1] Store hours, security systems, trade organization memberships, credit cards accepted, no solicitation, and open/closed.

- CODE OF ORDINANCES
Chapter 26 - SIGNS
ARTICLE 26.01. GENERAL PROVISIONS

Sec. 26.01.001 Title.

This chapter shall be known as the "sign ordinance."

Sec. 26.01.002 Purpose and Findings.

The City adopts this ordinance pursuant to Tex. Loc. Gov't Code Chapter 216. The City Council finds that signs affect public safety, community aesthetics, and economic vitality. Reasonable regulation of signs promotes traffic safety, supports local business visibility, and maintains the character of neighborhoods, while respecting constitutional free speech protections.

~~Sec. 26.01.002~~Sec. 26.01.003 **Geographic scope and applicability.**

This chapter applies to all property within the incorporated municipal boundaries (i.e., city limits) and the extraterritorial jurisdiction (ETJ) as it exists at the time this chapter is adopted and as may be modified in the future. All signs must comply with this Chapter, the Outdoor Lighting Ordinance, the Building Code, and all other applicable codes.

Sec. 26.01.004 Summary of Sign Regulations by Type.

Appendix A Chart of Sign Design Standards following this code summarizes regulations for each sign type. In the event of an inconsistency between the Chart of Sign Design Standards and the remainder of this ordinance, the latter shall prevail.

~~Sec. 26.01.003~~Sec. 26.01.005 **Definitions.**

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Applicant. The person or entity requesting sign permit approval, a variance, or a master sign plan from the city.

Arterial street. Arterial streets are designed to carry high volumes of through traffic. A principal traffic artery, carrying higher volumes of traffic, more or less continuously, which is intended to connect remote parts of the area adjacent thereto and to act as a principal connecting street with state highways.

Awning. A cloth, plastic, or other nonstructural covering that either is permanently attached to a building or can be raised or retracted to a position against the building when not in use. This term does not include canopies.

Balloon signs. Any inflatable, three-dimensional sign, with or without letters, symbols, or numbers, that is either expanded to its full dimensions or supported by gases contained within the sign at a pressure greater than atmospheric pressure.

[1]State law reference(s)—Authority of municipality to regulate signs, V.T.C.A., Local Government Code, ch. 216.

Billboard sign. A sign that is freestanding, attached to or part of a building, and is an off-premises sign that is designed for a change in copy, so that the characters, letters, display, or illustrations can be changed or rearranged within a fixed sign face.

Building. Any structure built for the support, shelter, and enclosure of persons, animals, goods, or movable property of any kind. When subdivided in a manner sufficient to prevent the spread of fire, each portion so subdivided may be deemed a separate building.

Changeable copy sign. A sign on which message copy is changed manually through the utilization of changeable letters, numbers, symbols, and other similar characters or pictorial panels.

Commercial districts. Commercial districts include areas zoned office, local retail, general retail, and commercial services, property in a planned development district that allow for a commercial use, or property in the ETJ that is appraised as commercial property.

Construction/development sign. A commercial sign placed on a piece of property advertising planned construction and providing related information, including but not limited to the name of the contractor, the name of the owner, the planned date of completion, and information indicating the future use or occupation of the site.

Daily display sign. An A-framed, hinged, folding sign that is freestanding and portable and that is not affixed to a base or pole structure. A daily display sign can be in the form of a board or an easel.

Dilapidation. Dilapidation includes any sign where elements of the sign area or background have portions of the finished material missing, broken, or illegible; where the structural support is visibly bent, broken, dented, rusted, corroded, or loose; or where the sign or its elements are not in compliance with the adopted electrical code and/or the building code.

Directional signs. Any sign with on a property zoned or used for a commercial purpose that includes directional information to the site of the sale, rent, or lease of goods, services, or property.

Electronic sign. Any sign for which the text, letters, numbers, pictures, or symbols forming the informational portion of the sign consists of flashing, intermittent, or moving lights, including any LED screen or any other type of video display. Illumination of a sign, by itself, does not create an electronic sign.

ETJ. Extraterritorial jurisdiction of the city as created and authorized under chapter 42 of the Texas Local Government Code or as been added by request or other manner.

Facade. The principal face of a building, including parapet walls and omitted wall lines, or any part of a building which encloses or covers usable space. Where separate faces are oriented in the same direction, or in directions within 45 degrees of one another, they are to be considered as part of a single facade.

Feather banner. A sign that is constructed of lightweight material (such as cloth, canvas, or vinyl) affixed to a pole or building which is similar to a flag, except that it is longer than it is wide. A feather banner resembles a feather, in that it is tall and narrow, having more surface area vertically than horizontally when fully extended.

Freestanding. A sign that is not attached to a wall or building. A sign that is supported by a structure primarily designed for display of the sign.

Government sign. A government sign is a sign that is constructed, placed, or maintained by the federal, state, or local government or a sign that is required to be constructed, placed, or maintained by the federal, state, or local government, including a water district, either directly by the governmental entity or to enforce a property owner's rights. Local government includes any political subdivision including the county, the city, the school district, the water district, or an emergency services district.

Hanging sign. A sign that is affixed to the underside of a roof, canopy, awning, or porch.

Height.

(1) Except as applied to a monument sign, height refers to the vertical distance between the highest attached component of the sign or of its supporting structure (whichever is higher) and the lowest attached component of the sign or of its supporting structure (whichever is lower).

(2) As applied to a monument sign, height refers to the vertical distance between the highest attached component of the sign or of its supporting structure (whichever is higher) and the natural grade of the ground at the point where the sign is located.

(3) If any sign, temporary or permanent, sits on property that is adjacent to a public right-of-way, and the natural grade of the property is lower than the average grade of the public right-of-way, the responsible party may raise the grade of the property on which the sign is located up to four feet, in accordance with zoning and all other ordinances, and height will be measured from the highest attached component of the sign or of its supporting structure (whichever is higher) and the increased grade. The responsible party may only increase the grade an amount equal to the difference between the average grade of the right-of-way and the natural grade of the property on which the sign is located. A responsible party may also apply for a variance from the sign administrator to raise the height of the sign.

Hill country style. Buildings of simple design, using native materials, incorporating wide overhangs, porches, and tall windows.

Historic district. The business and residential area designated by the historic district ordinance.

Indirect illumination or lighting. A light source not seen directly. The term includes a source of illumination which is not a part of the sign or the sign structure, which provides light for the sole purpose of making the sign visible when natural light is not sufficient. Indirect illumination can include internal illumination, if such illumination is also compliant with the outdoor lighting ordinance.

Inflatable sign. An inflatable device, with or without a message, figure, or design attached to its surface designed to attract attention.

Logo. Graphic symbols used to represent or identify a commercial, institutional, or nonprofit entity or organization.

Marquee sign. A canopy or covering structure bearing a signboard or copy projecting from and attached to a building.

Master sign plan. A comprehensive document containing specific regulations for an entire project or property's signs.

Mobile food establishment/mobile food vendor. A vehicle-mounted food establishment that is readily moveable.

Monument sign. A sign permanently affixed to the ground at its base or by poles that are enclosed by natural stone, stucco, brick, or wood and not mounted to a part of a building. Pole(s) may be used to construct a monument sign so long as the poles are not visible below the sign.

Natural colors (earth tones). Colors that are muted and flat in an emulation of the natural colors found in dirt, moss, trees and rocks, including browns, tans, grays, greens, oranges, whites, blues and some reds.

Nonconforming sign. A sign lawfully in existence on the date the provisions of this chapter are adopted that do not conform to the provisions of this chapter, but which were in compliance with the applicable regulations at the time they were constructed, erected, affixed, or maintained.

Off-premises sign. Any commercial sign that advertises a business, person, activity, goods, products, real property, or services not located on the property where the sign is installed, or that directs persons to a location other than the property where the sign is located.

Outdoor lighting ordinance. Article 24.06 of the City of Dripping Springs Code of Ordinances that applies to all signs whether within the city limits or in the ETJ.

Pedestrian elements. Any furniture, fencing, gates, benches, trash cans, poles, or any other type of structure that benefits pedestrian use of an area.

Pole sign. A sign that is permanently supported in a fixed location by a structure of poles, posts, stakes, uprights, or braces from the ground and is not supported by a building, fence, vehicle, base structure, or other support.

Portable sign. Any sign without a permanent foundation, or otherwise permanently attached to a fixed location, that can be carried, towed, hauled, or driven and is primarily designed to be moved rather than be limited to a fixed location regardless of modifications that limit its movability. Daily display signs as defined below are excluded from this definition.

Property owner. The owner of the property on which a sign is located. A lessor may have the same rights and authority as the property owner if given such authority through written agreement with the property owner.

Residential development. A residential building project that includes multiple residences, also referred to as a neighborhood or subdivision.

Residential district. Residential district is property zoned as single-family by the city's zoning code including SF-1; SF-2; SF-4; and SF-5 as defined in chapter 30, exhibit A, section 3.1 of the Code of Ordinances, any property within a planned development district that allows a residential use, and any property in the ETJ that is appraised as residential property.

Responsible party. The owner/operator of the business being identified on the sign; the owner of the property upon which the sign or sign structure is located; the owner of the sign or sign structure; the person who installs a sign or sign structure, contracts with or directs a person to accomplish the installation; and/or the person who retrieves a sign from the impound.

Restaurant menu. A sign on the outside of a restaurant or other food service establishment that advertises the sale of food items.

Right-of-way. The area on, below, or above a public road, highway, street, public sidewalk, alley, waterway, or utility easement in which a governmental entity has an interest.

Roof sign. A sign that is displayed about the eaves and under the peak of a building. This term includes a sign painted, erected, constructed, or maintained on the roof of a building.

Sign. A structure, sign, display, light device, figure, painting, drawing, message, plaque, poster, billboard, or other object that is designed, intended, or used that includes text or images designed to communicate. Signs located completely within an enclosed building and not exposed to view from a street shall not be considered a sign. Each display surface of a sign or sign face shall be a sign.

Sign administrator. The officer appointed by the city council with the authority to enforce this chapter in conjunction with the city building department. The sign administrator or designee shall review sign regulations and applications for variances and master sign plans. In the absence of designation by the city council, the city administrator shall serve as the sign administrator. The term also includes any person designated to act on behalf of the sign administrator.

Sign face. The entire display surface area of a sign upon, against, or through which copy is placed.

Signable area. The total surface including frame and mounting. The actual area of the sign shall be calculated using trigonometric methods when the sign is not a simple rectangle. The allowed area of the sign as stated in the ordinance equals one side of a freestanding back-to-back sign, provided the freestanding sign's sides are back-to-back or angled with no greater separation between sides at its widest point than four feet and provided that both sides have the identical sign. Frame and mounting shall not exceed 30 percent of the total surface area of sign. When referring to area limitations of monument signs, area and signable area refers to an area within a continuous perimeter that includes the sign structure as well as the lettering, illustrations, ornamentations, or other figures, but does not include the sign base. Required landscaping does not count towards signable area.

Temporary sign. A banner, pennant, poster, or advertising display constructed of paper, cloth, canvas, plastic sheet, cardboard, wallboard, plywood, or other like materials and that appears to be intended or is determined by the sign administrator or the administrator's designee to be displayed for a limited period.

Vehicle sign. Any sign attached to or displayed on a vehicle.

Vending machine. Any sign integrated into or placed on a coin, cash, credit card, or debit card operated self-service machine that dispenses such goods or services as propane cages, ice, DVDs, or cash automated teller machines (ATMs).

Wall sign. A sign attached to, painted on, or erected against the wall of a building or structure, or on the fence or detached wall on the same property as the building, with the exposed face of the sign in a plane parallel to the face of the wall and not projecting more than nine inches from the face of the wall at any point.

Window signs. Signs that are painted on, etched in, attached, pasted, or visible through a window or transparent door of a building that are oriented in a manner establishing an intent to be viewed off-premises or from public or private roadways. This term excludes signs displayed inside of buildings primarily for patrons on the premises.

Sec. 26.01.006 Administration.

The Sign Administrator, appointed by City Council, shall administer and enforce this Chapter. The Administrator may issue permits, interpret provisions, and grant variances consistent with Sec. 26.03.005.

Sec. 26.01.007 Violations and Penalties.

Violations of this Chapter are subject to enforcement under the City Code and Texas Local Government Code Chapter 216. Each day a violation continues constitutes a separate offense. Remedies include fines, removal, and injunctive relief.

~~Sec. 26.01.004~~Sec. 26.01.008 Prohibited signs.

(a) All signs are prohibited in the city limits and the ETJ unless:

(1) Constructed, maintained, structurally altered, or improved pursuant to a valid permit when required under this chapter; and

(2) Expressly authorized under this chapter.

(b) Signs which cannot be expressly authorized include:

(1) Signs, except government signs, located in or projected over any public right-of-way or across the public right-of-way line extended across a railroad right-of-way, except when attached to and projecting no more than 18 inches from a building wall legally located at or near the right-of-way line in the city limits or in the ETJ.

(2) Portable signs.

(3) Electronic signs that have changes in screen image more than once an hour.

(4) Off-premises signs (including billboards) containing commercial advertising of goods, real property, or services.

(5) Signs with lights that blink, fluctuate, or move. Light rays must shine only upon the sign and upon the property within the premises.

(6) Signs, other than government or traffic-control signs, of a size, location, movement, coloring, or manner of illumination which may be confused with or construed as a traffic-control device or which hide from view any traffic or street sign or signal.

(7) Signs, other than flagpoles, that are taller than 15 feet.

(8) Signs that are attached to any utility pole or wire, traffic sign, or public easement or are placed on government-owned property unless placed by written permission of the governmental entity.

(9) Signs that obstruct any fire escape, required exit, window, or door opening intended as a means of egress.

(10) Boxes, tires, or other goods stored in view of the street, etc. which have large product identification that serves as a sign.

(11) Feather banners.

(12) Commercial signs or advertising materials that are worn, held, or attached to a person's body advertising the sale of goods, real property, or services.

(13) Balloon signs.

(14) Inflatable signs.

(15) Banners on residential property.

(16) Pennants.

(17) Pole signs except as otherwise specifically allowed.

(18) Roof signs (including signs that are otherwise authorized but are placed on a roof or on a mobile food vendor or vehicle).

(19) Marquee signs.

(20) Changeable copy signs.

(21) Signs placed or attached to trees, bushes, planters, benches, or other pedestrian elements.

(22) Signs on trash receptacles except for signs that are required by law, provide direction on the trash receptacle's use, provide safety instructions, or are otherwise customarily found on trash receptacles as a means of identifying the trash collection company.

(23) Flags with a commercial message.

(c) A violation of this section is an offense under section 26.05.002.

~~Sec. 26.01.005~~Sec. 26.01.009 Authorized signs without a separate permit.

The following signs authorized under this section are authorized in every zoning district or property in the ETJ without a permit, unless specifically required below:

(1) Government signs including signs placed by the city, county, state, or federal governing in their governmental capacity which are not otherwise prohibited.

(2) Traffic-control devices that are erected and maintained to comply with the Texas Manual on Uniform Traffic-Control Devices.

(3) Signs required by this chapter.

(4) Signs required by other law, including federal, state, or local law, including a sign that a property owner is required to post on the owner's property to warn of a danger or to prohibit access to the property either generally or specifically; the owner must comply with the federal, state, or local law to post a sign on the property.

(5) Official governmental notices and notices posted by governmental officers in the performance of their duties for regulatory purposes such as neighborhood crime watch areas, to identify streets, or to warn of danger including those placed by the city, county, water district, or other governmental entity.

(6) Signs displayed on trucks, buses, trailers, mobile food vendors, or other vehicles that are attached to a vehicle where no portion of the sign is not affixed to the vehicle itself and does not extend more than

eighteen (18) inches from the body of the vehicle itself ~~less than 32 square feet~~ and are being operated as motor vehicles, provided that the primary purpose of the vehicles is not for display of signs and provided that they are parked in areas appropriate to their use as vehicles, are in operable condition, and carry a current and valid license plate and state inspection tag. Vehicle signs shall conform to the following restrictions:

(A) Vehicular signs shall contain no flashing or moving elements;

(B) Vehicular signs shall not be attached to a vehicle so that the driver's vision is obstructed from any angle;

(C) Signs, lights and signals used by authorized emergency vehicles shall not be restricted;

(D) Any mobile food vendor who is required to obtain a conditional use permit pursuant to article 30.05 of this code shall submit their sign requests, including the signage on the vehicle itself, with its permit application. Signage allowance shall be considered alongside the permit application.

(7) Vending machine signs where the sign face is not larger than the normal dimensions of the machine to which the sign is attached.

(8) Memorial signs or tablets when cut into any masonry surface or attached to a building when constructed of bronze or other metal up to six square feet as part of a building.

(9) Any sign wholly within the confines of a building, and oriented to be out of view from outside the building.

(10) Any sign wholly within the confines of a sports field or court and oriented to be out of view from outside the field or court. No sign under this section may be larger than 32 square feet. The maximum height for a field sign shall not exceed six feet.

(11) A noncommercial sign that is carried by a person or is a bumper sticker on a vehicle.

(12) Business-related signs on or visible through doors or windows indicating: Store hours, security systems, trade organization memberships, credit cards accepted, no solicitation, and open/closed. These signs will not count towards the cumulative signable area limits so long as their total cumulative signable area does not exceed five square feet.

(13) Traffic-control signs other than uniform traffic-control devices (see definition of MUTCD in section 16.03.006) upon private residential property shall be required if needed for directional or public safety purposes as determined by the emergency services district and city administrator. All vehicular traffic-control signs shall not exceed two square feet and no part of the sign shall extend above six feet from average grade. Lighting for such signs may only be indirect and shall comply with the city's outdoor lighting ordinance.

(14) Banners are not required to have a permit so long as they meet the requirements in Section 26.02.007.

~~(13) Directional signs, up to four signs on a property where the sign is for providing direction to commercial use and may include the logo or name of business but shall not be taller than four feet in height and the sign area shall not be more than four square feet. These signs may be pole, wall, or monument signs.~~

~~Sec. 26.01.006~~Sec. 26.01.010 Lessors.

For purposes of this chapter, the lessor of a property is considered the property owner as to the property if the lessor holds a right to use that exclusive of others (or the sole right to occupy). If there are multiple lessors of a property, then each lessor must have the same rights and duties as the property owner as to the property the lessor leases and that the lessor has the sole right to occupy, and the size of the property must be deemed to be

the property that the lessor has the sole right to occupy under the lease. Written authorization from property owner to place signage onsite may be required.

~~Sec. 26.01.007~~Sec. 26.01.011 Permit required.

A sign permit is required prior to the display and erection of any sign except as otherwise provided in this chapter.

~~Sec. 26.01.008~~Sec. 26.01.012 Compliance with outdoor lighting article.

(a) Reflective surfaces. Glare-producing surfaces on signs are not allowed.

(b) All lighting of signs shall be indirect illumination as defined herein. No sign shall be illuminated, in whole or in part, where the illumination is intermittent or varies in color or intensity ~~from time to time~~ or appears to be emergency lighting similar to public safety vehicles. Variation in intensity or color is allowed if such change occurs less than once an hour and is static the remainder of the time. The use of searchlights is prohibited. Changeable electronic variable message signs (CEVMS), ~~electronic signs, and light emitting diode (LED)~~ signs are prohibited if facing or visible from a roadway.

(c) All signs shall be compliant with the city's outdoor lighting ordinance, article 24.06 of this code.

(d) A violation of subsection (a) above is an offense under section 26.05.002.

~~Sec. 26.01.009~~Sec. 26.01.013 ~~Sec. 26.01.009.~~ Wind pressure and dead loads.

Any sign that requires a permit shall be designed and constructed to withstand wind pressures and receive dead loads if the structure is required to comply with the International Building Code (IBC) as adopted by the city.

~~Sec. 26.01.010~~Sec. 26.01.014 ~~Sec. 26.01.010.~~ Applicability of other codes not in conflict.

All signs erected or maintained pursuant to the provisions of this chapter shall be erected and maintained in compliance with all applicable state laws and with the building code, zoning ordinance, outdoor lighting ordinance, historic district requirements, comprehensive plan, and other applicable ordinances of the city.

~~Sec. 26.01.011~~Sec. 26.01.015 ~~Sec. 26.01.011.~~ Noncompliant signs prohibited.

It is an offense for a person to install, maintain, repair, alter, or relocate a sign within the city limits or ETJ, except in accordance with the provisions of this chapter. It is an offense for a person in the city or its ETJ to have any sign located on the person's property in violation of this chapter. A violation of this section is an offense under section 26.05.002.

~~Sec. 26.01.012~~Sec. 26.01.016 ~~Sec. 26.01.012.~~ Large r~~R~~eal estate signs.

(a) Only one nonilluminated real estate sign shall be permitted per lot that is for sale or lease, except that two nonilluminated real estate signs shall be permitted if it is a corner lot.

(b) The maximum area of a sign shall not exceed ~~six~~ thirty-two (32) square feet.

(c) The maximum height for a sign shall not exceed ~~three~~ eight feet.

(d) Real estate signs advertising the sale or lease of property shall be removed at the completion of the transaction advertised ~~or within 24 months, whichever comes first, unless the 24-month term is extended by the sign administrator~~.

(e) ~~A real estate sign of up to 32 square feet may be erected, but the~~The owner of the property must apply for a permit before erecting such a sign. If the sign is placed more than twelve months, an annual renewal of the sign permit is required. The sign must be kept in good condition. ~~The maximum height for a real estate sign shall not exceed eight feet.~~

(~~f~~g) If multiple units are available for lease on a single property or property ownership is structured as a condominium project, the property may have smaller signs (not to exceed six square feet in area or six feet in height) for each individual unit provided the individual signs are not legible from the public right-of-way (i.e., street). Neither a permit nor a permit fee is required for these smaller, individual signs.

Sec. 26.01.017 Small real estate signs

(a) Only one nonilluminated real estate sign shall be permitted per lot that is for sale or lease, except that two nonilluminated real estate signs shall be permitted if it is a corner lot.

(b) The maximum area of a sign shall not exceed six square feet.

(c) The maximum height for a sign shall not exceed three feet.

(d) Real estate signs advertising the sale or lease of property shall be removed at the completion of the transaction advertised. The sign must be kept in good condition.

(e) A small real estate sign does not require a permit.

(f) If multiple units are available for lease on a single property or property ownership is structured as a condominium project, the property may have multiple small real estate signs for each individual unit. Neither a permit nor a permit fee is required for these smaller, individual signs.

ARTICLE 26.02. SPECIFIC SIGN REGULATIONS BY DISTRICT

Sec. 26.02.001 ~~Sec. 26.02.001.~~ Residential districts.

No sign shall be permitted or allowed in a residential district as defined in this article unless it meets the following standards:

(1) Types of signs allowed with a permit.

(A) Residential developments. For residential developments (including subdivision identification) a residential development may have one or more monument signs as described below. The monument sign shall be located at least eight feet from the right-of-way and may be indirectly lighted to the extent allowed by article 24.06 of this code. The maximum size and number of signs that the owner or owners of the residential development may erect and maintain at the entrances to the development shall be controlled according to the following:

(i) Residential developments—Monument identification sign ~~(small). Four acres or less in area may have a monument sign or signs with a total sign area of no more than 18 square feet at each entrance onto an arterial not to exceed six feet in height. Signable area only includes the portion of the sign that includes copy or other design. The address on any sign shall have lettering for the address shall be at least six inches in size.~~

~~(ii) Residential developments—Monument identification sign (large). Over four acres may have a~~A monument sign or signs ~~which~~ may have a total area of no more than 24 square feet not to exceed six feet in height at each entrance onto an arterial. Signable area only includes the portion of the sign that includes copy or other design. The address on any sign shall have lettering for the address shall be at least six inches in size.

(ii~~i~~) Before a residential construction/development sign may be installed under this section, the sign permit application shall be reviewed by the city building department for completeness and compliance with state and city codes.

(iii~~v~~) Residential construction/development sign. When a subdivision has been released for construction, one construction/development sign per subdivision entrance which shall not exceed 48 square feet in area or eight feet in overall height may be placed at each subdivision entrance after applying for and receiving a sign permit.

a. A sign under this section may be a pole sign or a monument sign.

b. A sign permitted under this subsection must be removed when the entire development is constructed or when active construction has ceased for more than twelve (12) months. ~~-~~If the sign is placed more than twelve months, an annual renewal of the sign permit is required. The sign must be kept in good condition.~~or 24 months, whichever comes first.~~

c. The property owner or other responsible party shall be responsible for the maintenance, removal, and compliance requirements of such signs.

d. If a subdivision owner wishes to place model home, selling point, or other temporary signs to advertise the lots within the subdivision, application for a master sign plan is encouraged in lieu of submission of multiple requests for variances.

(iv) Landscaping. A landscaped area of 24 square feet at the base of any monument sign, shall be maintained in a neat, clean and healthy condition throughout the life of the permit; and the applicant shall submit a plan showing the landscaping to the city building department at the time of application. All landscaping under this section shall be compliant with the city's landscaping ordinance, article 28.06 of this code.

(2) Signs on individual lots.

(A) Flags. Flags are authorized to be placed on residential property without a permit, including two flags with noncommercial messages and one flagpole per premises shall be allowed on each lot. The higher flag may be a maximum of five feet by eight feet in area. A second, lower flag, if any, may be a maximum of 25 square feet in area. The flagpole must be a maximum of 25 feet in height or no higher than the highest point of the principal building's roof, whichever is lower. Flagpoles must meet the minimum yard setback requirements for a principal building. Flags may be illuminated in accordance with section 24.06.010 of this code.

(B) Other signs. Signs, including a wall sign or monument sign (unless specifically designated otherwise by this article), allowed at any time on any property without a permit:

(i) A property owner may place a sign no larger than 8.5 inches by 11 inches in one window on the property at any time which has a noncommercial message.

(ii) A property owner may place a sign of any type at any time that:

a. Is four square feet in size; and

b. Contains a noncommercial message.

(iii) A person having a legal home occupation may display one additional sign on the face of the building or porch. The sign shall be attached directly to, and parallel to, the face of the building or porch. The sign shall not exceed four square feet in sign area, shall not be illuminated in any way, and shall not project more than six inches beyond the building or porch. No permit is required.

(3) General regulations for signs on individual lots.

(A) No sign may be placed on a residential lot without the consent of the property owner or a lessor who has been given authority to place a sign on the property by written agreement of the property owner.

(B) Other than those signs specifically authorized under this section, a sign under this section shall not be illuminated, electronic, digital, or contain moving elements.

(C) Unless otherwise specified in this section, permitted signs may be placed anywhere on the premises except in a required side yard within the street or utility right-of-way, or within any other form of public easement.

(D) Height: The following maximum heights shall apply to signs on individual lots in a residential district:

(i) Unless otherwise specified in this section, if ground-mounted, the top must not be over four feet above the ground; and

(ii) If building mounted, the sign must be flush-mounted and must not project above the roofline.

(E) Each residential lot or unit shall display an address sign. The letters, numbers, and symbols that make up a residential address sign must be a minimum of six inches in height and shall not be larger than eight inches in height or which meet the fire code adopted by the city. Address signs must be visible from an adjacent right-of-way for the primary structure on each piece of property.

(F) One additional temporary sign that may be up to nine square feet in size may be located on the owner's property at any time. A permit for this sign is not required. This section does not limit the content on the additional temporary sign.

(G) ~~Traffic control signs other than uniform traffic control devices (see definition of MUTCD in section 16.03.006) upon private residential property shall be required if needed for directional or public safety purposes as determined by the emergency services district and city administrator. All vehicular traffic control signs shall not exceed two square feet and no part of the sign shall extend above six feet from average grade. Lighting for such signs may only be indirect and shall comply with the city's outdoor lighting ordinance.~~

Sec. 26.02.002. Multifamily residential district (MF).

No sign shall be permitted or allowed in a multifamily residential district unless it meets the following standards:

(1) Types of signs allowed with a permit.

(A) Multifamily residential complex sign. The maximum size and number of signs that the owner or owners of the residential development may erect and maintain at the entrances to the development shall be controlled according to the following:

(i) Multifamily residential complex sign ~~– Small.~~ Multifamily residential ~~complexes with 20 units or less in area may have a monument sign or signs with a total area of no more than 18 square feet not to exceed six feet in height at each entrance to the complex. The monument sign shall be located at least eight feet from the right-of-way and may be indirectly lighted to the extent allowed by article 24.06 of this code.~~

~~(ii) Multifamily residential complexes with over 20 units~~ may have a monument sign or signs which have a total area of no more than 24 square feet not to exceed six feet in height at each entrance to the complex. The monument sign shall be located at least eight feet from the right-of-way and may be indirectly lighted to the extent allowed by article 24.06 of this code.

(ii~~i~~) Before a residential complex sign may be installed under this section, the sign permit application shall be reviewed by the city building department for completeness and compliance with state and city codes.

(iii~~v~~) Landscaping. A landscaped area of 24 square feet at the base of any monument sign, shall be maintained in a neat, clean and healthy condition throughout the life of the permit; and the applicant shall submit a plan showing the landscaping to the city building department at the time of application. All landscaping under this section shall be compliant with the city's landscaping ordinance, article 28.06 of this code.

(B) Multifamily construction/development sign. When a multifamily project has been released for construction, one construction/development sign per subdivision entrance which shall not exceed 48 square feet in area or eight feet in overall height may be placed at each subdivision entrance after applying and receiving a sign permit.

(i) A sign under this section may be a pole sign or a monument sign.

(ii) A sign permitted under this subsection must be removed when the entire development is constructed ~~or 24 months, whichever comes first.~~ or when active construction has ceased for more than twelve (12) months. If the sign is placed more than twelve months, an annual renewal of the sign permit is required. The sign must be kept in good condition.

(iii~~v~~) If a subdivision owner wishes to place model home, selling point, or other temporary signs to advertise the lots within the subdivision, application for a master sign plan is encouraged in lieu of submission of multiple requests for variances.

(C) Multifamily identification sign (wall or hanging). There may be one sign no larger than fifteen (15) square feet in sign area identifying the complex and placed flush on the wall near the office entrance or, as an alternative, one hanging sign containing no more than eight square feet in sign area may be erected. The address shall be in lettering at least six inches in height.

(2) Types of signs allowed without a permit. Individual lessees or owners of units within multifamily housing may also display any sign allowed in a residential district, so long as:

(A) Sign is allowed by owner of multifamily housing if property is owned separately; and

(B) Sign is displayed within the area owned or leased by individual.

(3) Properties in the ETJ that are appraised as residential and that contain multifamily units, including a building or portion thereof which is designed, built, rented, leased, or let to be occupied as three or more dwelling units or apartments or which is occupied as a home or residence of three or more families must comply with this section.

Sec. 26.02.003. Manufactured home district (MH).

No sign shall be permitted or allowed in a manufactured home district unless it meets the following standards:

(1) Types of signs allowed with a permit.

(A) Manufactured home park identification monument sign. One monument sign or wall sign not more than 24 square feet in sign area not to exceed six feet in height may be erected on the property of the manufactured home park at each entrance to an arterial and may be indirectly lighted.

(i) The monument sign shall be located at least eight feet from the right-of-way and may be indirectly lighted to the extent allowed by article 24.06 of this code. Sign placement must comply with any additional setback that may be prescribed by the sign administrator or city building department when there is a potential safety issue.

(ii) This sign requires a permit.

(iii) Landscaping: A landscaped area of 24 square feet at the base of any monument sign, shall be maintained in a neat, clean and healthy condition throughout the life of the permit; and the applicant shall submit a plan showing the landscaping to the city building department at the time of application. All landscaping under this section shall be compliant with the city's landscaping ordinance, article 28.06 of this code.

(iv) An address listed on a sign shall have lettering that is at least six inches in height.

(2) Types of signs allowed without a permit. Individual lessees or owners of manufactured homes within a manufactured home park may also display any sign allowed in a residential district, so long as:

(A) Sign is allowed by owner of manufactured home park if the property is owned separately.

(B) Sign is displayed within the area owned or leased by an individual.

(C) Properties in the ETJ that are appraised by the county appraisal district as residential and that contain a unified development of manufactured home sites, plots, or stands as arranged on a large tract under single ownership and designed to accommodate manufactured homes for a long-term duration must comply with this section.

Sec. 26.02.004. Commercial districts.

No signs shall be permitted or allowed in a commercial district unless they meet the following standards:

(1) Types of signs allowed with a permit.

(A) Commercial wall sign.

(i) Only one wall sign is permitted per business on each property, two wall signs may be permitted if a business:

a. Is within a multiunit property;

b. Takes up an entire building; and

c. Is on a corner or has two ~~public~~ customer entrances into the building on different sides of the building in which it is located.

(ii) The total area on any such sign shall not be larger than 75 percent of the area of the storefront for the leased or owned area.

(iii) The total length on any such sign shall not exceed 75 percent of the storefront width for the leased or owned area.

(iv) The total signable area of the wall sign for each business shall not exceed 64 square feet in a nonresidential zoning district.

(v) No wall sign shall extend, either above the roof of the building or beyond the wall to which it is attached by more than four feet at the point of attachment. In no instance shall the height of the sign exceed the maximum building height established for the zoning district.

(vi) A wall sign attached to a building on private property shall not extend over any public land except a sidewalk adjacent to the building.

(vii) An address listed on a sign shall have lettering that is at least six inches in height.

(B) Commercial hanging sign.

(i) The maximum area of a hanging sign shall not exceed eight square feet.

(ii) The total length on any such sign shall not exceed 75 percent of the storefront width for the leased or owned area.

(iii) The clearance from the ground to the bottom of any hanging sign must be at least seven feet.

(iv) Only one hanging sign is permitted per property unless the property is a corner lot or has two customer entrances into the building on different sides of the building, in which case two hanging signs are permitted.

(v) An address listed on a sign shall have lettering that is at least six inches in height.

(C) Commercial construction/development sign. When a commercial lot is under construction, one sign per commercial development entrance which shall not exceed 64 square feet in area or eight feet in overall height may be placed at each entrance after applying and receiving a sign permit.

(i) A sign under this section may be a pole sign or a monument sign.

(ii) A sign permitted under this subsection must be removed when 80 percent of the commercial property is constructed or when active construction has ceased for more than twelve (12) months. If the sign is placed more than twelve months, an annual renewal of the sign permit is required. The sign must be kept in good condition. ~~or 12 months after the original sign permit is issued, whichever comes first.~~

(iii) The property owner or other responsible party shall be responsible for the maintenance, removal, and compliance requirements of such signs.

(D) Commercial monument sign-individual business for use by a single business.

(i) The area of a monument sign for a property with a single business in a nonresidential zoning district shall not exceed 32 square feet not to exceed six feet in height. The sign shall be at least eight feet from the right-of-way and compliant with article 24.06.

(ii) Landscaping. A landscaped area of 24 square feet at the base of any monument sign, shall be maintained in a neat, clean and healthy condition throughout the life of the permit; and the applicant shall submit a plan showing the landscaping to the city building department at the time of application. All landscaping under this section shall be compliant with the city's landscaping ordinance, article 28.06 of this code.

(iii) An address listed on a sign shall have lettering that is at least six inches in height.

(E) Awning signs as part of wall sign.

(i) One-third of the area of an awning sign shall be counted toward the limit on the total area of wall signs on the wall to which the awning is attached.

(ii) Only one awning sign is permitted per property, unless the property is a corner lot in which case two awning signs are permitted.

(F) Restaurant menus. ~~-~~Detached or attached to a building, used in connection with a drive-in or drive-through, which do not attract the attention of persons not on the premises. Signs under this subsection shall not exceed 32 square feet and eight feet in height. Such signs shall not be illuminated other than internally illuminated. If restaurant has more than one drive-in or drive-through lane onsite may include ~~one~~ two restaurant menu signs for each lane of vehicular or pedestrian traffic for ordering. Restaurant menus may have screens that change image so long as the images change if such change occurs less than once an hour and is static the remainder of the time.

(G) New business temporary signs.

(i) For the purposes of this section, a "new business" is defined as a non-residential enterprise that was not operated by any person or entity with a controlling interest in a non-residential enterprise located within 100 feet of the property within the previous 12 months. The new business is per nonresidential enterprise, not per lot.

(ii) For projects subject to the city's building code, new businesses may place one new business temporary sign on their premises for a period not exceeding 60 days between the time of issuance of a building permit for construction or renovation and the time a certificate of occupancy is issued. This sign must be removed at time of issuance of certificate of occupancy. An additional new business temporary sign may be placed for up to 60 days after a certificate of occupancy is issued.

(iii) For projects not subject to the city's building code, new businesses may place one new business temporary sign on their premises for a period not exceeding 60 days prior to the business opening to the public. An additional new business temporary sign may be placed for up to 60 days after the business opens to the public.

(iv) The maximum surface area for a new business temporary sign shall be 32 square feet. The new business temporary sign does not count towards total cumulative signable area limits nor the total amount of temporary signs on an annual basis.

(v) The height of the new business temporary sign must not exceed six feet.

(vi) The new business temporary sign must be located on the business premises and must not obstruct traffic visibility or pedestrian pathways and must follow all other city regulations.

(vii) The application for each new business temporary sign must include the expected/actual date of certificate of occupancy issuance and a plan showing the proposed location and dimensions of the sign.

(viii) A new business temporary sign must not be illuminated.

(ix) A new business temporary sign must be of a type otherwise allowed by chapter 26 of this Code.

(2) Types of signs allowed without a permit.

(A) Equipment signs. Words may be attached to machinery or equipment which is necessary or customary to the business, including but not limited to devices such as gasoline pumps, vending machines, ice machines, etc., if words so attached refer exclusively to products or services dispensed by the device, and project no more than one inch from the surface of the device.

(B) Window signs. A business may have a total signable area of window signs that shall not exceed 24 square feet for each business. A business where the business is at an intersection of two roadways and has windows on different sides of the building adjacent to the roadways, may have a total signable area of window signs that shall not exceed 48 square feet. The total signable area of the window signs do not count towards the cumulative total signable area allowed. A single-unit property with a drive-through shall not exceed 48 square feet of total signable area.

(C) Small Commercial Banner. A small commercial banner of twenty-four (24) square feet may be displayed at any time so long as:

(i) the banner is kept in good condition; and

(ii) the banner is securely affixed to a building, wall, or fence; and

(iii) can be placed in addition to a nonresidential banner.

(3) Noncommercial signs allowed without a permit.

(A) Each lot may have one noncommercial sign, including a pole sign, wall sign, or monument sign, that meets the requirements of this section:

(i) A noncommercial sign shall not have an area greater than 36 square feet.

(ii) A noncommercial sign shall not be more than six feet in height.

(B) A noncommercial sign shall not be lighted or have any moving elements.

(C) Noncommercial signs may be installed on private property only with the consent of a property owner and may not be installed in, on, or over any street or right-of-way.

(D) Noncommercial signs under this section may not advertise the sale of goods or services.

(E) Any sign allowed under this section for a commercial message may also contain noncommercial content.

(4) Each lot may have up to a maximum of four flags with noncommercial messages on up to two flagpoles per premises. Each flag must be a maximum of 40 square feet in area. Flagpoles shall be a maximum of 25 feet in height but no higher than the highest point of the nearest principal building's roof on the premises. Flagpoles must meet the minimum yard setback requirements for a principal building or a minimum of ten feet, whichever is more restrictive. Each flagpole may only have two flags each. Flags may be illuminated in accordance with section 24.06.010 of this code.

(5) One daily display sign per business may be displayed on the sidewalk or adjacent to the sidewalk on private property immediately adjacent to the business at a location approved by the city building department if:

(A) The sign does not impede pedestrian traffic;

(B) The maximum height of the entire structure of a daily display sign is three feet;

(C) Sign is stored away from public view when the establishment served by the sign is closed for business.

(6) No sign may be placed without the consent of the property owner or without a sign permit, when required.

(7) The responsible party is responsible for compliance with this article.

(8) Any sign under this section shall not advertise the sale of goods, services, or activities that are not available on the building or property on which the sign is attached or placed.

(9) Properties in the ETJ that are appraised as, or used as, commercial property and that contain a business or commercial entity that reflects a use allowed in the above zoning district regulated by this section must comply with this section.

Sec. 26.02.005. Industrial (I), light industrial (LI), government, utility, institutional (GUI), public recreation (PR), public park or preserve (PP), and agriculture (A).

No sign shall be permitted or allowed in an industrial, light industrial, government, utility, institutional, public recreation, public park or preserve, or agricultural district unless it meets the following standards:

(1) Types of signs allowed with permit.

(A) Wall signs. Wall signs may be erected. The total sign area for all signs shall not exceed 64 square feet. This sign shall be placed at least eight feet from any public right-of-way. Sign area allotment is computed by adding the sign area of all wall signs on the lot. Wall signs shall project no more than two feet perpendicular from the wall and not more than three feet vertically above the wall of the building. Each sign under this section requires a sign permit. An address listed on a sign shall have lettering that is at least six inches in height.

(B) Monument identification signs. One nonattached sign per lot may be erected. No sign shall exceed 48 square feet in sign area and shall not exceed eight feet in height. The setback shall be a minimum of eight feet from any public right-of-way. Sign placement must comply with any additional setback that may be prescribed by the sign administrator or city building department when there is a potential safety issue. A permit is required for this sign.

~~(C) Daily display sign. One daily display sign per business may be displayed on the sidewalk or adjacent to the sidewalk on private property immediately adjacent to the business at a location approved by the city building department if:~~

(A) Equipment signs. Words may be attached to machinery or equipment which is necessary or customary to the business, including but not limited to devices such as gasoline pumps, vending machines, ice machines, etc., if words so attached refer exclusively to products or services dispensed by the device, and project no more than one inch from the surface of the device.

(B) Noncommercial signs. Each lot may have one noncommercial sign, which may be a pole sign, wall sign, or monument sign, that meets the requirements of this section.

(i) A noncommercial sign shall not have an area greater than 36 square feet not to exceed six feet in height.

(ii) Each lot may have up to a maximum of four flags with noncommercial messages on up to two flagpoles per premises. Each flag must be a maximum of 40 square feet in area. Flagpoles shall be a maximum of 25 feet in height but no higher than the highest point of the nearest principal building's roof on the premises. Flagpoles must meet the minimum yard setback requirements for a principal building or a minimum of ten feet, whichever is more restrictive. Each flagpole may only have two flags each. Flags may be illuminated in accordance with section 24.06.010 of this code.

(iii) A noncommercial sign shall not be lighted or have any moving elements.

(iv) Noncommercial signs may be installed on private property only with the consent of a property owner and may not be installed in, on, or over any street or utility right-of-way.

(v) Any sign allowed under this section for a commercial message may also contain noncommercial content.

(C) Daily display sign. One daily display sign per business may be displayed on the sidewalk or adjacent to the sidewalk on private property immediately adjacent to the business at a location approved by the city building department if:

(i) The sign does not impede pedestrian traffic;

(ii) The maximum height of the entire structure of a daily display sign is three feet;

(iii) Sign is stored away from public view when the establishment served by the sign is closed for business.

(D) Small Commercial Banner. A small commercial banner of twenty-four (24) square feet may be displayed at any time so long as:

(i) the banner is kept in good condition; and

(ii) the banner is securely affixed to a building, wall, or fence; and

(iii) can be placed in addition to a nonresidential banner.

(~~C~~E) In addition to the other signs authorized by this chapter, the city building department may allow the placement of additional temporary, non-commercial signs on city property pursuant to the city approved sign policy. Any sign placed under the sign policy as approved by the city building department must meet all of the requirements of the sign policy and any conditions required by

the city building department. No sign may be placed in the right-of-way or on city property without the permission of the sign administrator.

(3) The responsible party is responsible and liable for compliance with these provisions.

(4) Any sign under this section shall not advertise the sale of goods, services, or activities that are not available on the building or property on which the sign is attached or placed.

(5) Properties in the ETJ that are appraised as or used as commercial property and that contain a business or commercial entity that reflects a use allowed in the above zoning districts regulated by this section must comply with this section.

Sec. 26.02.006. Multi-unit complex in a nonresidential district—Additional signs requiring permit.

Additional signs allowed in a multi-unit complex in a nonresidential district:

(1) In addition to the signs allowed according to the zoning district, one monument or wall sign per complex may be erected advertising up to the total number of office or commercial tenants with a sign permit. On corner lots, the major or primary street shall be construed to be the development lot frontage and no more than one sign shall be permitted. On a development lot located at the intersection of two arterials, a sign shall be permitted for each such thoroughfare or expressway with a sign permit. The sign area of the sign may not be larger than 48 square feet. The name of the complex and the street address with letters no less than six inches in height will appear on the sign. Height of the sign may not be taller than six feet. Address signs must be visible from an adjacent right-of-way for the primary structure on each piece of property.

(2) Sign placement must comply with all setback regulations and any additional setback that may be prescribed by the city building department or sign administrator when there is a potential safety issue.

(3) Properties in the ETJ that are appraised as or used as nonresidential property and that are a multi-unit complex are also required to meet the provisions of this section.

(4) Master sign plans for areas with a multi-unit complex are highly encouraged to meet the unique needs of each multi-unit complex. All owners, tenants, subtenants and purchasers of individual units within the development shall comply with the approved master sign plan.

(5) Landscaping. A landscaped area of 24 square feet at the base of any monument sign, shall be maintained in a neat, clean and healthy condition throughout the life of the permit; and the applicant shall submit a plan showing the landscaping to the city building department at the time of application. All landscaping under this section shall be compliant with the city's landscaping ordinance, article 28.06 of this code.

(6) Single sign in a multi-unit project. A single sign in a multi-unit project may be replaced upon application for this permit and payment of fee. This permit and fee is only applicable for the replacement of a panel or sign area of the same or smaller size. Each panel or sign area is a separate permit or fee under this subsection.

Sec. 26.02.007. Banners on nonresidential property.

(a) Each nonresidential property may display one banner at a time. A small commercial banner can be displayed in addition to this banner.

(b) Banners ~~must be~~that are securely attached to a permanently installed building, fence, or wall may remain so long as they ~~and they must be~~are kept in good repair throughout the time of their display.

(c) Banners that are securely erected on ~~P~~pipes, poles, posts or other materials ~~may be used to erect banners~~ may be placed as discussed herein so long as they remain in good repair and ~~so long as they~~ are securely

fashioned to the pipe or other material and the material is specifically designed for the display of a banner. Banners secured this fashion may only be placed on any site for up to three months within a calendar year.

~~(c) Banners shall not be placed on any site more than four times within a calendar year.~~

(e) Banners hung on nonresidential property shall not exceed 15 feet in height.

(f) Only one banner at a time is permitted per nonresidential property, unless additional banners are allowed under this code.

(g) Banners on nonresidential property do not require a permit so long as they meet the requirements in this section.

(h) A small commercial banner of twenty-four (24) square feet may be displayed at any time on nonresidential property so long as:

(i) the banner is kept in good condition; and

(ii) the banner is securely affixed to a building, wall, or fence; and

(iii) this banner is in addition to the other banner (32 sq ft) allowed.

~~(g) The responsible party must affix the permit sticker to the back of the banner.~~

Sec. 26.02.008. Historic district.

Additional signage regulations applicable to the city's historic districts are included in the design and development standards in the historic preservation implementation manual.

Sec. 26.02.009. Master sign plans.

A master sign plan is a comprehensive document containing specific regulations for an entire project's signs. Master sign plans are appropriate for planned development districts, master planned developments, development agreements, large residential or commercial developments, multi-unit complexes, or in the case where a project applicant is seeking several variances to the city's sign chapter.

ARTICLE 26.03. ADMINISTRATION

Sec. 26.03.001. Permit required.

Applications for a sign permit must be filed in the city building department and will be processed by the sign administrator or the sign administrator's designee.

(1) Requirements. Except as otherwise provided for herein, no sign shall be erected, posted, painted, or otherwise produced, changed, refaced, remodeled, or reconstructed, in whole or in part, within the city limits and ETJ of the city without first obtaining a permit.

(A) Applications. Application for a permit required by this article shall be made as required by the city building department. The application for sign permits shall contain all information, drawings, and specifications necessary to fully advise the city building department and sign administrator of the type, size, shape, location, zoning district if within city limits, construction, and materials of the proposed sign and the building structure or premises upon which it is to be placed. Drawings shall also show all existing signs on the property. An application is not considered complete until all necessary information listed in this code are provided with the application.

(B) Application for permit. An application for a sign permit must be filed with the city building department. An application for any sign must state the date when the owner intends to erect the sign.

(C) Proof of property interest. All applicants must provide sufficient proof, to be determined by the city building department, showing a real property ownership interest in the property on which the sign will be located or sufficient proof of authorization from the real property owner for sign placement on the property.

(D) Refacing permit for refacing, remodeling, or repainting sign. A permit is required for anything more than routine maintenance that results in refacing, remodeling, or repainting a sign. The permit fee shall be as listed in the fee schedule. A refacing permit is only available if: (i) the size of the face remains the same; and (ii) the sign is compliant with the outdoor lighting ordinance.

(2) An application shall include:

(A) Name, address, and telephone number of the owner and applicant (if different from owner) of the sign;

(B) Name, address, and telephone number of lessor, if any, sponsoring the sign, if any;

(C) Name, address, and telephone number of the contractor, if any and different from the owner, installing the sign;

(D) Physical address and legal description of the property where the sign is to be installed;

(E) Zoning district, if in city limits, or use if in ETJ, in which the proposed sign will be located;

(F) Any variance that will be requested or has been approved, if variances will be required but have not been previously approved, a separate variance application~~package~~ shall be submitted ~~separately but~~ simultaneously;

(G) An illustration or photograph including the location, appearance, and dimensions of the proposed sign;

(H) An illustration or photograph of the position of the sign on a building or on the ground in plain view, drawn to scale, and elevation views, drawn to scale;

(I) If required by the building official or sign administrator, a copy of stress sheets and calculations showing that the structure is designed for dead load and wind pressure in any direction and in any amount required by this chapter or by the building code or other laws adopted by the city; and

(J) An application is not considered complete unless all the above information is provided with the application.

(3) The city building department or designee shall promptly process the sign permit application and approve the application, reject the application, or notify the applicant of deficiencies in the application within 21 calendar days after receipt or within seven days if the sign requested is a real estate sign. Any application that complies with all provisions of this article, the zoning ordinance, the building code, the lighting ordinance, and other applicable laws, regulations, and ordinances shall be approved ~~after inspection and approval of the~~ after ~~-~~plan reviews~~s~~ and inspection of the site, if needed.

(A) If the application is rejected, the city building department shall provide in writing a list of the reasons for the rejection. An application shall be rejected for noncompliance with the terms of this article, the zoning ordinance, building code, or other applicable law, regulation, or ordinance. ~~If the permit application does not comply with the city ordinances after resubmission and review by the city building department, and no variances have been applied for, the applicant must pay a reapplication fee before the city building department will review the application again.~~

(B) If no action is taken by the city building department or designee within the stated time period after receipt, the city shall not collect a fee for the sign permit application. The city building department then shall approve or reject the application as soon as practical after the 21-day deadline. A new 21-day deadline begins at each submission. However, if the city building

department has not approved or rejected the permit within 45 calendar days after the completed application is filed, the applicant can file a complaint as an appeal to the city council as if the permit had been denied.

(4) Permit fee. A nonrefundable fee as set forth in the uncodified fee schedule adopted by the city council shall accompany all sign permit applications. A reapplication fee may be charged as designated in this article. No permit shall be issued until applicable fees have been paid to the city. Fees may be subject to change without prior notification. The sign permit fee schedule shall be in accordance with the fee schedule enacted by the city council and located at city hall.

(5) Duration and revocation of permit. If a sign is not completely installed within six months following the issuance of a sign permit, the permit shall be void. The city may revoke a sign permit under any of the following circumstances:

(A) The city determines that information in the application was materially false or misleading;

(B) The sign as installed does not conform to the sign permit application;

(C) The sign violates this article, the zoning ordinance, building code, or other applicable law, regulation, or ordinance; or

(D) The city building department determines that the sign is not being properly maintained or has been abandoned.

(6) Appeals. If the city building department denies a permit, the applicant may appeal in writing to the city council under section 26.03.003(g)(2). The city council shall make the final decision on the approval or denial of any permit.

~~(7) All applications for permits shall include a drawing to scale of the proposed sign and all existing signs maintained on the premises and visible from the right-of-way, a drawing of the lot plan or building facade indicating the proposed location of the sign, and specifications for its construction, lighting, motion, and wiring, if any. All drawings shall be of sufficient clarity to show the extent of the work.~~

(~~8~~9) Conditions for issuing permits. No permit for the erection or alteration of any sign over any sidewalk, alley, or other public property, or on or over any roof or building shall be issued to any person except upon the condition that the permit may be withdrawn at any time, in which case the sign shall be immediately removed by the responsible party, who will also be liable under the penalties provided for in this article.

(~~9~~10) Issuance. A permit shall not be issued when:

(A) An existing billboard sign is in a deteriorated, unsafe, or unsightly condition.

(B) A sign on the premises is not in compliance with this article.

(C) A sign on the premises is proposed for construction in an area not zoned for such a sign.

(D) Authorization of the property owner on which the sign is to be placed has not been obtained.

(10~~1~~) Inspection. Any sign for which a permit is issued shall be inspected after its erection for conformity to the provisions of this article.

(11~~2~~) Before any permit may be issued for a new sign under this chapter, the responsible party shall modify or remove any of its own nonconforming signs and sign structures displayed or erected on the same property for which the permit is being sought, so that all the signs and sign structures they are responsible for on the property conform to the provisions of this chapter. This provision does not apply to real estate signs, banners, temporary signs, or daily display signs. This provision does not apply to nonconforming signs with a variance.

Sec. 26.03.002. Permit not required.

A permit shall not be required for:

(1) Simple routine maintenance, adjustments, replacement of compliant light bulbs, etc., on existing signs.

(2) When a sign has been damaged by fire, windstorm, or other causes, immediate work may be done to prevent damage to property or hazard to persons, and to this extent only. Notice will be given as soon as practical to the city building department.

(3) Changing a commercial message to a noncommercial message on any legal sign surface. Any sign surface on which a commercial message may contain a noncommercial message.

(4) Changing of permitted copy of an existing sign, provided that no increase occurs with respect to either the sign area or the manner in which the sign is structurally supported.

(5) Any sign or display exempted from the sign article or permit requirement.

Sec. 26.03.003. Variances.

(a) A responsible party that wants a variance from this article must file a request for variance with the sign administrator along with a variance application fee, as stated in the city's most recent fee schedule. The sign administrator will indicate what documentation the responsible party must provide in support of the request.

(b) Once the complete and necessary documentation has been provided to the sign administrator, the sign administrator shall review the request and make a determination based on the documentation provided by the responsible party.

(c) The sign administrator may, in specific cases and subject to appropriate conditions, and only after a finding based on the evidence presented that strict compliance with the requirements of this article will result in substantial undue hardship, sufficient mitigation, or inequity to the applicant without sufficient corresponding benefit to the city and its citizens in accomplishing the objectives of this article:

(1) Permit a variance for a noncommercial or commercial sign of the setback, effective area, size of internal components of a sign so long as total size of sign face is compliant, or height requirements of this article;

(2) Authorize one additional sign on premises more than the number permitted by this article;

(3) Approve an increase in height up to four feet;

(45) Approve a roof sign.

Commented [LM1]: Need further discussion of electronic signs, especially as it relates to signs in the ETJ.

(d) Other requests for variances require a variance application to the city council. The city council may decide, subject to appropriate conditions, and only after a finding based on the evidence presented that strict compliance with the requirements of this article will result in substantial undue hardship, sufficient mitigation, or inequity to the applicant without sufficient corresponding benefit to the city and its citizens in accomplishing the objectives of this article.

(e) The sign administrator and city council shall consider:

(1) Special or unique hardship because of the size or shape of the property on which the sign is to be located, or the visibility of the property from public roads.

(2) Hardship claim based on the exceptional topographic conditions or physical features uniquely affecting the property on which a sign is to be located.

(3) Proposed sign location, configuration, design, materials and colors are harmonious with the hill country setting.

(4) Natural colors (earth tones) and muted colors are favored. Color schemes must be compatible with the surrounding structures. Predominate use of bold and/or bright colors is discouraged under this section.

(5) The sign and its supporting structure is in architectural harmony with the surrounding structures.

(6) Mitigation measures related to the sign in question or other signs on the same premises.

(7) Demonstrated and documented correlation between the variance and protecting the public health and safety.

(8) The stage at which the variance is requested. The city will be more inclined to consider a variance request when it is sought during an earlier stage of the construction approval process, for instance when the responsible party is submitting/obtaining a plat, planned unit development, development agreement, or site plan.

(9) Whether the sign could have been included in a master signage plan. Master signage plans are highly encouraged. The city will be more inclined to favorably consider a variance request when the variance is part of a master signage plan. There will be a presumption against granting variances piecemeal, ad hoc, on a case-by-case basis when the sign for which a variance is sought could have been included in a master sign plan and considered in the course of a comprehensive review of the entire project's signage.

(10) The sign administrator may authorize the remodeling, renovation, or alteration of a sign when some nonconforming aspect of the sign is thereby reduced.

(f) Where a permit was required for a sign's erection according to the law in effect at the time the sign was erected and where the sign administrator finds no record of a permit being issued, the sign administrator may authorize the issuance of a replacement permit when, from the evidence presented, the sign administrator finds either that a permit was issued or that arrangements were made with a sign company to obtain such permit.

(g) If an applicant wishes to request a variance from the amount of sign and/or variance fees, the applicant may request a fee variance from the sign administrator. The sign administrator may lessen the amount of fees based on the analysis of the time required in review of the sign or variance application(s).

(hg) If a variance applicant wishes to appeal the decision of the sign administrator, the applicant shall file for an appeal with the city council within ten days of receipt of the sign administrator's decision. The city council shall consider the appeal at its next regular meeting or as soon as practicable. The board of adjustment city council shall either: (1) approve, reject, or approve upon condition the variance application, if any, at its meeting; (2) postpone its decision on the request of the applicant; or (3) postpone its decision to its next regular meeting for good cause based on need for further review by the city council. Upon approval by the city council, the sign permit and variances, if any, the permit shall be issued by the city administrator or the administrator's designee.

Sec. 26.03.004. Conditions.

The sign administrator or city council board of adjustment may impose conditions upon the granting of a variance under this chapter. Such conditions must be related to the variance sought and be generally intended to mitigate the adverse effects of the sign on neighboring tracts and the general aesthetic ambiance of the community. A non-exhaustive list of examples of conditions include increased setbacks, added vegetation, muted colors, and decreased lighting. The city council may condition sign variances on the responsible party bringing other existing, nonconforming signs into compliance with current regulations. A responsible party's failure to comply with conditions placed on a variance may result in the city council voiding the variance and authorizing all available code enforcement actions and other remedies available in equity or at law.

Sec. 26.03.005. Approval of master sign plans.

(a) A responsible party that seeks approval of a master sign plan must file a request for a master sign plan with the sign administrator along with a sign permit fee, as stated in the city's most recent fee schedule. The sign administrator will indicate what documentation the responsible party must provide in support of the request.

(b) Once the necessary documentation has been provided to the sign administrator, the sign administrator may administratively deny or approve the master sign plan, with or without conditions.

(c) The sign administrator may determine to present the master sign plan to the city council for approval or denial in lieu of administrative approval.

(d) If the responsible party disagrees with a decision of the sign administrator to deny a master sign plan, or disagrees with the conditions placed on a master sign plan by the sign administrator, the responsible party may submit a written request that the city council review the master sign plan request, the supporting documents, and the sign administrator's decision. The city council can affirm, reverse, or modify the decision of the sign administrator.

(e) The city council has final authority to approve a master sign plan or conditions on a master sign plan.

(f) A master sign plan ordinance can modify variance procedures for its specific property.

(g) Any application for a master sign plan shall be accompanied by fees for each sign and variance requested within the master sign plan. In addition, the master sign plan fee or master sign plan ordinance fee, dependent on application type, must be paid for each master sign plan or master sign plan ordinance.

Sec. 26.03.006. Procedure for variances to master sign plans.

(a) A responsible party that wants a variance from a master sign plan adopted under this chapter must file a request for variance with the sign administrator along with a variance fee, as stated in the city's most recent fee schedule. The sign administrator will indicate what documentation the responsible party must provide in support of the request.

(b) Once the necessary documentation has been provided to the sign administrator, the sign administrator may administratively deny or approve a variance, with or without conditions, from an adopted master sign plan if the change is related to:

(1) Change the location of the sign within the area designated by the master sign plan;

(2) Change the location of the sign within the right-of-way or into the right-of-way so long as a license agreement is presented and approved by the sign administrator;

(3) Change illumination of the sign so long as the illumination complies with article 24.06: Outdoor lighting ordinance;

(4) Change of sign face so long as the size of the sign face is not increased;

(5) Change in number of panels or size of panels on a monument sign so long as total size of sign face is not increased; or

(6) Change in letter size or line number so long as total size of sign face is not increased.

(c) Administrative approval is not allowed and variance procedures in section 26.03.001 shall be followed if:

(1) Additional signs are requested;

(2) Increase in the size of the sign is requested;

(3) Change in sign type is requested;

(4) Increase in the height of the sign is requested; or

(5) The sign administrator determines the variance request shall be reviewed in the regular variance process.

(d) If the responsible party disagrees with a decision of the sign administrator to deny a variance request, or disagrees with the conditions placed on a grant of a variance by the sign administrator, the responsible party may submit a written request that the city council review the variance request, the supporting documents, and the sign administrator's decision. The city council can affirm, reverse, or modify the decision of the sign administrator.

(e) The city council has final authority to approve a variance or conditions on a variance.

(f) A master sign plan ordinance can modify variance procedures for its specific property.

ARTICLE 26.04. EXISTING SIGNS

Sec. 26.04.001. Maintenance of existing signs.

(a) All signs in the city and ETJ shall be properly maintained at all times to the satisfaction of the sign administrator. The sign administrator shall have the authority to order the painting, repair, or removal of a sign which constitutes a hazard to the safety, health, or public welfare by reason of inadequate maintenance, dilapidation, obsolescence, or abandonment. The sign administrator's decision shall be subject to the review of the board of adjustment under the procedure for appeal of a decision of an administrative official under section 26.03.003(g)(2). If within 15 days the maintenance orders are not complied with, the city administrator may order the sign removed at the owner's expense under the provisions of this article.

(b) It is an offense under section 26.05.002 for a responsible party to fail to maintain signs and sign structures in a good and sound condition as determined by the building official in accordance with the International Building Code. Responsible parties must repair or replace signs and sign structures that are rotting, pealing, rusting, fading, becoming discolored, covered in dirt, or filled with holes. Responsible parties shall not allow signs or sign structures to become dangerous, within the meaning of the International Building Code, as a result of inadequate design, construction, repair, or maintenance. The city can seek to compel immediate removal of signs that are in such a state of disrepair as to constitute an imminent threat to public health, safety and welfare.

Sec. 26.04.002. Newly annexed signs.

Signs in areas newly annexed into the city limits or newly encompassed by an expanded ETJ shall be treated as nonconforming signs. If required for the type of existing sign, a permit shall be issued upon application. The signs shall be held to the amortization period addressed below of ten years so that the beginning of the amortization period is the time of annexation or encompassment.

Sec. 26.04.003. Off-premises pole signs (billboards).

No permit for alteration or relocation may be issued for an off-premises sign that was not timely inventoried and reported to the city prior to November 30, 2008.

(1) Alteration. An off-premises sign may not be altered regarding amount of surface area, shape, orientation, height, illumination, or location without the prior issuance of a sign alteration or relocation permit. Ordinary and routine necessary repairs that do not change the size, shape, orientation, height, illumination, or location of an inventoried off-premises sign do not require an alteration permit. A sign alteration permit expires if the approved modifications are not completed within 90 days of permit issuance.

(2) Maintenance. If the sign administrator or administrator's designee finds that any off-premises sign on the authorized list is not maintained in good repair, the sign administrator or administrator's designee will

notify and order the owner to repair the sign within 30 calendar days. If the sign administrator or administrator's designee finds that the sign structure or sign area of an off-premises sign has deteriorated more than 60 percent of its replacement value, or is not repaired within 30 calendar days, the sign administrator or administrator's designee shall notify the owner of the off-premises sign and the owner of the real property on which the off-premises sign is located to remove the off-premises sign or poster panel from the property within a specified time. Replacement of more than 60 percent of an off-premises sign during one calendar year shall void the legal nonconforming status of the sign and require immediate removal or conformance with current standards. All off-premises signs ordered to be removed shall be stricken from the authorized list.

(3) No existing billboard shall exceed 40 feet in height from the ground level. No existing billboard shall interfere with the visibility of pedestrians or drivers of motor vehicles at street intersections or otherwise obstruct traffic or create a traffic hazard.

Sec. 26.04.004. Destroyed nonconforming signs.

An existing nonconforming sign in the city limits or ETJ may not be repaired or rebuilt in the case of obsolescence or destruction by fire or other causes. In case of partial destruction by fire or other causes, where the cost of repairing the sign is less than 60 percent of the cost of erecting a new sign of the same type at the same location, the sign administrator may issue a "no fee" permit for the necessary repairs to be made to the sign. If the necessary repairs are not completed within 60 days of the receipt of written notification to the responsible party by the sign administrator or the sign administrator's designee, then the sign shall be removed either by the responsible party or by the city at the responsible party's expense. Criminal or civil penalties may also be initiated against the responsible party as provided for in this article. Under unusual circumstances and/or where the responsible party has shown "good faith" in attempting to comply with the provisions of this article, an extension period of 30 days may be granted to the responsible party to facilitate repairs. If the cost of rebuilding or repair of an existing nonconforming sign exceeds 60 percent of the cost of erecting a new sign of the same type at the same location, the sign shall be removed at the responsible party's expense. If the sign is not removed within 30 days of written notification to the responsible party, then it shall be removed by the city or its designated agent(s) at the responsible party's expense. A sign so removed under the provisions of this section shall be kept in storage for a period of 60 days, and if it is not claimed within said period, it may be disposed of in a lawful manner by the city.

Sec. 26.04.005. Abandoned or discontinued signs.

An abandoned or discontinued sign is a sign that advertises a business or project that has ceased operations more than one year, unless the property is leased, in which case the sign shall be removed after two years. The responsible party shall remove any sign and/or sign structure that has not been used for advertising or promoting a going concern for at least one year. For the purposes of this section, a business or project has ceased to operate when it is no longer engaged in the sale of products or services in the normal course of business. A violation of this section is an offense under section 26.05.002.

Sec. 26.04.006. Signs and modifications.

(a) Signs lawfully in existence on the date the provisions of this article are adopted that do not conform to the provisions of this article, but which were in compliance with the applicable regulations at the time they were constructed, erected, affixed, or maintained, must be regarded as nonconforming.

(b) For the purpose of amortization, these signs may be continued from the effective date of this article for a period not to exceed ten years, unless under a previous regulation the signs were to be amortized as allowed by law. In that case the amortization period must be as previously required or ten years, whichever is less. Signs that cannot be amortized by the city may continue in existence so long as the sign continues to be properly maintained as required by this code.

(c) Signs which were nonconforming to the prior ordinance and which do not conform to this article must be removed immediately.

Sec. 26.04.007. Altered, relocated, or replaced signs.

Any sign which is altered, relocated, or replaced must be brought immediately into compliance with all provisions of this article.

Sec. 26.04.008. Additional temporary signs.

Temporary signs may be displayed with the approval of a temporary sign permit. A temporary sign permit is valid for 14 days. Each lot in the city may have up to three temporary sign permits per year. Square footage of the sign may not exceed 36 square feet and height may not exceed 6 feet in height. Signs must be securely attached to a permanently installed building or wall and they must be kept in good repair throughout the time of their display. Pipes, poles, posts or other materials may be used to erect signs if the signs and supporting materials are kept in good repair. ~~The responsible party must affix the permit sticker to the back of the sign.~~ A temporary sign must obtain a permit and pay a temporary sign fee as required by the city fee schedule for the number of days for which a temporary will be displayed. A temporary sign under this section shall comply with all setback requirements of other signs on similarly zoned lots. A violation of this section is an offense under section 26.05.002.

Sec. 26.04.009. Incentives for compliance.

(a) Variance incentive. When considering granting a requested variance under this chapter or any other chapter, the city may take into consideration an applicant's commitment to bring pre-existing nonconforming signs into compliance with this chapter, and/or remove pre-existing nonconforming signs.

(b) Permit incentive. If a responsible party voluntarily elects to bring a pre-existing nonconforming sign into compliance with this chapter, the sign administrator may waive the application fee for any required sign permits related to the specific property.

ARTICLE 26.05. VIOLATIONS AND PENALTIES

Sec. 26.05.001. Violations.

Should the responsible party or parties after receiving written notice from the sign administrator, building official, or code enforcement officer~~ial~~ of a violation of this chapter fails to correct a violation of this chapter within the time stated in the written notice, the sign administrator or the administrator's designee may cause such signs and supports to be removed. The sign administrator may also take necessary action to file a lien against the property to recover the cost of removal if the removal costs are not paid by the property owner within 15 days after the property owner is billed. The sign administrator may also pursue criminal penalties and/or civil action as provided for under this article and state law. No notice by the city is required to remove improperly placed signs that are:

(1) In the right-of-way;

(2) In another person's property without that person's written permission;

(3) In a place that causes a safety issue due to its placement; or

(4) In a place that encumbers use of a street, path, trail, or sidewalk or encumbers entry or exit from a property.

Sec. 26.05.002. Offense.

(a) A person who violates, causes, allows or permits a violation a section of this chapter designated as an offense commits a misdemeanor punishable by a fine not exceeding $500.00.

(b) Each violation of this chapter designated as an offense constitutes a separate offense.

(c) No culpable mental state is required to prove an offense under this chapter if the offense involves: (1) placement of a sign in the right-of-way; (2) placement of a sign in another person's property without the person's permission; (3) placement of a sign that encumbers access to a person's property or encumbers use of a street, sidewalk, trail, path, or driveway.

(d) Sections containing an offense:

(1) Section 26.01.0084, prohibited signs.

(2) Section 26.01.01208(a), reflective surfaces.

(3) Section 26.01.0154, noncompliant signs prohibited.

(4) Section 26.03.001(78), qualifications.

(5) Section 26.04.001(b), maintenance of existing signs.

(6) Section 26.04.005, abandoned or discontinued signs.

(7) Section 26.04.008, additional temporary signs.

Sec. 26.05.003. Liability.

The provisions of this chapter shall not be construed as relieving or limiting in any way the responsibility or liability of any person that erects or owns any sign, from personal injury or property damage resulting from the placing of the sign, or resulting from the negligence or willful acts of such person in the design, construction, maintenance, repair or removal of any sign erected in accordance with a permit issued under the provisions of this chapter. Nor shall it be construed as imposing upon the city or its officers, employees or agents any responsibility or liability by reason of the approval of any signs, materials, or devices under these provisions.

Sec. 26.05.004. Civil remedies.

Nothing in this chapter shall be construed as a waiver of the city's right to bring a civil action to enforce the provisions of this chapter and to seek remedies as allowed by law, including, but not limited to the following:

(1) Injunctive relief to prevent specific conduct that violates the chapter or to require specific conduct that is necessary for compliance with the chapter, including removal of signs that violate this chapter at the expense of the responsible party;

(2) A civil penalty up to $1,000.00 a day when it is shown that the defendant was notified of the provisions of the chapter and after receiving notice committed acts in violation of the chapter or failed to take action necessary for compliance with the chapter; and other available relief; and

(3) An impoundment fee may be charged to recover a sign that has been impounded based on the current city fee schedule.

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DRIPPING SPRINGS
Texas

Sign Ordinance Update

Laura Mueller, City Attorney

Update to the Sign Ordinance

1. Update ordinance to more closely match approved variances
2. Simplified Monument Signs
3. Simplified Construction/Development Signs
4. Simplified Real Estate Signs
5. Modernized lighting of signs (menu)
6. Allowed additional Banners and simplified process

Monument Signs

- **Change from 2 signs (large and small) to one type of sign with fee cost based on size**
- **Residential and Multifamily**

Monument sign. A sign permanently affixed to the ground at its base or by poles that are enclosed by natural stone, stucco, brick, or wood and not mounted to a part of a building. Pole(s) may be used to construct a monument sign so long as the poles are not visible below the sign.

Multifamily residential complex monument sign	24 sq. ft.	6 ft.	One per entrance	yes	26.02.002
Residential developments — monument identification sign	24 sq. ft.	6 ft.	1	yes	26.02.001



Construction/Development Signs

- **48 sq ft maximum**
- **Annual Renewals**
- **Kept in good condition**
- **Removed when Construction has ceased**

Construction/development sign. A commercial sign placed on a piece of property advertising planned construction and providing related information, including but not limited to the name of the contractor, the name of the owner, the planned date of completion, and information indicating the future use or occupation of the site.



Construction/ development sign	48 sq. ft.	8 ft.	One	yes — project completion Annual Renewals	26.02.001; 26.02.002; 26.02.004

Real Estate Signs

- Change to 2 separate types of Real Estate Signs based on size

- Large Real Estate Signs – Require Permits
  - 32 sq ft; Height – 8 feet
  - Annual Renewals
  - nonilluminated
- Small Real Estate Signs – No Permit Required
  - 6 sq ft; height 3 feet
  - Remains until sale
  - Allowed for multiple units
  - Nonilluminated





Menu Signs



- Electronic Signs are now allowed by right if remain static.
- No variance required now.
- Must comply with Outdoor Lighting Ordinance.
- Two Menu Signs for each lane – vehicular or pedestrian.
- Cannot change more than one an hour – otherwise static.



Banners



- Expanded banners and no permits for first banner:
- One banner allowed on a nonresidential property at all times so long as:
  - Attached to fence, wall, or building
  - Good Condition
  - One at a time
  - Thirty-two (32) sq feet
- Small Commercial Banner – nonresidential property
  - One at a time
  - Twenty-four (24) sq feet
  - Good Condition
  - Affixed to building, wall, or fence
- One banner allowed on a nonresidential property three months in a calendar a year so long as:
  - Attached to pipes, poles
  - Good Condition
  - One at a time
  - Thirty-two (32) sq feet



Can have total of two banners on residential property without a permit. One up to 24 sq ft and one up to 32 sq ft. If attached to a pole/pipes it is limited in time.

Additional Changes

- Updated Vehicle Sign regulations
- Multiple Entrances can have multiple wall or hanging signs:
  - Is on a corner or has two public customer entrances into the building on different sides of the building in which it is located
- Daily Display Signs in Industrial Districts do not require permits
- Simplified Application language to remove duplication
- Allows fee variance waivers to be handled by the sign administrator
- Added Administrative Sections to mirror other ordinances

Signs that Businesses can Display

- Construction/Development Sign when in Construction
- Wall or Hanging Sign
- Individual business monument signs
- Monument Sign
- 24 sq foot banner
- 32 sq foot banner
- Directional Signs
- Window Signs
- Equipment Signs
- Non-commercial Sign
- Daily Display Sign
- New Business Temporary Signs – 32 sq ft
  - 60 days sign between time of issuance of building permit and CO
  - 60 days prior to opening





















Questions?

CITY OF DRIPPING SPRINGS

RESOLUTION No. 2025-R___

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DRIPPING SPRINGS, AUTHORIZING PARTICIPATION WITH THE STATE OF TEXAS, THROUGH THE OFFICE OF THE ATTORNEY GENERAL, IN THE SECONDARY MANUFACTURER OPIOID SETTLEMENTS; AUTHORIZING THE CITY ADMINISTRATOR TO EXECUTE AND SUBMIT ALL REQUIRED DOCUMENTS; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, The City Council of the City of Dripping Springs has received information indicating that secondary opioid manufacturers (i.e., Alvogen, Amneal, Apotex, Hikma, Indivior, Mylan, Sun, and Zydus), including certain pharmaceutical companies, affiliates, and subsidiaries, contributed to the opioid epidemic through the manufacture and distribution of opioid medications; and

WHEREAS, these actions, conduct and misconduct have resulted in significant financial costs to the City of Dripping Springs (the "City"); and

WHEREAS, on May 13, 2020, the State of Texas, through the Office of the Attorney General, and a negotiation group for Texas political subdivisions entered into an Agreement entitled Texas Opioid Abatement Fund Council and Settlement Allocation Term Sheet (hereafter, the Texas Term Sheet) approving the allocation of any and all opioid settlement funds within the State of Texas; and

WHEREAS, on December 7, 2021 the City approved and adopted the Texas Term Sheet via Resolution No. 2021-R40; and

WHEREAS, on March 21, 2023 the City approved a resolution joining the settlement agreement with Walgreens, CVS, Walmart and Allergan via Resolution No. 2023-R13; and

WHEREAS, on December 3, 2024 the City approved a resolution joining the settlement agreement with Kroger via Resolution No. 2024-R28; and

WHEREAS, on September 2, 2025 the City approved a resolution joining the settlement agreement with Purdue/Sackler via Resolution No. 2025-R31; and

WHEREAS, Counsel and the State of Texas have recommended that the City Council of the City of Dripping Springs support the approval and submission of the latest four settlement participation forms pertaining to the secondary manufacturers described above. The forms are attached hereto as Exhibit A.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DRIPPING SPRINGS, TEXAS:

1. **Approval:** The City supports the approval and submission of the latest settlement participation form pertaining to secondary manufacturers including Alvogen, Amneal, Apotex, Hikma, Indivior, Mylan, Sun, and Zydus.

2. **Recognized Substantial Need:** There is a substantial need for repayment of opioid-related expenditures and payment to abate opioid-related harms in and about the City.

3. **Allocation Method:** The City supports and reaffirms the allocation method for opioid settlement proceeds as set forth in the Texas Term Sheet.

4. **Purpose:** The City understands that the purpose of these participation forms and the Texas Term Sheet is to permit collaboration between the State of Texas and Political Subdivisions to explore and potentially effectuate resolution of the Opioid Litigation against Pharmaceutical Supply Chain Participants as defined therein.

5. **Additional Purpose:** The City also understands that an additional purpose is to create an effective means of distributing any potential settlement funds obtained under this Texas Term Sheet between the State of Texas and Political Subdivisions in a manner and means that would promote an effective and meaningful use of the funds in abating the opioid epidemic in this City and throughout Texas.

6. **Authority to Execute:** The City Administrator is hereby authorized to execute and submit all necessary related documents.

7. **Effective Date:** The resolution shall be effective from and after its approval and passage.

8. **Meeting:** The meeting at which this Resolution was passed was open to the public, and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Texas Government Code, Chapter 551.

PASSED AND APPROVED this, the 7th day of October 2025 by a vote of ____(ayes) to ____ (nays) to _____ (abstentions) of the City Council of Dripping Springs, Texas:

CITY OF DRIPPING SPRINGS:

_____

Bill Foulds, Jr., Mayor

ATTEST:

_____

Diana Boone, City Secretary

Exhibit "A"

STAFF REPORT

City of Dripping Springs

PO Box 384

511 Mercer Street

Dripping Springs, TX 78620

Submitted By: Aniz Alani, Deputy City Attorney

Council Meeting Date: October 7, 2025

Agenda Item Wording: **Consultation with City Attorney related to opioid lawsuits.**

Background:

The City of Dripping Springs has an opportunity to participate in an additional nationwide opioid litigation settlement involving secondary manufacturers—those entities involved in the manufacture of opioid products not previously covered in earlier settlements, namely: Alvogen, Amneal, Apotex, Hikma, Indivior, Mylan, Sun, and Zydus.

The Texas Attorney General's Office, in conjunction with the Texas Opioid Abatement Fund Council (TOAFC), has coordinated this latest round of settlement efforts. The settlement participation opportunity follows previous successful engagements with opioid distributors and retailers such as CVS, Walgreens, Walmart, Allergan, Kroger, and Purdue Pharma.

The City has previously approved participation in opioid settlements via:

- Resolution No. 2021-R40 (Texas Term Sheet)
- Resolution No. 2023-R13 (CVS, Walgreens, Walmart, and Allergan)
- Resolution No. 2024-R28 (Kroger)
- Resolution No. 2025-R31 (Purdue Pharma/Sackler)

This new round involves Secondary Manufacturers, as detailed in the National Opioid Settlement documentation received from the settlement administrator, and requires submission of signed participation forms by the designated deadline.

Recommended Council Actions: Authorize participation in secondary opioid manufacturer settlements and authorize execution and submission of participation forms to the settlement administrator.

Attachments: Draft Resolution

Secondary Manufacturer Subdivision Participation and Release Form

Confidential Memo dated March 3, 2023 from Marianne Banks and Marc Calderaro, Bojorquez Law Firm

Docusign Envelope ID: 9630B3DC-11F0-4FEF-8C0B-B0C926AE8A25

New National Opioids Settlement: Secondary Manufacturers
Opioids Implementation Administrator
opioidsparticipation@rubris.com

Dripping Springs city, TX
Reference Number: CL-1772032

TO LOCAL POLITICAL SUBDIVISIONS:

THIS PACKAGE CONTAINS DOCUMENTATION TO PARTICIPATE IN THE NEW NATIONAL OPIOIDS SECONDARY MANUFACTURERS SETTLEMENTS. YOU MUST TAKE ACTION IN ORDER TO PARTICIPATE.

Deadline: October 8, 2025

A new proposed national opioids settlement ("*Secondary Manufacturers Settlements*") has been reached with eight opioids manufacturers: Alvogen, Amneal, Apotex, Hikma, Indivior, Mylan, Sun, and Zydus ("Settling Defendants"). This *Combined Participation Package* is a follow-up communication to the *Notice of National Opioids Settlement* recently received electronically by your subdivision.

You are receiving this *Combined Participation Package* because Texas is participating in the Secondary Manufacturers Settlements.

If a state is not eligible to or does not participate in the settlement with a particular manufacturer, the subdivisions in that state are not eligible to participate in that manufacturer's settlement.

This electronic envelope contains:

- A *Combined Participation Form* for the *Secondary Manufacturers Settlements* that your subdivision is eligible to join, including a release of any claims.

The *Combined Participation Form* must be executed, without alteration, and submitted on or before October 8, 2025, in order for your subdivision to be considered for initial participation calculations and payment eligibility under the *Secondary Manufacturers Settlement*.

Based upon *Combined Participation Forms* received on or before October 8, 2025, the subdivision participation rate will be used to determine whether participation is sufficient for each settlement to move forward and whether a state earns its maximum potential payment under each settlement. If a settlement moves forward, your release will become effective. If a settlement does not move forward, that release will not become effective.

Any subdivision that does not participate cannot directly share in the settlement funds, even if the subdivision's state is settling and other participating subdivisions are sharing in settlement funds. Any subdivision that does not participate may also

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reduce the amount of money for programs to remediate the opioid crisis in its state. Please note, a subdivision will not necessarily directly receive settlement funds by participating; decisions on how settlement funds will be allocated within a state are subject to intrastate agreements or state statutes.

You are encouraged to discuss the terms and benefits of the *Secondary Manufacturers Settlements* with your counsel, your Attorney General's Office, and other contacts within your state. Many states are implementing and allocating funds for this new settlement the same as they did for the prior opioids settlements but states may choose to treat this settlement differently.

Information and documents regarding the *Secondary Manufacturers Settlements*, implementation in your state, and how funds will be allocated within your state can be found on the national settlement website at https://nationalopioidsettlement.com/. This website will be supplemented as additional documents are created. You may also visit the Texas Attorney General's Office website at https://www.texasattorneygeneral.gov/globalopioidsettlement for information.

This *Participation Packet* is different than the participation packet you recently received from Rubris concerning a settlement with Purdue Pharma, L.P, and the Sackler Family. The *Secondary Manufacturers Settlements* discussed in this *Participation Packet* are different than the settlement with Purdue and the Sacklers, and you may participate in the *Secondary Manufacturers Settlements* regardless of whether you join the Purdue and Sackler settlement.

How to return signed forms:

Please note that the Texas Attorney General's Office is collecting the executed *Participation Form* differently from prior opioid settlements. There are three methods for returning the executed *Combined Participation Form* and any supporting documentation to the Implementation Administrator:

(1) *Electronic Signature via DocuSign*: Executing the *Combined Participation Form* electronically through DocuSign will return the signed form to the Implementation Administrator and associate your form with your subdivision's records. Electronic signature is the most efficient method for returning the *Combined Participation Form*, allowing for more timely participation and the potential to meet higher settlement payment thresholds, and is therefore strongly encouraged.

(2) *Manual Signature returned via DocuSign*: DocuSign allows forms to be downloaded, signed manually, then uploaded to DocuSign and returned automatically to the Implementation Administrator. Please be sure to complete all fields. As with electronic signature, returning a manually signed *Combined Participation Form* via DocuSign will associate your signed forms with your subdivision's records.

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(3) *Manual Signature returned via electronic mail*: If your subdivision is unable to return an executed *Combined Participation Form* using DocuSign, the signed *Combined Participation Form* may be returned via electronic mail to opioidsparticipation@rubris.com. Please include the name, state, and reference ID of your subdivision in the body of the email and use the subject line Combined Settlement Participation Form – [Subdivision Name, Subdivision State] – [Reference ID].

Detailed instructions on how to sign and return the *Combined Participation Form*, including changing the authorized signer, can be found at https://nationalopioidsettlement.com/additional-settlements/. You may also contact opioidsparticipation@rubris.com and/or opioids@oag.texas.gov if you have any questions.

The sign-on period for subdivisions ends on October 8, 2025.

If you have any questions about executing the *Combined Participation Form*, please contact your counsel, the Implementation Administrator at opioidsparticipation@rubris.com, or the Texas Attorney General's Office at opioids@oag.texas.gov.

Thank you,

Secondary Manufacturers Settlements Implementation Administrator

The Implementation Administrator is retained to provide the settlement notice required by the Secondary Manufacturers Settlements and to manage the collection of the Combined Participation Form.

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EXHIBIT K

Secondary Manufacturers' Combined Subdivision Participation and Release Form ("Combined Participation Form")

Governmental Entity: Dripping Springs city	State: TX
Authorized Official:	
Address 1:	
Address 2:	
City, State, Zip:	
Phone:	
Email:	

The governmental entity identified above ("*Governmental Entity*"), in order to obtain and in consideration for the benefits provided to the Governmental Entity pursuant to each of the settlements which are listed in paragraph 1 below (each a "Secondary Manufacturer's Settlement" and collectively, "the Secondary Manufacturers' Settlements"), and acting through the undersigned authorized official, hereby elects to participate in each of the Secondary Manufacturers' Settlements, release all Released Claims against all Released Entities in each of the Secondary Manufacturers' Settlements, and agrees as follows.

1. The Participating Entity hereby elects to participate in each of the following Secondary Manufacturers' Settlements as a Participating Entity:

   a. Settlement Agreement for Alvogen, Inc. dated April 4, 2025.
   b. Settlement Agreement for Apotex Corp. dated April 4, 2025.
   c. Settlement Agreement for Amneal Pharmaceuticals LLC dated April 4, 2025.
   d. Settlement Agreement for Hikma Pharmaceuticals USA Inc. dated April 4, 2025.
   e. Settlement Agreement for Indivior Inc. dated April 4, 2025.
   f. Settlement Agreement for Viatris Inc. ("Mylan") dated April 4, 2025.
   g. Settlement Agreement for Sun Pharmaceutical Industries, Inc. dated April 4, 2025.
   h. Settlement Agreement for Zydus Pharmaceuticals (USA) Inc. dated April 4, 2025.

2. The Governmental Entity is aware of and has reviewed each of the Secondary Manufacturers' Settlements, understands that all capitalized terms not defined in this Combined Participation Form have the meanings defined in each of the Secondary Manufacturers' Settlements, and agrees that by executing this Combined Participation Form, the Governmental Entity elects to participate in each of the Secondary Manufacturers' Settlements and become a Participating Subdivision as provided in each of the Secondary Manufacturers' Settlements.

3. The Governmental Entity shall promptly, and in any event no later than 14 days after the Reference Date and prior to the filing of the Consent Judgment, dismiss with prejudice any Released Claims that it has filed against any Released Entity in each of the Secondary Manufacturers' Settlements. With respect to any Released Claims pending in *In re National Prescription Opiate Litigation*, MDL No. 2804, the Governmental Entity

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authorizes the Plaintiffs' Executive Committee to execute and file on behalf of the Governmental Entity a Stipulation of Dismissal with Prejudice for each of the manufacturers listed in paragraph 1 above substantially in the form found at *https://nationalopioidsettlement.com/additional-settlements/.*

4. The Governmental Entity agrees to the terms of each of the Secondary Manufacturers' Settlements pertaining to Participating Subdivisions as defined therein.

5. By agreeing to the terms of each of the Secondary Manufacturers' Settlements and becoming a Releasor, the Governmental Entity is entitled to the benefits provided therein, including, if applicable, monetary payments beginning after the Effective Date.

6. The Governmental Entity agrees to use any monies it receives through each of the Secondary Manufacturers' Settlements solely for the purposes provided therein.

7. The Governmental Entity submits to the jurisdiction of the court and agrees to follow the process for resolving any disputes related to each Secondary Manufacturer's Settlement as described in each of the Secondary Manufacturers' Settlements.[1]

8. The Governmental Entity has the right to enforce each of the Secondary Manufacturers' Settlements as provided therein.

9. The Governmental Entity, as a Participating Subdivision, hereby becomes a Releasor for all purposes in each of the Secondary Manufacturers' Settlements, including without limitation all provisions related to release of any claims,[2] and along with all departments, agencies, divisions, boards, commissions, districts, instrumentalities of any kind and attorneys, and any person in his or her official capacity whether elected or appointed to serve any of the foregoing and any agency, person, or other entity claiming by or through any of the foregoing, and any other entity identified in the definition of Releasor, provides for a release to the fullest extent of its authority. As a Releasor, the Governmental Entity hereby absolutely, unconditionally, and irrevocably covenants not to bring, file, or claim, or to cause, assist or permit to be brought, filed, or claimed, or to otherwise seek to establish liability for any Released Claims against any Released Entity in each of the Secondary Manufacturers' Settlements in any forum whatsoever. The releases provided for in each of the Secondary Manufacturers' Settlements are intended by the Parties to be broad and shall be interpreted so as to give the Released Entities in each of the Secondary Manufacturers' Settlements the broadest possible bar against any liability relating in any way to Released

[1] *See* Settlement Agreement for Alvogen, Inc. Section VII.F.2; Settlement Agreement for Apotex Corp. Section VII.F.2; Settlement Agreement for Amneal Pharmaceuticals LLC Section VII.F.2; Settlement Agreement for Hikma Pharmaceuticals USA Inc. Section VII.F.2; Settlement Agreement for Indivior Section VI.F.2; Settlement Agreement for Mylan Section VI.F.2; Settlement Agreement for Sun Pharmaceutical Industries, Inc. Section VII.F.2; Settlement Agreement for Zydus Pharmaceuticals (USA) Inc. Section VII.F.2.

[2] *See* Settlement Agreement for Alvogen, Inc. Section XI; Settlement Agreement for Amneal Pharmaceuticals LLC Section X; Settlement Agreement for Apotex Corp. Section XI; Settlement Agreement for Hikma Pharmaceuticals USA Inc. Section XI; Settlement Agreement for Indivior Section X; Settlement Agreement for Mylan Section X; Settlement Agreement for Sun Pharmaceutical Industries, Inc. Section XI; Settlement Agreement for Zydus Pharmaceuticals (USA) Inc. Section XI.

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Claims and extend to the full extent of the power of the Governmental Entity to release claims. Each of the Secondary Manufacturers' Settlements shall be a complete bar to any Released Claim against that manufacturer's Released Entities.

10. The Governmental Entity hereby takes on all rights and obligations of a Participating Subdivision as set forth in each of the Secondary Manufacturers' Settlements.

11. In connection with the releases provided for in each of the Secondary Manufacturers' Settlements, each Governmental Entity expressly waives, releases, and forever discharges any and all provisions, rights, and benefits conferred by any law of any state or territory of the United States or other jurisdiction, or principle of common law, which is similar, comparable, or equivalent to § 1542 of the California Civil Code, which reads:

> **General Release; extent.** A general release does not extend to claims that the creditor or releasing party does not know or suspect to exist in his or her favor at the time of executing the release that, if known by him or her would have materially affected his or her settlement with the debtor or released party.

A Releasor may hereafter discover facts other than or different from those which it knows, believes, or assumes to be true with respect to the Released Claims in each of the Secondary Manufacturers' Settlements, but each Governmental Entity hereby expressly waives and fully, finally, and forever settles, releases and discharges, upon the Effective Date, any and all Released Claims that may exist as of such date but which Releasors do not know or suspect to exist, whether through ignorance, oversight, error, negligence or through no fault whatsoever, and which, if known, would materially affect the Governmental Entities' decision to participate in each of the Secondary Manufacturers' Settlements.

12. The Governmental Entity understands and acknowledges that each of the Secondary Manufacturers' Settlements is an independent agreement with its own terms and conditions. Nothing herein is intended to modify in any way the terms of any of the Secondary Manufacturers' Settlements, to which Governmental Entity hereby agrees, aside from the exceptions in paragraph 13 below. To the extent this Combined Participation Form is interpreted differently from any of the Secondary Manufacturers' Settlements in any respect, the individual Secondary Manufacturer's Settlement controls.

13. For the avoidance of doubt, in the event that some but not all of the Secondary Manufacturers' Settlements proceed past their respective Reference Dates, all releases and other commitments or obligations shall become void ***only as to*** those Secondary Manufacturers' Settlements that fail to proceed past their Reference Dates. All releases and other commitments or obligations (including those contained in this Combined Participation Form) shall remain in full effect as to each Secondary Manufacturer's Settlement that proceeds past its Reference Date, and this Combined Participation Form need not be modified, returned, or destroyed as long as any Secondary Manufacturer's Settlement proceeds past its Reference Date.

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I have all necessary power and authorization to execute this Combined Participation Form on behalf of the Governmental Entity.

Signature: _____

Name: _____

Title: _____

Date: _____