Notice of City Council Regular Meeting
AGENDA

May 14, 2024 at 6:00 PM

NOTICE IS HEREBY GIVEN that a Meeting of the Montgomery City Council will be held on **Tuesday, May 14, 2024**, at **6:00 PM** at the City of Montgomery City Hall, 101 Old Plantersville Road, Montgomery, Texas.

Members of the public may view the meeting live on the City's website under Agenda/Minutes and then select **Live Stream Page (located at the top of the page).** The meeting will be recorded and uploaded to the City's website.

CALL TO ORDER

INVOCATION

PLEDGE OF ALLEGIANCE TO FLAGS

OATHS OF OFFICE & PRESENTATION

1. Mayor Byron Sanford will administer the Oath of Office to the following duly elected officials from the May 4, 2024, General Election.

Sara Countryman - Mayor

Casey Olson - Council Place 2

Cheryl Fox - Council Place 4

2. Recognition of outgoing Mayor, Byron Sanford.

3. Consideration and possible action to elect the Mayor Pro Tem for the term on one (1) year as provided by Texas Local Government Code 22.037(b).

VISITOR/CITIZENS FORUM:

Citizens are invited to speak for three (3) minutes on matters relating to City Government that relate to agenda or non-agenda items. Prior to speaking, each speaker must be recognized by the Presiding Officer. All speakers should approach the podium to address Council and give their name and address before sharing their comments. City Council may not discuss or take any action on an item, but may place the issue on a future agenda.

CONSIDERATION AND POSSIBLE ACTION:

4. Consideration and possible action on approval of construction plans for Hills of Town Creek Section Five (Dev. No. 2406).

COUNCIL INQUIRY:
Pursuant to Texas Government Code Sect. 551.042 the Mayor and Council Members may inquire about a subject not specifically listed on this Agenda. Responses are limited to the recitation of existing policy or a statement of specific factual information given in response to the inquiry. Any deliberation or decision shall be limited to a proposal to place on the agenda of a future meeting.

ADJOURNMENT

/s/ Nici Browe

Nici Browe, City Secretary. TRMC

I certify that the attached notice of meeting was posted on the bulletin board at City of Montgomery City Hall, 101 Old Plantersville Road, Montgomery, Texas, on May 10, 2024 at 10:00 a.m.

This facility is wheelchair accessible and accessible parking spaces are available. Please contact the City Secretary's office at 936-597-6434 for further information or for special accommodations.

Montgomery City Council
AGENDA REPORT

Meeting Date: May 14, 2024	**Budgeted Amount:** N/A
Department: Admin	**Prepared By: Dave McCorquodale**

Subject

Consideration and possible action on approval of construction plans for Hills of Town Creek Section Five (Dev. No. 2406).

Recommendation

Staff recommends a motion to approve the plans as presented.

Discussion

The city engineer's memo is attached recommending approval of the plans based on compliance with city regulations and approved variances for the project.

Approved By

Assistant City Administrator & Planning & Development Director	Dave McCorquodale	Date: 05/07/2024

May 8, 2024

City Council
City of Montgomery
101 Old Plantersville Rd.
Montgomery, Texas 77316

Re: Submission of Water, Sanitary, Drainage, & Paving Plans
Hills of Town Creek Section 5 (Dev. No. 2406)
City of Montgomery

Dear Mayor and Council:

We reviewed the water, sanitary sewer, drainage and paving plans submission for the referenced development on behalf of the City of Montgomery (the "City"). Our review was based on the City's Code of Ordinances, Chapter 78 Section 60 and any other applicable chapters, and the City's Design Manual. Our review was also based upon the approved variances to development regulations included previously made between the Developer and the City. We recommend approval of the plans as submitted.

If you have any questions or comments, please contact me.

Sincerely,

Chris Roznovsky

Chris Roznovsky, PE
City Engineer

CVR/akg
Z:\00574 (City of Montgomery)_900 General Consultation\Correspondence\Letters\2024\2024.05.08 MEMO TO Council RE HOTC 5.docx
Enclosures: N/A
Cc (via email): The Honorable Mayor and City Council – The City of Montgomery
Mr. Gary Palmer – City of Montgomery, City Administrator
Ms. Nici Browe – City of Montgomery, City Secretary
Mr. Dave McCorquodale – City of Montgomery, Director of Planning & Development

(DEV NO. 2406)
CITY OF MONTGOMERY, TEXAS
HILLS OF TOWN CREEK SECTION 5
PUBLIC IMPROVEMENTS

Sheet List Table

ONE–CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
(713) 223–4567 (in Houston)
(New Statewide Number Outside Houston)
1–800–545–6005

PROJECT NOTES

ENGINEER'S CERTIFICATION:
I CERTIFY THAT THESE PLANS WHICH BEAR MY SEAL HAVE BEEN PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND ARE IN COMPLIANCE WITH ALL APPLICABLE CITY, STATE AND FEDERAL REQUIREMENTS. THE PROPOSED IMPROVEMENTS SHOWN IN THESE PLANS WILL NOT IMPEDE THE FLOW OF SURFACE WATERS FROM HIGHER ADJACENT PROPERTIES, WILL NOT ALTER THE NATURAL FLOW OF SURFACE WATERS SO AS TO DISCHARGE THEM UPON ADJACENT PROPERTIES AT A MORE RAPID RATE OR IN A DIFFERENT LOCATION, AND WILL NOT CONCENTRATE FLOWS OF SURFACE WATERS IN A MANNER WHICH EXCEEDS THE CAPACITY OF THE RECEIVING WATERCOURSE. THIS CERTIFICATION DOES NOT APPLY TO ANY EXISTING IMPROVEMENTS ON THE SUBJECT PROPERTY.

CIVIL NOTE:
FIELD VERIFY ALL EXISTING CONDITIONS AND ELEVATIONS INCLUDING PAVEMENT AND UTILITY TIE–INS PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF ALL DISCREPANCIES PRIOR TO BEGINNING ANY WORK.

TDLR NOTE:
TEXAS DEPARTMENT OF LICENSING AND REGISTRATION (TDLR) NUMBER REQUIRED FOR ALL PROPOSED COMMERCIAL BUILDINGS. **IF TDLR NUMBER IS NOT PRESENT, CLIENT IS RESPONSIBLE FOR ACQUIRING REGISTRATION NUMBER PRIOR TO CONSTRUCTION.

WETLAND NOTE:

THESE PLANS WERE PREPARED WITHOUT THE BENEFIT OF AN ENVIRONMENTAL OR OTHER WETLANDS STUDY. L SQUARED ENGINEERING IS NOT AN ENVIRONMENTAL ENGINEERING FIRM AND DOES NOT HAVE THE ABILITY TO DETERMINE ENVIRONMENTAL OR WETLAND IMPACTS. THE CLIENT AND/OR OWNER SHALL BE RESPONSIBLE FOR ANY SUCH STUDY AND NOTIFY ENGINEER IF ANY RESULTING CHANGES ARE NEEDED PRIOR TO CONSTRUCTION.

LEGAL DESCRIPTION:
THE HILLS OF TOWN CREEK SECTION 5, A SUBDIVISION OF 18.5001 ACRES (805,863 SQ FT.), BENJAMIN RIGBY LEAGUE, ABSTRACT 31 MONTGOMERY COUNTY, TEXAS.

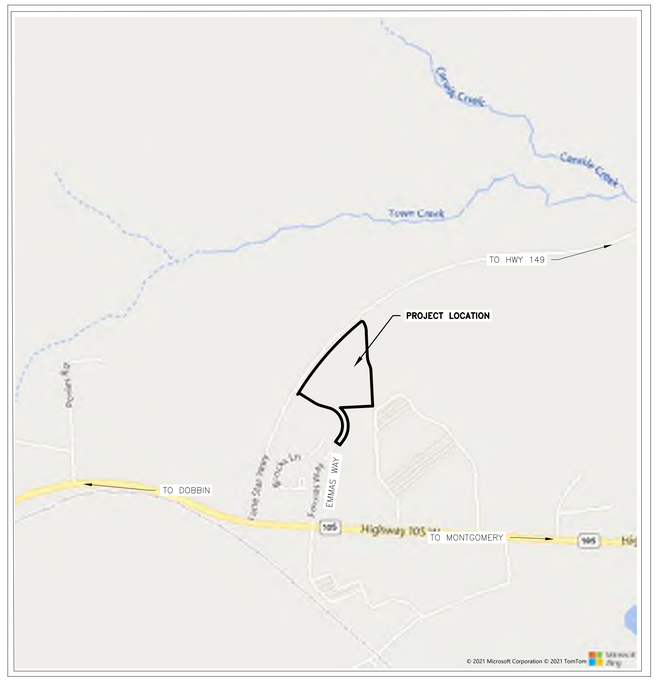
CITY OF MONTGOMERY BENCHMARKS:
MONT 3 ELEV.=268.73'
3" BRASS DISK LOCATED FROM THE INTERSECTION OF HWY 105 AND HWY 149, WEST ±4700' TO THE PARKING LOT OF THE HERITAGE HOUSE RESTAURANT, WHICH IS LOCATED ON THE NORTH SIDE OF HWY 105.

MONT 7 ELEV.=291.77'
3" BRASS DISK IS LOCATED IN THE CENTER OF MONTGOMERY ON THE SOUTH SIDE OF HWY 105. MARK IS IN FRONT (NORTH) OF GAS PUMPING AREA OF BROOKSHIRE BROTHER'S GROCERY STORE, AS WELL AS ACROSS HWY 105 (SOUTH) FROM 'THE OLDE SCHOOL HOUSE.'

BENCHMARK:
BRASS DISK IN CONCRETE ELEV.=314.12'
BRASS DISK IN CONCRETE IN THE SOUTHEAST RIGHT–OF–WAY OF EMMA'S WAY LOCATED NORTH 29°13'51" WEST, A DISTANCE OF 2.19' FROM THE COMMON CORNER OF LOTS 1 AND 2, BLOCK 1. THE HILLS OF TOWN CREEK, SOUTH 0124809'31"WEST, A DISTANCE OF 527.26 FEET FROM THE SOUTHWEST CORNER OF THE SUBJECT PROPERTY.

FLOODPLAIN:
THIS SITE IS SITUATED IN ZONE "X" IN MONTGOMERY, COUNTY, TEXAS ACCORDING TO FEMA MAP NUMBER 48339C0200G DATED AUGUST 18, 2014: THIS STATEMENT DOES NOT IMPLY THAT THE PROPERTY AND/OR THE STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. THIS DETERMINATION HAS BEEN MADE BY SCALING THE PROPERTY ON THE REFERENCED MAP AND IS NOT THE RESULT OF AN ELEVATION SURVEY. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF THE SURVEYOR.

SURVEY NOTE:
SURVEY PROVIDED BY CORE LAND SURVEYING DATED JANUARY 2022. CONTRACTOR TO VERIFY EXISTING CONDITIONS PRIOR TO ANY WORK AND NOTIFY ENGINEER OF ANY DISCREPANCIES.



KEY MAP 122U
SCALE: 1" = 1,000'

PROJECT MAP
SCALE: 1" = 80'

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

L SQUARED ENGINEERING
MUNICIPAL COMMERCIAL RESIDENTIAL
WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 12235
(MAIN OFFICE)
3307 W. DAVIS STREET #100
CONROE, TEXAS 77304
OFFICE: 936-647-0420
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK SECTION 5
COVER SHEET

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS SHOWN	SHEET	01

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER

04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 – HOTC5 – K HOV\03 CAD\DESIGN SET\01 COVER SHEET.DWG Apr. 30, 2024–8:10 AM CAITLYN CURTIS

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 – HOTC5 – K HOV\03 CAD\DESIGN SET\02 CONSTRUCTION NOTES.DWG Apr. 30, 2024–8:10 AM CAITLYN CURTIS

REFERENCE SPECIFICATIONS:

APPLICABLE ENTITY DETAILS & SPECIFICATIONS SHALL APPLY. WHEN NO SUCH INFORMATION EXISTS, CONTRACTOR SHALL THEN REFERENCE CITY OF MONTGOMERY DETAILS AND SPECIFICATIONS.

GENERAL CONSTRUCTION NOTES:

1. MATERIALS, CONSTRUCTION AND TESTING TO BE IN ACCORDANCE WITH THE GOVERNING ENTITY'S ORDINANCES AND SPECIFICATIONS, LATEST PRINTING AND AMENDMENTS THERETO.
2. CONTRACTOR TO OBTAIN ALL DEVELOPMENT AND CONSTRUCTION PERMITS REQUIRED BY ALL ENTITIES AT HIS EXPENSE PRIOR TO COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES OR RAILROADS AFFECTED BY HIS OPERATIONS 48 HOURS PRIOR TO COMMENCEMENT OF WORK IN STREET RIGHTS–OF–WAY OR EASEMENTS.
4. ALL EXISTING UNDERGROUND UTILITIES SHOWN ARE NOT GUARANTEED TO BE COMPLETED OR DEFINITE, BUT WERE OBTAINED FROM THE BEST INFORMATION AVAILABLE. CONTRACTOR HAS SOLE RESPONSIBILITY FOR FIELD VERIFICATION OF ALL EXISTING FACILITIES SHOWN ON DRAWINGS. CONTRACTOR SHALL COORDINATE ALL CONFLICTS WITH THE APPROPRIATE GOVERNING AGENCY.
5. THE LOCATION OF LUFKIN–CONROE TELEPHONE EXCHANGE OR AT&T COMPANY, ENTEX, AND ENTERGY–GSU (GULF STATES UTILITIES) UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL REQUEST THE EXACT LOCATION OF THESE FACILITIES BY CALLING THE UTILITY COMPANIES, AT LEAST 48 HOURS BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE WHICH OCCURS DUE TO HIS FAILURE TO REQUEST THE LOCATION AND PRESERVATION OF THESE UNDERGROUND FACILITIES. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
6. TEXAS LAW ARTICLE 1436C, PROHIBITS ALL ACTIVITIES IN WHICH PERSONS OR EQUIPMENT MAY COME WITHIN 6 FEET OF ENERGIZED OVERHEAD POWER LINES, AND FEDERAL REGULATION, TITLE 29, PART 1910.130(1) AND PART 1926.440 (A) (15) REQUIRE A MINIMUM CLEARANCE OF 10 FEET FROM THESE FACILITIES. THE ABOVE LAWS CARRY BOTH CRIMINAL AND CIVIL LIABILITIES, WITH CONTRACTORS AND OWNERS BEING LEGALLY RESPONSIBLE FOR THE SAFETY OF WORKERS UNDER THESE LAWS. IF YOU OR YOUR COMPANY MUST WORK NEAR ENERGIZED OVERHEAD POWER LINES, CALL THE POWER COMPANY FOR THE LINES TO BE DE–ENERGIZED AND/OR MOVED AT YOUR EXPENSE.
7. CONSTRUCTION SHALL COMPLY WITH THE LATEST REVISIONS OF OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING TRENCHING AND SHORING. CONTRACTOR SHALL PROVIDE A TRENCH SAFETY SYSTEM TO MEET, AS A MINIMUM, THE REQUIREMENTS OF OSHA SAFETY AND HEALTH REGULATION, PART 1926, SUB–PART P AS PUBLISHED IN THE FEDERAL REGISTER, VOLUME 54, NO. 209, DATED OCTOBER 31, 1989.
8. DETAILS SHOWN DO NOT EXTEND OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, INCLUDING THE PLANS AND SPECIFICATIONS REQUIRED BY CHAPTER 756, SUBCHAPTER "C" OF THE TEXAS HEALTH AND SAFETY CODE.
9. CONTRACTOR SHALL COVER OPEN EXCAVATIONS WITH ANCHORED STEEL PLATES DURING NON–WORKING HOURS, ALONG EXISTING ROADWAYS AND TRAFFIC AREAS.
10. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE GOVERNING ENTITY. ALL CONSTRUCTION RUNOFF SHALL COMPLY WITH STORM WATER MANAGEMENT FOR CONSTRUCTION ACTIVITIES AND THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS OR PROVIDE ALL–WEATHER DETOURS AROUND CONSTRUCTION SITE, PROVIDE PUBLIC NOTIFICATION, AND USE UNIFORMED POLICE OFFICERS TO CONTROL TRAFFIC.
12. EXISTING PAVEMENTS, CURBS, SIDEWALKS AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO THE GOVERNING ENTITY'S STANDARDS. ALL ASPHALT AND CONCRETE DRIVEWAYS EXCAVATED DURING CONSTRUCTION SHALL BE BACKFILLED WITH STABILIZED MATERIAL AND RETURNED TO EXISTING CONDITIONS. ALL STATE AND COUNTY HIGHWAY PAVEMENT AND RAILROAD RIGHT–OF–WAYS TO BE BORED ACCORDING TO THE RULES, REGULATIONS AND REQUIREMENTS FOR APPROVAL AND ACCEPTANCE BY SAID AGENCIES.
13. EXISTING ROADS AND/OR RIGHT–OF–WAYS DISTURBED DURING CONSTRUCTION SHALL BE AS GOOD OR BETTER THAN THE CONDITION PRIOR TO STARTING THE WORK, UPON COMPLETION OF THE PROJECT.
14. AFTER DISTURBED AREAS HAVE BEEN COMPLETED TO THE LINES, GRADES, AND CROSS–SECTIONS SHOWN ON THE PLANS, SEEDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS TO ESTABLISH ADEQUATE VEGETATION COVERAGE TO ELIMINATE EROSION. IF NO PROVISION FOR PLANTING GRASS IS INCLUDED IN THE PLANS OR SPECIFICATIONS, THE MINIMUM REQUIREMENT FOR THIS ITEM WILL BE IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR "SODDING OR SEEDING FOR EROSION CONTROL."
15. ALL TRENCHES, INCLUDING TRENCHES FOR LEADS AND STUBS UNDER PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL CURBS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND AS PER SPECIFICATION TO A POINT IMMEDIATELY BELOW THE SUBGRADE. TRENCHES OTHER THAN UNDER PAVEMENT SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL IN 6 INCH LAYERS AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM DESIGNATION D–698/AASHTO T99). MOISTURE CONTENT OF BACKFILL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CEMENT STABILIZED SAND SPECIFICATIONS. SEE GOVERNING ENTITY'S STANDARD DETAIL SHEETS FOR BEDDING AND OTHER DESIGN REQUIREMENTS.
16. CONTRACTOR TO REMOVE EXISTING PLUGS AND CONNECT TO EXISTING UTILITY LINES AS INDICATED ON PLANS.
17. UNLESS OTHERWISE NOTED ON PLANS, WHERE MANHOLES ARE LOCATED WITHIN THE UTILITY EASEMENTS, THE CONTRACTOR SHALL SET RIM ELEVATIONS TWO INCHES ABOVE FINISHED GROUND ELEVATIONS.
18. WHEN TRENCH CONDITION REQUIRES THE USE OF WELL POINTS, THIS IS TO BE REQUESTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING THE MUD AND/OR DIRT DEPOSITED ON EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY DAILY. ALL EQUIPMENT AND DEBRIS FROM CONSTRUCTION TO BE MOVED AT END OF PROJECT.

SANITARY SEWER CONSTRUCTION NOTES:

1. SANITARY SEWERS SHALL BE CONSTRUCTED IN COMPLIANCE WITH THE LATEST SPECIFICATIONS FOR SEWER CONSTRUCTION, AND TESTED AS SPECIFIED FROM THE LATEST TEST PROCEDURE FOR EITHER LIQUID OR AIR, INCLUDING ALL AMENDMENTS AND REVISIONS THERETO. BACKFILL AND BEDDING FOR SANITARY SEWERS MUST MEET ALL MINIMUM ASPECTS OF ASTM D–2321 AND MUST BE PLACED IN ACCORDANCE WITH THE APPLICABLE ENTITY'S SPECIFICATIONS.
2. ALL SANITARY SEWER MANHOLES SHALL BE STANDARD THE APPLICABLE ENTITY PRE–CAST USING RAM–NECK OR CAST IN PLACE CONCRETE IN ACCORDANCE WITH ASTM C–478. NO BRICK MANHOLES ALLOWED. FOR PVC PIPE, USE MANHOLE WATER STOP GASKET AND CLAMP ASSEMBLY AT MANHOLE CONNECTIONS. SANITARY SEWER MANHOLE RIMS SHALL BE 3 INCHES ABOVE NATURAL GROUND. BACKFILL SHALL BE ADDED AND SLOPED AWAY FROM THE MANHOLE RIM FOR DRAINAGE PURPOSES.
3. MANHOLE CONCRETE BOTTOM FOUNDATION SHALL BE 12" REINFORCED WITH #5 BARS AT 12", ON CENTERS, EACH WAY, WITH A MINIMUM OF 6" EXTRA SLAB LENGTH AROUND THE MANHOLE, IF POURED IN PLACE. APPROVED CHEMICALS SHALL BE USED FOR PATCHING AROUND MANHOLE JOINTS. MORTAR CEMENT WILL NOT BE ACCEPTED.
4. SANITARY SEWER PIPE SHALL BE PVC SDR 26 OR PVC SDR 35 (WITH APPROVAL), IN ACCORDANCE WITH ASTM SPECIFICATIONS D–3034, FOR 4" THROUGH 15" AND ASTM F–879 FOR 18" THROUGH 27". MINIMUM SIZE SANITARY SEWER MAIN IS 6". SDR 35 MAY BE USED WHEN DEPTH IS MORE THAN 3 FEET AND LESS THAN 6 FEET.
5. SEWER LINES SHALL BE LOCATED ON THE OPPOSITE SIDE OF THE STREET FROM WHERE WATER IS LOCATED. SEWER LINE AND WATER LINE SEPARATION SHALL BE IN ACCORDANCE WITH TEXAS NATURAL RESOURCE CONSERVATION COMMISSION RULES, CHAPTER 317.13 APPENDIX E.
6. NO SEWER PIPE SHALL BE LAID ON AN UNSTABLE FOUNDATION. SELECTED MATERIAL SHALL BE USED AND/OR WET SAND CONSTRUCTION DETAILS, WHICHEVER APPLIES IN THE OPINION OF THE ENGINEER. NO PIPE SHALL BE COVERED WITHOUT APPROVAL OF THE ENGINEER OR HIS REPRESENTATIVE. SANITARY SEWERS CONSTRUCTED IN WET SAND SHALL HAVE A SPECIAL PROCEDURE AND SHALL BE CONSTRUCTED AS PER THE APPLICABLE ENTITY STANDARDS.
7. WHEN THE NATURAL GROUND LEVEL AROUND MANHOLE LIES BELOW THE 100 YEAR FLOODPLAIN ELEVATION, THE MANHOLE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SEALED AND VENTED MANHOLE DETAIL.
8. A DEFLECTION TEST SHALL BE REQUIRED AFTER THE BACKFILL HAS BEEN IN PLACE A MINIMUM OF 30 DAYS. THIS TEST SHALL BE DONE BY PULLING A HAND LINE WITH AN ATTACHED MANDREL FROM MAN–HOLE TO MANHOLE. THE MANDREL SHALL HAVE AN OUTSIDE DIAMETER THAT IS AT LEAST 95% OF THE ORIGINAL INSIDE DIAMETER OF THE PIPE. MANDREL TO BE MANUFACTURED WITH A MINIMUM OF SEVEN (7) RUNNERS, WITH EACH RUNNER BEING A MINIMUM OF 5 INCHES LONG. ANY PIPE NOT MEETING EST REQUIREMENTS TO BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.
9. INFILTRATION/EXFILTRATION NOT TO EXCEED 200 GALLONS PER INCH DIAMETER PER MILE OF PIPE FOR 24 HOURS UNDER A MINIMUM OF 2 FEET OF HEAD, OR AN AIR TEST SHALL BE REQUIRED IN ACCORDANCE WITH ASTM C–828.
10. WHERE A SEWER LINE HAS LESS THAN (2) FEET OF COVER, PROVIDE CEMENT STABILIZED SAND BACKFILL MATERIAL.
11. CONTRACTOR SHALL KEEP RECORD OF LOCATION OF ALL STACKS, STUBS, SEWER LEADS, ETC. THE AS–BUILT MYLAR DRAWINGS MUST SHOW THE EXACT LOCATION.
12. IF SANITARY SERVICE LEADS ARE INSTALLED DURING CONSTRUCTION OF MAIN LINE, ALL LEADS TO HAVE A MINIMUM SLOPE OF 0.70% OR GREATER. ALL PVC LEADS TO BE THE SAME MATERIAL AS MAIN LINE. ALL DOUBLE SERVICE LEADS TO HAVE WYE LOCATED ON THE END OF THE LEAD. ALL SINGLE SERVICE LEADS TO BE 4 INCH, AND ALL DOUBLE SERVICE LEADS TO BE 6 INCH.
13. THE INSTALLATION OF ALL SANITARY SEWER LINES SHALL EXTEND ALONG THE ENTIRE LENGTH OF THE PROPERTY TO BE SERVED. SANITARY SEWER LINES THAT DEAD END SHALL EXTEND TO THE PROJECT LIMITS FOR FUTURE EXTENSIONS, WITH DEPTHS BASED ON ENTIRE SERVICE AREA.

STORM WATER QUALITY NOTES:

1. IF THE PROJECT DISTURBS 10 ACRES, COVERAGE IS REQUIRED UNDER THE TPDES GENERAL PERMIT TXR150000 FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION, INSPECTION, AND MAINTENANCE OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS. THE COSTS TO IMPLEMENT, INSPECT, AND MAINTAIN THE SWPPP SHALL BE CONSIDERED INCIDENTAL TO THE SWPPP BID ITEMS.
2. IF THE PROJECT DISTURBS GREATER THAN 5 ACRES, A NOTICE OF INTENT (NOI) SHALL BE SUBMITTED TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) AT LEAST 7 DAYS PRIOR TO THE START OF ANY EARTH DISTURBING ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TCEQ COMPLIANCE, PLAN IMPLEMENTATION AND MAINTENANCE DURING CONSTRUCTION. WHEN DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PROVIDE A COPY OF THE CONTRACTOR'S NOTICE OF INTENT (NOI) AND PROOF THAT IT HAS BEEN SENT TO THE TCEQ.
3. COPIES OF THE CONTACTOR'S NOI AND CONSTRUCTION SITE NOTICE (CSN) SHALL BE POSTED AT THE SITE BY THE CONTRACTOR. COPIES SHALL ALSO BE SUBMITTED TO THE PROJECT OWNER AND ENGINEER. THE CONTRACTOR SHALL LAMINATE AND POST THE TWO NOIS, TWO CSNS AND ANY "SECONDARY OPERATOR" CSNS ON THE PROJECT SITE AT A LOCATION WITH EASY ACCESS TO THE PUBLIC FOR CLEAR VIEWING AND AS APPROVED BY THE ENGINEER. THE COST OF LAMINATION AND POSTING OF THE NOIS & CSNS SHALL BE CONSIDERED INCIDENTAL TO THE SWPPP BID ITEMS.
4. UPON COMPLETION OF CONSTRUCTION ACTIVITIES AND FINAL STABILIZATION OF THE SITE, AS DEFINED BY THE TPDES GENERAL PERMIT, A NOTICE OF TERMINATION (NOT) IS REQUIRED TO BE SUBMITTED TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ). WHEN DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PROVIDE A COPY OF THE CONTRACTOR'S NOTICE OF TERMINATION (NOT) AND PROOF THAT IT HAS BEEN SENT TO THE TCEQ.
5. A RAIN GAUGE SHALL BE KEPT ON THE PROJECT SITE OR WITHIN THE IMMEDIATE PROJECT VICINITY. RECORDS OF RAINFALL EVENTS SHALL BE KEPT BY THE CONTRACTOR TO ASSIST WITH DETERMINING IF AN SWPPP SITE INSPECTION IS REQUIRED. THE COSTS FOR THE RAIN GAUGE SHALL BE CONSIDERED INCIDENTAL TO THE SWPPP BID ITEMS.
6. THE SWPPP, INSPECTION & MAINTENANCE REPORTS, CERTIFICATIONS, RAINFALL RECORDS, MAJOR GRADING DATE RECORDS AND TEMPORARY AND PERMANENT STABILIZATION DATE RECORDS SHALL BE KEPT CURRENT BY THE CONTRACTOR AND IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. COPIES OF THE ALL SWPPP RECORDS SHALL BE KEPT ON–SITE, IF FEASIBLE, UNTIL THE NOTICE OF TERMINATION HAS BEEN SUBMITTED TO THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY. THE SWPPP RECORDS SHALL BE MADE READILY AVAILABLE TO ENGINEER AND REGULATORY AUTHORITIES UPON AN ON–SITE INSPECTION. THE CONTRACTOR SHALL DELIVER COPIES OF ALL SWPPP RECORDS TO PROJECT OWNER AND ENGINEER AS DIRECTED BY THE ENGINEER."

STORM SEWER NOTES:

1. STORM SEWER AND LEADS SHALL BE REINFORCED CONCRETE PIPE, ASTM C–76, CLASS III, WITH O–RING RUBBER GASKET JOINTS, AND SHALL BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH THE GOVERNING ENTITIE'S STANDARDS AND SPECIFICATIONS

NOTE: HDPE PIPE MAY BE USED PROVIDED THAT IT IS BACKFILLED WITH CEMENT STABILIZED SAND (2 SACKS CEMENT/TON), OR OTHER BACKFILL MATERIALS THAT HAVE BEEN APPROVED BY THE GOVERNING ENTITY. SEE NOTES BELOW.

2. ALL PROPOSED PIPE STUB OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH 8 INCH BRICK WALLS UNLESS OTHERWISE NOTED.
3. ALL BOX CULVERTS INSTALLED SHALL BE PLACED ON A MINIMUM OF 6 INCHES OF CEMENT STABILIZED SAND (CEMENT STABILIZED SAND SHALL BE 1½ SACK CEMENT PER TON). FOR INSTALLATION OF PRE–CASE CONCRETE BOX CULVERTS IN POOR SAIL CONDITIONS, A 7 INCH REINFORCED CONCRETE SLAB SHALL BE INSTALLED. FOR INSTALLATION OF MONOLITHIC REINFORCED CONCRETE BOX CULVERTS IN POOR SOIL CONDITIONS, A 4 INCH THICK CLASS "C" CONCRETE SEAL SLAB SHALL BE INSTALLED, PRIOR TO CONSTRUCTION OF BOX CULVERTS.
4. STORM SEWER MANHOLES SHALL BE STANDARD PRE–CAST, UNLESS OTHERWISE NOTED.
5. ALL INLETS TO BE TO THE DETAIL SPECIFICATIONS SHOWN IN THE PLANS OR APPROVED EQUAL OR UNLESS OTHERWISE STATED ON PLANS. INLETS TO BE STANDARD DEPTH UNLESS OTHERWISE NOTED.
6. ALL STORM SEWER LEADS SHALL BE 18 INCH MINIMUM UNLESS OTHERWISE INDICATED. GRADE DROP ON LEADS BETWEEN INLETS TO BE A MINIMUM OF 0.20 FOOT. GRADE DROP BETWEEN INLET AND MANHOLES TO BE 0.20 FOOT UNLESS OTHERWISE SHOWN. WHEN MANHOLE FRAME AND COVER IS REQUIRED, USE EAST JORDAN 24" FRAME AND COVER (OR EQUAL).
9. FOR ADJUSTMENT OF MANHOLE LIDS USE STANDARD CONCRETE RINGS.
10. CONCRETE USED FOR ALL POURED–IN–PLACE MANHOLES, INLETS, WINGWALLS, HEADWALLS AND OTHER APPURTENANCES TO BE CLASS "A" CONCRETE WITH 3,000 P.S.I. STRENGTH AT 28 DAYS.
11. ALL EXPOSED CORNERS TO BE CHAMFERED 3/4".
12. OTHER BACKFILL MATERIALS MAY BE USED BASED ON THE GEOTECHNICAL REPORT OR PER HDPE SPECIFICATIONS. BACKFILL MUST BE USED WITH APPROPRIATE COMPACTION.
13. SEE MANUFACTURERS SPECIFICATIONS FOR THE USE OF HIGH DENSITY POLYETHYLENE PIPE FOR STORM DRAINS FOR SPECIFIC TECHNICAL INFORMATION.

WATER CONSTRUCTION NOTES:

1. CONTRACTOR SHALL PROVIDE ADEQUATE THRUST BLOCKING TO WITHSTAND TEST PRESSURE AS SPECIFIED IN THE APPLICABLE ENTITY STANDARD DRAWINGS AND REQUIREMENTS FOR WATER MAIN CONSTRUCTION AND MATERIALS.
2. PRIOR TO INSTALLATION OF WATER METER, WATER METER LEAD OR UNMETERED FIRE SPRINKLER LINE, THE CONTRACTOR SHALL CONTACT THE PERMIT DIVISION.
3. PRIOR TO WATER MAIN CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE GOVERNING ENTITY'S ENGINEER AND COMPLY WITH ALL REQUIREMENTS NECESSARY FOR THE ISSUANCE OF A WORK ORDER FOR THE WATER MAIN CONSTRUCTION.
4. SEPARATION DISTANCES FOR ALL WATER MAIN AND SANITARY SEWER MAIN CONSTRUCTION SHALL BE GOVERNED BY THE "TEXAS NATURAL RESOURCES CONSERVATION COMMISSION RULES AND REGULATIONS FOR DESIGN CRITERIA FOR SEWERAGE SYSTEMS", SECTION 317.20, LATEST PRINTING. REFER TO THE THE APPLICABLE ENTITY DESIGN MANUAL WATER MAIN DESIGN REQUIREMENTS
5. TWELVE–INCH (12") AND SMALLER MAINS SHALL HAVE A MINIMUM COVER OF FOUR FEET (4') FROM THE TOP OF THE CURB OR FIVE FEET (5') FROM THE MEAN ELEVATION OF THE BOTTOM OF THE NEARBY DITCH AND NEARBY RIGHT–OF–WAY ELEVATION FOR OPEN DITCH SECTIONS.
6. MAINS LARGER THAN TWELVE–INCHES (12") SHALL HAVE A MINIMUM COVER OF FIVE FEET (5') FROM THE TOP OF THE CURB OR SIX FEET (6') FROM THE MEAN ELEVATION FOR OPEN DITCH SECTIONS.
7. ALL WATER MAINS SHALL BE HYDROSTATICALLY TESTED BEFORE BACTERIOLOGICAL TESTING IN ACCORDANCE WITH AWWA STANDARD C–600.
8. ALL WATER PIPING SHALL BE DISINFECTED AND BACTERIOLOGICALLY TESTED PRIOR TO USE IN ACCORDANCE WITH AWWA STANDARD C–601.
9. ALL WATER MAINS 4" THROUGH 12" SHALL BE C–900 (SDR–18). ALL WATER MAINS 14" THROUGH 36" SHALL BE C–905 (SDR–18).
10. PRIOR TO BACKFILLING OF ALL UNDERGROUND WATER LINES, INSTALL A CONTINUOUS #14 COPPER TRACER WIRE, LOCATED DIRECTLY OVER BURIED LINES AND ACCESSIBLE AT EACH VALVE STACK.
11. THE INSTALLATION OF ALL WATER LINES SHALL EXTEND ALONG THE ENTIRE LENGTH OF THE PROPERTY TO BE SERVED. WATER LINES THAT DEAD END SHALL EXTEND TO THE PROJECT LIMITS FOR FUTURE EXTENSIONS.

PAVING NOTES:

1. IF PROPOSED SEMI–RIGID BASE WITH 2 INCH TYPE "D" HOT MIX ASPHALTIC CONCRETE SURFACING, FOR URBAN ESTATES ONLY, SEMI–RIGID BASE MAY BE 7 INCH CEMENT STABILIZED SHELL, 8 INCH CRUSHED LIMESTONE, OR 6 INCH HOT MIX ASPHALTIC CONCRETE.
2. EXPOSE 15 INCHES OF REINFORCING STEEL AT ALL PROPOSED SAWED JOINTS. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS PER NOTE #4.
3. REQUIRE A ONE (1) INCH REDWOOD EXPANSION BOARD OR PRE–MOLDED NON–EXTRUDING JOINT BETWEEN SIDEWALK AND BACK OF CURB.
4. HORIZONTAL DOWELS SHALL BE NO. 6 BARS, 24 INCHES LONG, DRILLED AND EMBEDDED 8 INCHES INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL. DOWELS SHALL BE 24 INCHES CENTER TO CENTER UNLESS OTHERWISE SPECIFIED.
5. WHEN PROPOSED PAVEMENT ENDS AT A CONSTRUCTION JOINT LEAVE 15 INCHES OF REINFORCING STEEL EXPOSED BEYOND PAVEMENT, COAT WITH ASPHALT, AND WRAP WITH BURLAP FOR FUTURE PAVEMENT TIE–IN. AT EXPANSION JOINTS, EXTEND DOWELS 5 INCHES; COAT AND WRAP SAME AS CONSTRUCTION JOINTS.
6. WHEREVER A SIDEWALK IS REQUIRED BY GOVERNING ENTITY'S ORDINANCE , PROVIDE WHEELCHAIR RAMP AND/OR SIDEWALKS IN ACCORDANCE WITH THE "TEXAS DEPARTMENT OF TRANSPORTATION STANDARD WHEELCHAIR RAMP AND SIDEWALK DETAILS".
7. ADJUST EXISTING MANHOLE FRAMES AND COVERS TO FIT NEW GRADE.
8. ADJUST EXISTING WATER VALVE BOXES TO NEW PAVING GRADE. REPLACE ALL MISSING OR DAMAGED VALVE BOXES AND COVERS.
9. PLACE WHITE OR YELLOW PLASTIC MARKER OR PAINT AS SHOWN BY THE UNIFORM TRAFFIC MANUAL FOR PAVEMENT MARKINGS.
10. PROVIDE A CONCRETE PAVING HEADER AT THE END OF THE PAVEMENT.
11. T. C. INDICATES TOP OF CURB ELEVATION AND T. P. INDICATES TOP OF PAVEMENT ELEVATION.
12. CURB RADII AT STREET INTERSECTIONS TO BE 24.50 FEET TO BACK OF CURB WITH A MINIMUM OF ONE (1) PERCENT GRADE UNLESS OTHERWISE NOTED.
13. GUIDELINES SET FORTH IN THE "TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" WILL BE OBSERVED.
14. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT ALL RADIUS RETURNS AND AT A MAXIMUM SPACING OF 60 FOOT INTERVALS.
15. CONTRACTOR WILL USE CONTINUOUS LONGITUDINAL REINFORCING BARS IN CURBS AS SHOWN ON DETAILS PROVIDED IN CONSTRUCTION DRAWINGS.
16. CYLINDER COMPRESSION TEST OR BEAM FLEXURAL TEST SHALL BE REQUIRED. TWO SAMPLES SHALL BE TAKEN FOR EACH 100 CUBIC YARDS OF CONCRETE POURED. FOR SMALLER QUANTITIES, TWO SAMPLES SHALL BE TAKEN REGARDLESS OF THE AMOUNT OF CONCRETE POURED EACH DAY. CONCRETE SHALL HAVE 5 SACKS CEMENT PER CUBIC YARD AND A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS OR A MINIMUM FLEXURAL STRENGTH OF 600 PSI IN 28 DAYS. NO TRAFFIC SHALL BE ALLOWED ON CONCRETE FOR 28 DAYS. IF EXTRA TESTS ARE MADE 75% OF THE 28 DAY STRENGTH IS ACHIEVED THE GOVERNING ENTITY'S ENGINEER MAY ALLOW TRAFFIC ON THE PAVEMENT IF IT DEEMS NECESSARY.
17. PRIOR TO PLAN APPROVAL, A CERTIFIED LAB SHALL DETERMINE THE PERCENTAGE OF CEMENT CONTENT FOR SUBGRADE STABILIZATION IN SANDY SOILS WITH P.I. LESS THAN 10 TO OBTAIN A COMPRESSIVE STRENGTH OF 400 PSI IN 28 DAYS. THE LAB SHALL ALSO DETERMINE THE PERCENTAGE OF LIME CONTENT FOR SUBGRADE STABILIZATION IN CLAY SOILS WITH A P.I. GREATER THAN 20. ALL STREETS SHALL BE TESTED EVERY 200 FEET AND SUBGRADE SHALL BE STABILIZED UNLESS THE LAB CERTIFIES THE P.I. TO BE BETWEEN 10 AND 20 AND THAT STABILIZATION IS NOT NEEDED.
18. A CONCRETE MIX DESIGN BY THE CERTIFIED LAB SHALL BE SUBMITTED TO AND APPROVED BY THE GOVERNING ENTITY'S ENGINEER BEFORE ANY CONCRETE IS POURED.
19. A MINIMUM OF TWO (2) COMPACTION TESTS SHALL BE PERFORMED A MAXIMUM DISTANCE OF 500 FEET, AND FOR EACH 2'–6" MAXIMUM THICK LAYERS OF FILL. IN AREAS WHERE NO FILL IS REQUIRED, TWO (2) SAMPLES SHALL BE TAKEN AT A MAXIMUM DISTANCE OF 500 FEET. ADDITIONAL TESTING SHALL BE PERFORMED IF SEEN NECESSARY BY THE ENGINEER. NO ADDITIONAL LAYERS OF FILL SHALL BE MADE WITHOUT HAVING THE LAB'S WRITTEN APPROVAL OF COMPLETED LAYERS. PROOF ROLLING SHALL BE REQUIRED BY THE INSPECTOR ON EACH LAYER PLACED AND ANY "PUMPING" AREAS SHALL BE REMOVED IMMEDIATELY AND REPLACED OR STABILIZED AND RE–COMPACTED TO A PASSING DENSITY.
20. CONSTRUCTION OF ITEMS THAT ARE NOT SPECIFICALLY ADDRESSED TO BE IN ACCORDANCE WITH THE TEXAS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS (LATEST REVISION).
21. RIGHT–OF–WAY SHALL BE SLOPED FROM THE PROPERTY TO THE TOP OF CURB AND HYDROMULCHED OR SODDED BEFORE FINAL ACCEPTANCE BY THE GOVERNING ENTITY TO CONTROL EROSION INTO THE STREET AND STORM SEWER.
22. MEMBRANE CURING TYPE 2, WHITE PIGMENTED, SHALL BE USED FOR CURING ALL CONCRETE SURFACES IMMEDIATELY AFTER FINISHING OF SURFACES AND SHALL BE IN ACCORDANCE WITH THE TEXAS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS ITEM #526.
23. ALL FIRST STAGE INLET CONSTRUCTION SHALL BE PROTECTED WITH 3 INCH THICK BOARDS AT ALL TIMES.
24. ALL SUBGRADE AND EMBANKMENT AREAS SHALL BE STRIPPED OF ALL ORGANIC AND UNSUITABLE MATERIAL BEFORE STABILIZATION OR FILLING IS BEGUN. MATERIAL USED FOR FILL SHALL BE CERTIFIED BY A LAB TO HAVE A PLASTICITY INDEX BETWEEN 10 AND 20.
25. FORMS SHALL BE SET TO THE PROPER GRADE AND PROPERLY SUPPORTED SO THAT NO DISPLACEMENT OCCURS WITH THE PAVING ACTIVITIES. ALL CONCRETE SHALL BE VIBRATED BY MECHANICAL MEANS TO INSURE PROPER COMPACTION AND NO HONEY COMBS.
26. CONCRETE SHALL NOT BE PLACED WHEN THE TEMPERATURE IS BELOW 40° F. AND FALLING, BUT MAY BE PLACED WHEN TEMPERATURE IS ABOVE 35° F. AND RISING. THE TEMPERATURE SHALL BE TAKEN IN THE SHADE AND AWAY FROM ARTIFICIAL HEAT.
27. THE CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES TO ADEQUATELY PROTECT THE PAVEMENT. THE CONTRACTOR SHALL HAVE PERSONNEL ON SITE UNTIL THE PAVEMENT HAS REACHED SUFFICIENT STRENGTH AS NOT TO BE DAMAGED BY ANIMALS OR FOOT TRAFFIC.
28. JOINT SEALING MATERIAL SHALL BE A HOT POURED RUBBER TYPE AND SHALL MEET THE REQUIREMENTS IN ACCORDANCE WITH TEST METHOD TEX–525–C, OR AN APPROVED EQUAL. TAR WILL NOT BE ALLOWED.
29. JOINTS SHALL BE CLEANED OF ALL SCALE, DIRT, DUST, CURING COMPOUND, AND CONCRETE TO THE WIDTH AND DEPTH OF THE JOINT AND SHALL BE DRY BEFORE SEALING IS PERFORMED.
30. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM 615 GRADE 60 (GRADE 40 ONLY FOR BARS REQUIRING BENDING). REINFORCING STEEL SHALL BE SUPPORTED ON CHAIRS STRONG ENOUGH TO HOLD IT IN PLACE AND BE TIED.
31. CONCRETE FOR PAVEMENT SHALL MEET TEXAS DEPARTMENT OF HIGHWAY STANDARD SPECIFICATIONS AND SHALL BE A MINIMUM OF 5 SACK, 3,000 PSI UNLESS STATED SPECIFICALLY BY THE PLANS OR THE SPECIFICATIONS.
32. CONCRETE PAVEMENT SHALL BE CORED TO VERIFY THICKNESS OF CONCRETE AT INTERVALS OF 1,000 LINEAR FEET PER TRAFFIC LANE, IF REQUIRED BY THE GOVERNING ENTITY ENGINEER.

LEGEND:

EX ADJOINER LINE, ADJ
EX SANITARY, SAN
EX WATERLINE, WL
EX STORM SEWER, STM
EX DRAINAGE PATH, FL
EX HIGH BANK, HB
EX EASEMENT, ESMT
EX BUILDING LINE, BL
P — EX OVERHEAD POWER, P
UG — EX UNDERGROUND POWER, UG
FO — EX FIBER, FO
T — EX TELEPHONE, T
G — EX GAS LINE, G
X — EX FENCE, FNC
EX ZONE X, 500 YR FLOODPLAIN, FP
EX ZONE AE, 100 YR FLOODPLAIN, FP
EX FLOODWAY
EX WETLANDS
NATURAL GROUND, NG
PROJECT BOUNDARY LINE, BNDY
PROP PHASE LINE
PROP SANITARY, SAN
PROP FORCE MAIN, FM
PROP WATERLINE, WL
PROP STORM SEWER, STM
PROP DRAINAGE PATH, FL
PROP HIGH BANK, HB
PROP EASEMENT, ESMT
PROP BUILDING LINE, BL
P — PROP OVERHEAD POWER, P
UG — PROP UNDERGND POWER, UG
FO — PROP FIBER, FO
T — PROP TELEPHONE, T
G — PROP GAS LINE, G
X — PROP FENCE, FNC
PROP PAVEMENT, PVMT BC
PROP FACE OF CURB 4", FC
PROP FACE OF CURB 6", FC
PROP CASING
FINISHED GRADE, FG
INVERT ELEVATION, IE
CROWN ELEVATION, CE

LEGAL DESCRIPTION:
THE HILLS OF TOWN CREEK SECTION 5, A SUBDIVISION OF 18.5001 ACRES (805,863 SQ FT.), BENJAMIN RIGBY LEAGUE, ABSTRACT 31 MONTGOMERY COUNTY, TEXAS.

CITY OF MONTGOMERY BENCHMARKS:
MONT 3
ELEV.=268.73'
3" BRASS DISK LOCATED FROM THE INTERSECTION OF HWY 105 AND HWY 149, WEST ±4700' TO THE PARKING LOT OF THE HERITAGE HOUSE RESTAURANT, WHICH IS LOCATED ON THE NORTH SIDE OF HWY 105.

MONT 7
ELEV.=291.77'
3" BRASS DISK IS LOCATED IN THE CENTER OF MONTGOMERY ON THE SOUTH SIDE OF HWY 105. MARK IS IN FRONT (NORTH) OF GAS PUMPING AREA OF BROOKSHIRE BROTHER'S GROCERY STORE, AS WELL AS ACROSS HWY 105 (SOUTH) FROM 'THE OLDE SCHOOL HOUSE.'

BENCHMARK:
BRASS DISK IN CONCRETE
ELEV.=314.12'
BRASS DISK IN CONCRETE IN THE SOUTHEAST RIGHT–OF–WAY OF EMMA'S WAY LOCATED NORTH 29°13'51" WEST, A DISTANCE OF 2.19' FROM THE COMMON CORNER OF LOTS 1 AND 2, BLOCK 1. THE HILLS OF TOWN CREEK, SOUTH 0124809'31"WEST, A DISTANCE OF 527.26 FEET FROM THE SOUTHWEST CORNER OF THE SUBJECT PROPERTY.

FLOODPLAIN:
THIS SITE IS SITUATED IN ZONE "X" IN MONTGOMERY, COUNTY, TEXAS ACCORDING TO FEMA MAP NUMBER 48339C0200G DATED AUGUST 18, 2014: THIS STATEMENT DOES NOT IMPLY THAT THE PROPERTY AND/OR THE STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. THIS DETERMINATION HAS BEEN MADE BY SCALING THE PROPERTY ON THE REFERENCED MAP AND IS NOT THE RESULT OF AN ELEVATION SURVEY. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF THE SURVEYOR.

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR
DATE

L SQUARED ENGINEERING
MUNICIPAL COMMERCIAL RESIDENTIAL
WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 11235
(MAIN OFFICE)
3307 W. DAVIS STREET #100
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OFFICE: 936-647-0420
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK SECTION 5

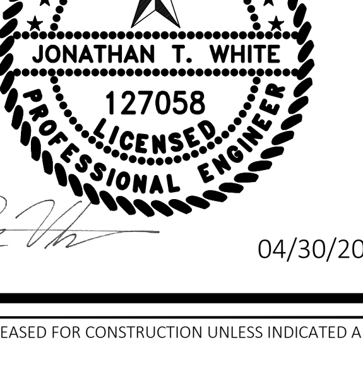
CONSTRUCTION NOTES & LEGEND 1 OF 2

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE		SHEET	02



04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

TCEQ WATER DISTRIBUTION SYSTEM GENERAL CONSTRUCTION NOTES

1. This water distribution system must be constructed in accordance with the current Texas Commission on Environmental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. At a minimum, construction for public water systems must always meet TCEQ's "Rules and Regulations for Public Water Systems."

2. All newly installed pipes and related products must conform to American National Standards Institute (ANSI)/NSF International Standard 61 and must be certified by an organization accredited by ANSI [§290.44(a)(1)].

3. Plastic pipe for use in public water systems must bear the NSF International Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less [§290.44(a)(2)].

4. No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply [§290.44(a)(3)].

5. All water line crossings of wastewater mains shall be perpendicular [§290.44(e)(4)(B)].

6. Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface [§290.44(a)(4)].

7. The maximum allowable lead content of pipes, pipe fittings, plumbing fittings, and fixtures is 0.25 percent [§290.44(b)].

8. The contractor shall install appropriate air release devices with vent openings to the atmosphere covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent [§290.44(d)(1)].

9. The contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation [§290.44(f)(1)].

10. When waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the waterline shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested [§290.44(f)(2)].

11. Pursuant to 30 TAC §290.44(a)(5), the hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.
    - The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

$$Q = \frac{LD\sqrt{P}}{148{,}000}$$

      Where:
      - Q = the quantity of makeup water in gallons per hour,
      - L = the length of the pipe section being tested, in feet,
      - D = the nominal diameter of the pipe in inches, and
      - P = the average test pressure during the hydrostatic test in pounds per square inch (psi).
    - The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

      Where:
      - L = the quantity of makeup water in gallons per hour,
      - S = the length of the pipe section being tested, in feet,
      - D = the nominal diameter of the pipe in inches, and
      - P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

12. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet §290.44(e)(1)-(4).

13. The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant [§290.44(e)(5)].

14. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction [§290.44(e)(6)].

15. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line [§290.44(e)(7)].

16. Waterlines shall not be installed closer than ten feet to septic tank drainfields [§290.44(e)(8)].

17. The contractor shall disinfect the new waterlines in accordance with AWWA Standard C-651-14 or most recent, then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer [§290.44(f)(3)].

18. Dechlorination of disinfecting water shall be in strict accordance with current AWWA Standard C655-09 or most recent.

TCEQ NOTES:

1. THESE WATER STORAGE FACILITIES MUST BE CONSTRUCTED IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D.

2. ALL FACILITIES FOR POTABLE WATER STORAGE SHALL BE COVERED AND DESIGNED, FABRICATED, ERECTED, TESTED AND DISINFECTED IN STRICT ACCORDANCE WITH CURRENT AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARDS AND SHALL BE PROVIDED WITH THE MINIMUM NUMBER, SIZE AND TYPE OF ROOF VENTS, MAN WAYS, DRAINS, SAMPLE CONNECTIONS, ACCESS LADDERS, OVERFLOWS, LIQUID LEVEL INDICATORS AND OTHER APPURTENANCES AS SPECIFIED IN THESE RULES.

3. BOLTED TANKS SHALL BE DESIGNED, FABRICATED, ERECTED AND TESTED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARD D103. WELDED TANKS SHALL BE DESIGNED, FABRICATED, ERECTED AND TESTED IN STRICT ACCORDANCE

WITH CURRENT AWWA STANDARD D 100. THE ROOF OF ALL TANKS SHALL BE DESIGNED AND ERECTED SO THAT NO WATER PONDS AT ANY POINT ON THE ROOF AND, IN ADDITION, NO AREA OF THE ROOF SHALL HAVE A SLOPE OF LESS THAN 0.75 INCH PER FOOT.

4. ROOF VENTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS AND SHALL BE EQUIPPED WITH APPROVED SCREENS TO PREVENT ENTRY OF ANIMALS, BIRDS, INSECTS AND HEAVY AIR CONTAMINANTS. SCREENS SHALL BE FABRICATED OF CORROSION RESISTANT MATERIAL AND SHALL BE 16 MESH OR FINER. SCREENS SHALL BE SECURELY CLAMPED IN PLACE WITH STAINLESS OR GALVANIZED BANDS OR WIRES AND SHALL BE DESIGNED TO WITHSTAND WINDS OF NOT LESS THAN TANK DESIGN CRITERIA (UNLESS SPECIFIED OTHERWISE BY THE ENGINEER).

5. ALL ROOF OPENINGS SHALL BE DESIGNED IN ACCORDANCE WITH CURRENT AWWA STANDARDS. IF AN ALTERNATE 30 INCH DIAMETER ACCESS OPENING IS NOT PROVIDED IN A STORAGE TANK, THE PRIMARY ROOF ACCESS OPENING SHALL NOT BE LESS THAN 30 INCHES IN DIAMETER. OTHER ROOF OPENINGS REQUIRED ONLY FOR VENTILATING PURPOSES DURING CLEANING, REPAIRING OR PAINTING OPERATIONS SHALL BE NOT LESS THAN 24 INCHES IN DIAMETER OR AS SPECIFIED BY THE LICENSED PROFESSIONAL ENGINEER. AN EXISTING TANK WITHOUT A 30-INCH IN DIAMETER ACCESS OPENING MUST BE MODIFIED TO MEET THIS REQUIREMENT WHEN MAJOR REPAIR OR MAINTENANCE IS PERFORMED ON THE TANK. EACH ACCESS OPENING SHALL HAVE A RAISED CURBING AT LEAST FOUR INCHES IN HEIGHT WITH A LOCKABLE COVER THAT OVERLAPS THE CURBING AT LEAST TWO INCHES IN A DOWNWARD DIRECTION. WHERE NECESSARY, A GASKET SHALL BE USED TO MAKE A POSITIVE SEAL WHEN THE HATCH IS CLOSED. ALL HATCHES SHALL REMAIN LOCKED EXCEPT DURING INSPECTIONS AND MAINTENANCE.

6. OVERFLOWS SHALL BE DESIGNED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS AND SHALL TERMINATE WITH A GRAVITY HINGED AND WEIGHTED COVER. THE COVER SHALL FIT TIGHTLY WITH NO GAP OVER 1/16 INCHES. IF THE OVERFLOW TERMINATES AT ANY POINT OTHER THAN THE GROUND LEVEL, IT SHALL BE LOCATED NEAR ENOUGH AND AT A POSITION ACCESSIBLE FROM A LADDER OR THE BALCONY FOR INSPECTION PURPOSES. THE OVERFLOW(S) SHALL BE SIZED TO HANDLE THE MAXIMUM POSSIBLE FILL RATE WITHOUT EXCEEDING THE CAPACITY OF THE OVERFLOW(S). THE DISCHARGE OPENING OF THE OVERFLOW(S) SHALL BE ABOVE THE SURFACE OF THE GROUND AND SHALL NOT BE SUBJECT TO SUBMERGENCE.

7. ALL CLEARWELLS AND WATER STORAGE TANKS SHALL HAVE A LIQUID LEVEL INDICATOR LOCATED AT THE TANK SITE. THE INDICATOR CAN BE A FLOAT WITH A MOVING TARGET, AN ULTRASONIC LEVEL INDICATOR, OR A PRESSSURE GAUGE CALIBRATED IN FEET OF WATER. IF AN ELEVATED TANK OR STANDPIPE HAS A FLOAT WITH MOVING TARGET INDICATOR, IT MUST ALSO HAVE A PRESSURE INDICATOR LOCATED AT GROUND LEVEL. PRESSURE GAUGES MUST NOT BE LESS THAN THREE INCHES IN DIAMETER AND CALIBRATED AT NOT MORE THAN TWO-FOOT INTERVALS. REMOTE READING GAUGES AT THE OWNER'S TREATMENT PLANT OR PUMPING STATION WILL NOT ELIMINATE THE REQUIREMENT FOR A GAUGE AT THE TANK SITE UNLESS THE TANK IS LOCATED AT THE PLANT OR STATION.

8. INLET AND OUTLET CONNECTIONS SHALL BE LOCATED SO AS TO PREVENT SHORT CIRCUITING OR STAGNATION OF WATER. CLEARWELLS USED FOR DISINFECTANT CONTACT TIME SHALL BE APPROPRIATELY BAFFLED.

9. CLEARWELLS AND POTABLE WATER STORAGE TANKS SHALL BE THOROUGHLY TIGHT AGAINST LEAKAGE, SHALL BE LOCATED ABOVE THE GROUND WATER TABLE AND SHALL HAVE NO WALLS IN COMMON WITH ANY OTHER PLANT UNITS CONTAINING WATER IN THE PROCESS OF TREATMENT. ALL ASSOCIATED APPURTENANCES INCLUDING VALVES, PIPES AND FITTINGS SHALL BE TIGHT AGAINST LEAKAGE.

10. EACH CLEARWELL OR POTABLE WATER STORAGE TANK SHALL BE PROVIDED WITH A MEANS OF REMOVING ACCUMULATED SILT AND DEPOSITS AT ALL LOW POINTS IN THE BOTTOM OF THE TANK. DRAINS SHALL NOT BE CONNECTED TO ANY WASTE OR SEWAGE DISPOSAL SYSTEM AND SHALL BE CONSTRUCTED SO THAT THEY ARE NOT A POTENTIAL AGENT IN THE CONTAMINATION OF THE STORED WATER.

11. ALL CLEAR WELLS, GROUND STORAGE TANKS, STANDPIPES, AND ELEVATED TANKS SHALL BE PAINTED, DISINFECTED, AND MAINTAINED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS. HOWEVER, NO TEMPORARY COATINGS, WAX GREASE COATINGS, OR COATING MATERIALS CONTAINING LEAD WILL BE ALLOWED. NO OTHER COATINGS WILL BE ALLOWED WHICH ARE NOT APPROVED FOR USE (AS A CONTACT SURFACE WITH POTABLE WATER) BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA), NATIONAL SANITATION FOUNDATION (NSF), OR THE UNITED STATES FOOD AND DRUG ADMINISTRATION (FDA). ALL NEWLY INSTALLED COATINGS MUST CONFORM TO ANSI/NSF STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI

12. NO TANKS OR CONTAINERS SHALL BE USED TO STORE POTABLE WATER THAT HAS PREVIOUSLY BEEN USED FOR ANY NON POTABLE PURPOSE. WHERE A USED TANK IS PROPOSED FOR USE, A LETTER FROM THE PREVIOUS OWNER OR OWNERS MUST BE SUBMITTED TO THE COMMISSION WHICH STATES THE USE OF THE TANK.

13. ACCESS MANWAYS IN THE RISER PIPE, SHELL AREA, ACCESS TUBE, BOWL AREA OR ANY OTHER LOCATION OPENING DIRECTLY INTO THE WATER COMPARTMENT SHALL BE LOCATED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS. THESE OPENINGS SHALL NOT BE LESS THAN 24 INCHES IN DIAMETER. HOWEVER, IN THE CASE OF A RISER PIPE OR ACCESS TUBE OF 36 INCHES IN DIAMETER OR SMALLER, THE ACCESS MANWAY MAY BE 18 INCHES TIMES 24 INCHES WITH THE VERTICAL DIMENSION NOT LESS THAN 24 INCHES. THE PRIMARY ACCESS MANWAY IN THE LOWER RING OR SECTION OF A GROUND STORAGE TANK SHALL BE NOT LESS THAN 30 INCHES IN DIAMETER. WHERE NECESSARY, FOR ANY ACCESS MANWAY WHICH ALLOWS DIRECT ACCESS TO THE WATER COMPARTMENT, A GASKET SHALL BE USED TO MAKE A POSITIVE SEAL WHEN THE ACCESS MANWAY IS CLOSED.

14. SERVICE PUMP INSTALLATION TAKING SUCTION FROM STORAGE TANKS SHALL PROVIDE AUTOMATIC LOW WATER LEVEL CUTOFF DEVICES TO PREVENT DAMAGE TO THE PUMPS. THE SERVICE PUMP CIRCUITRY SHALL ALSO RESUME PUMPING AUTOMATICALLY ONCE THE MINIMUM WATER LEVEL IS REACHED IN THE TANK.

CITY OF MONTGOMERY

GENERAL CONSTRUCTION NOTES

1. CONTRACTOR SHALL CONTACT CITY OF MONTGOMERY CITY ENGINEER, KATHERINE VU AT (713)789-1900 A MINIMUM OF 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.

2. CONTRACTOR SHALL CONTACT CITY OF MONTGOMERY DIRECTOR OF PUBLIC WORKS, MIKE MUCKLEROY AT (936) 597-6434 A MINIMUM OF 48 HOURS PRIOR TO COMMENCING CONSTRUCTION TO SET UP AN INSPECTION TO VERIFY CITY'S FACILITIES.

3. CONTRACTOR TO CONTACT CITY OF MONTGOMERY UTILITY OPERATOR PHILIP WRIGHT OF HAYS UTILITY NORTH CORPORATION AT (936) 588-1166 A MINIMUM OF 48 HOURS PRIOR TO COMMENCING CONSTRUCTION TO SET UP AN INSPECTION TO VERIFY CITY'S FACILITIES.

4. THE CITY UTILITY OPERATOR AND PUBLIC WORKS FOREMAN SHALL BE NOTIFIED 24 HOURS IN ADVANCE TO WITNESS AND INSPECT ANY SANITARY SEWER LINE CONNECTION. NO SANITARY SEWER LINES SHALL BE BACKFILLED BEFORE THE CITY'S UTILITY OPERATOR OR PUBLIC WORKS FOREMAN HAS INSPECTED THE CONNECTION.

5. CONTRACTOR SHALL CONTACT THE CITY'S UTILITY OPERATOR OR PUBLIC WORKS FOREMAN TO OPERATE ANY VALVES. AT NO TIME IS THE CONTRACTOR OR CONTRACTOR'S REPRESENTATIVE TO OPERATE ANY PART OF THE CITY OF MONTGOMERY WATER SYSTEM.

6. THE OWNER OR CONTRACTOR SHALL INSTALL AND TEST APPROPRIATE BACKFLOW PREVENTION, PER THE CITY OF MONTGOMERY RULES & REGULATIONS.

7. ALL TAPS TO THE CITY'S SYSTEM SHALL BE MADE BY THE CITY'S OPERATOR AT THE OWNERS EXPENSE.

LEGAL DESCRIPTION:
THE HILLS OF TOWN CREEK SECTION 5, A SUBDIVISION OF 18.5001 ACRES (805,863 SQ FT.), BENJAMIN RIGBY LEAGUE, ABSTRACT 31 MONTGOMERY COUNTY, TEXAS.

CITY OF MONTGOMERY BENCHMARKS:
MONT 5
ELEV.=268.73'
3" BRASS DISK LOCATED FROM THE INTERSECTION OF HWY 105 AND HWY 149, WEST ±4700' TO THE PARKING LOT OF THE HERITAGE HOUSE RESTAURANT, WHICH IS LOCATED ON THE NORTH SIDE OF HWY 105.

MONT 7
ELEV.=291.77'
3" BRASS DISK IS LOCATED IN THE CENTER OF MONTGOMERY ON THE SOUTH SIDE OF HWY 105. MARK IS IN FRONT (NORTH) OF GAS PUMPING AREA OF BROOKSHIRE BROTHER'S GROCERY STORE, AS WELL AS ACROSS HWY 105 (SOUTH) FROM 'THE OLDE SCHOOL HOUSE.'

BENCHMARK:
BRASS DISK IN CONCRETE
ELEV.=314.12'
BRASS DISK IN CONCRETE IN THE SOUTHEAST RIGHT-OF-WAY OF EMMA'S WAY LOCATED NORTH 29°13'51" WEST, A DISTANCE OF 2.19' FROM THE COMMON CORNER OF LOTS 1 AND 2, BLOCK 1, THE HILLS OF TOWN CREEK, SOUTH 0124809'31"WEST, A DISTANCE OF 527.26 FEET FROM THE SOUTHWEST CORNER OF THE SUBJECT PROPERTY.

FLOODPLAIN:
THIS SITE IS SITUATED IN ZONE "X" IN MONTGOMERY, COUNTY, TEXAS ACCORDING TO FEMA MAP NUMBER 48339C0200G DATED AUGUST 18, 2014: THIS STATEMENT DOES NOT IMPLY THAT THE PROPERTY AND/OR THE STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. THIS DETERMINATION HAS BEEN MADE BY SCALING THE PROPERTY ON THE REFERENCED MAP AND IS NOT THE RESULT OF AN ELEVATION SURVEY. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF THE SURVEYOR.

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

L SQUARED ENGINEERING
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OFFICE: 936-647-0420

21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK SECTION 5

CONSTRUCTION NOTES & LEGEND 2 OF 2

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

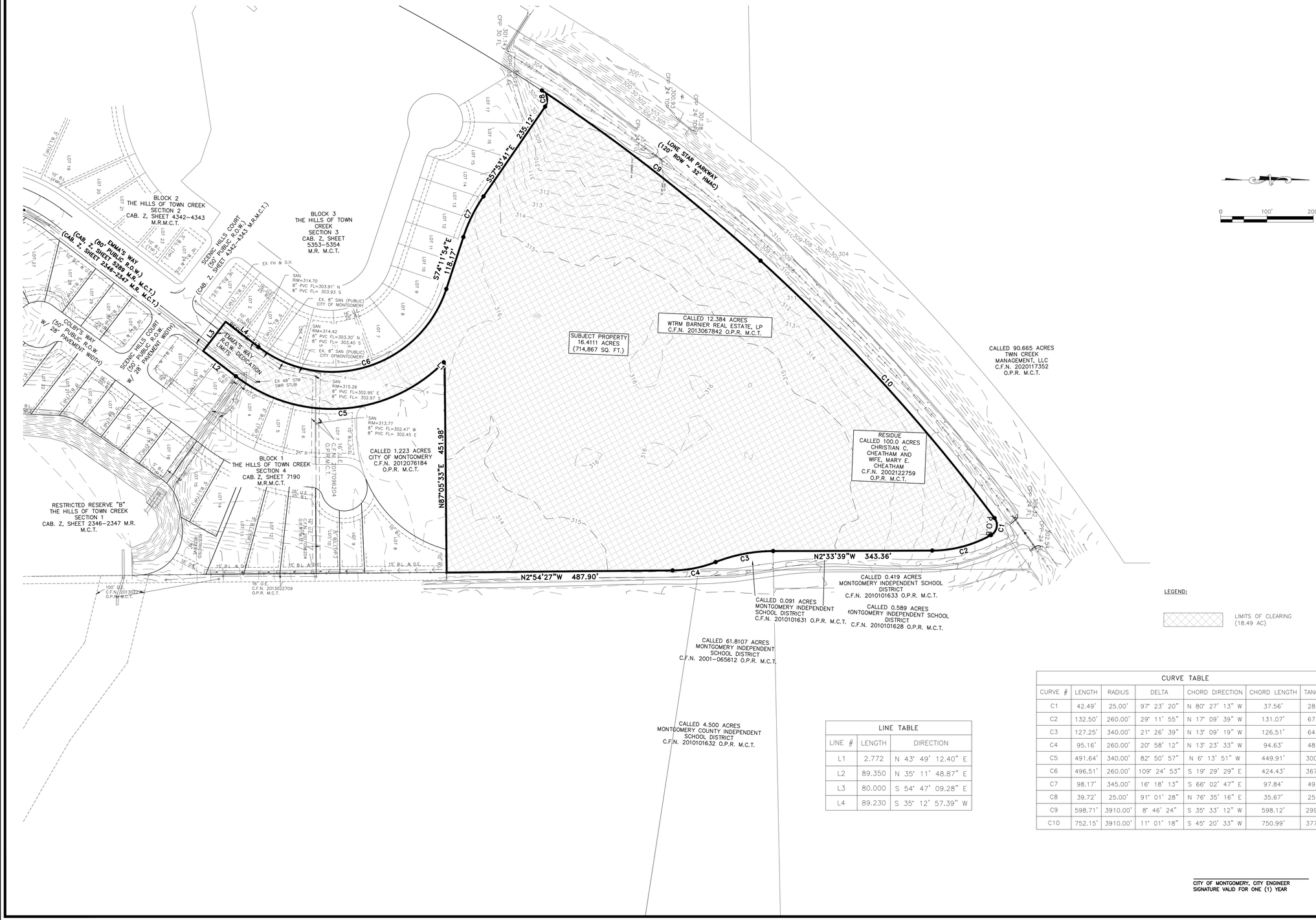
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE		SHEET	03

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER

04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\02 CONSTRUCTION NOTES.DWG Apr. 30, 2024-8:10 AM CAITLYN CURTIS



LEGEND:

LIMITS OF CLEARING (18.49 AC)

LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	2.772	N 43° 49' 12.40" E
L2	89.350	N 35° 11' 48.87" E
L3	80.000	S 54° 47' 09.28" E
L4	89.230	S 35° 12' 57.39" W

CURVE TABLE						
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH	TANGENT
C1	42.49'	25.00'	97° 23' 20"	N 80° 27' 13" W	37.56'	28.45'
C2	132.50'	260.00'	29° 11' 55"	N 17° 09' 39" W	131.07'	67.72'
C3	127.25'	340.00'	21° 26' 39"	N 13° 09' 19" W	126.51'	64.38'
C4	95.16'	260.00'	20° 58' 12"	N 13° 23' 33" W	94.63'	48.12'
C5	491.64'	340.00'	82° 50' 57"	N 6° 13' 51" W	449.91'	300.01'
C6	496.51'	260.00'	109° 24' 53"	S 19° 29' 29" E	424.43'	367.31'
C7	98.17'	345.00'	16° 18' 13"	S 66° 02' 47" E	97.84'	49.42'
C8	39.72'	25.00'	91° 01' 28"	N 76° 35' 16" E	35.67'	25.45'
C9	598.71'	3910.00'	8° 46' 24"	S 35° 33' 12" W	598.12'	299.94'
C10	752.15'	3910.00'	11° 01' 18"	S 45° 20' 33" W	750.99'	377.24'

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

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HILLS OF TOWN CREEK SECTION 5
EXISTING CONDITIONS SURVEY & CLEARING PLAN

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 100' (24x36) 1" = 200' (11x17)	SHEET	04

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER

04/30/2024

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L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\05 OVERALL SITE PLAN.DWG Apr. 30, 2024-8:10 AM CAITLYN CURTIS

PAVING LEGEND:

- 27,376 SF OF 4" CONCRETE
- 83934 SF OF 6" CONCRETE
- 40442 SF OF 8" CONCRETE (EMMAS WAY)
- 2988 SF OF 2" ASPHALT (EMMAS WAY)
- 7,364 LF OF CURB
- STREET LIGHT LOCATION

0 60' 120'

DRAINAGE EASEMENT NOTE:

NO FENCES ARE ALLOWED TO BE CONSTRUCTED OVER DRAINAGE EASEMENT. DRAINAGE EASEMENT TO REMAIN ACCESIBLE AT ALL TIMES.

NOTE:

1. ALL STREET LIGHTS ARE TO BE PROVIDED BY ENTERGY & ARE REQUIRED TO BE FULL CUT OFF.

2. PARK ACCESS AND SIDEWALK IS TO BE MAINTAINED BY HOA.

DIMENSIONAL CONTROL NOTES:

3. ALL COORDINATE POINTS AND DIMENSIONS SHOWN ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.

PAVING NOTES:

4. SEE PAVING DIMENSIONS AND SPECIFICATIONS PROVIDED ON DETAIL SHEETS

5. CONTRACTOR TO ONLY INSTALL SIDEWALK ON EMMAS WAY. HOME BUILDER TO INSTALL SIDEWALKS INSIDE RESIDENTIAL SECTION.

6. A BLUE REFLECTIVE TRAFFIC MARKER, APPROXIMATELY 4"X4", SHALL BE PLACED 4--6" OFF THE CENTERLINE OF THE STREET TO INDICATE ON WHICH SIDE OF THE STREET THE FIRE HYDRANT IS LOCATED.

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PROJECT ADDRESS
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MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
OVERALL SITE PLAN

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 60' (24x36) 1" = 120' (11x17)	SHEET	05

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

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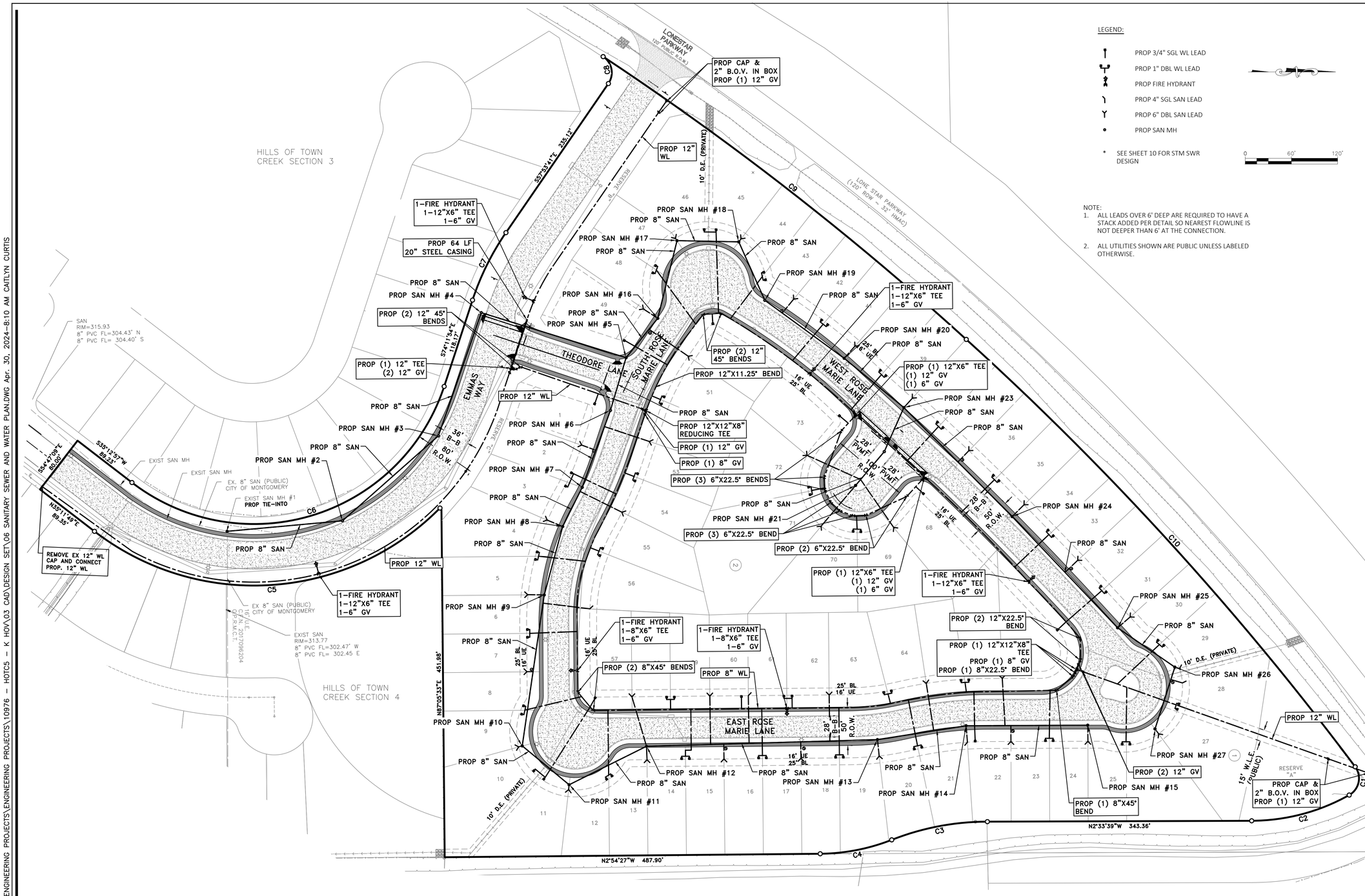

LEGEND:

NOTE:
1. ALL LEADS OVER 6' DEEP ARE REQUIRED TO HAVE A STACK ADDED PER DETAIL SO NEAREST FLOWLINE IS NOT DEEPER THAN 6' AT THE CONNECTION.
2. ALL UTILITIES SHOWN ARE PUBLIC UNLESS LABELED OTHERWISE.

CITY OF MONTGOMERY, CITY ENGINEER
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HILLS OF TOWN CREEK SECTION 5

SANITARY SEWER AND WATER PLAN

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 60' (24x36) 1" = 120' (11x17)	SHEET	06

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER

04/30/2024

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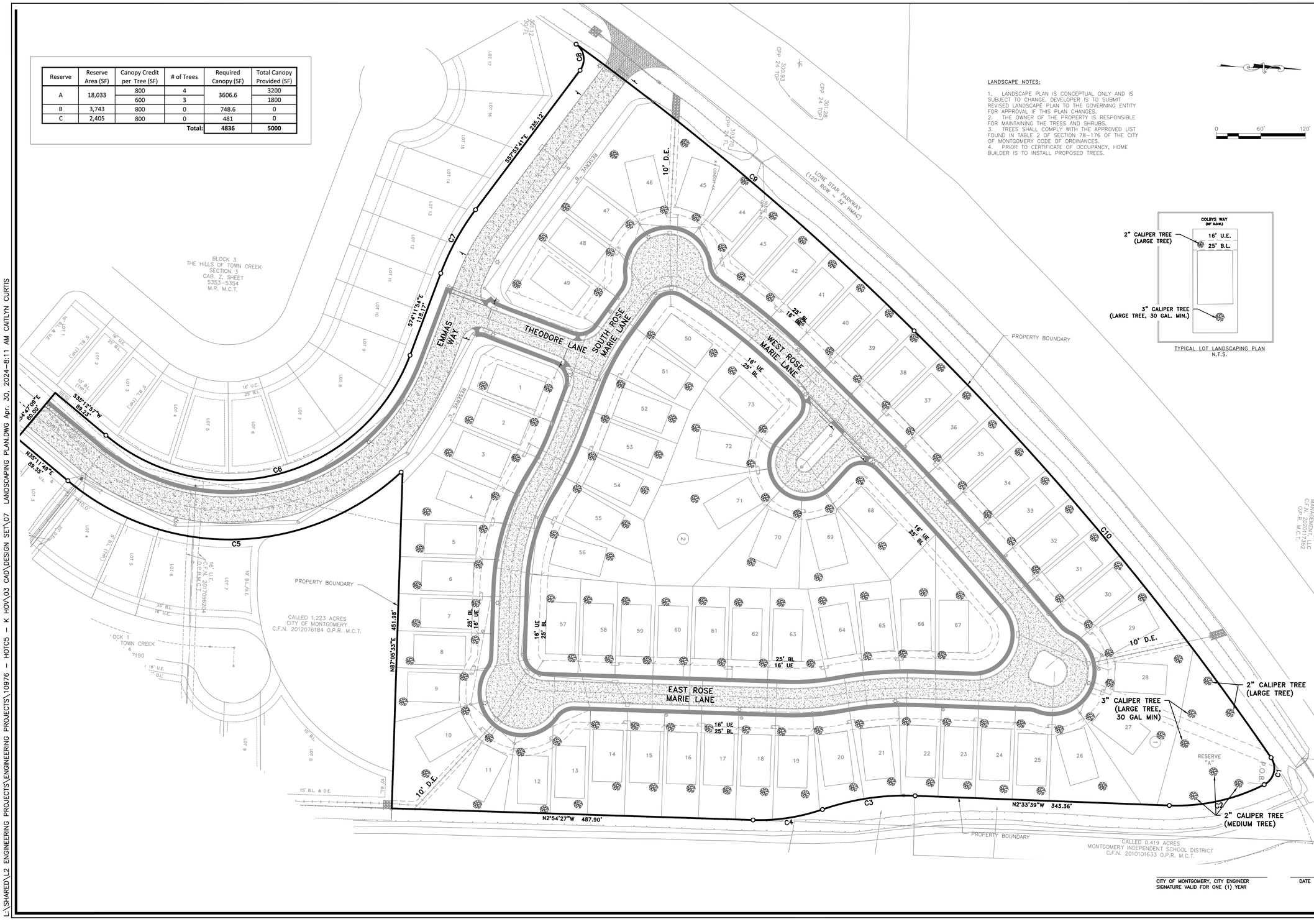
L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\06 SANITARY SEWER AND WATER PLAN.DWG Apr. 30, 2024 - 8:10 AM CAITLYN CURTIS

Reserve	Reserve Area (SF)	Canopy Credit per Tree (SF)	# of Trees	Required Canopy (SF)	Total Canopy Provided (SF)
A	18,033	800	4	3606.6	3200
		600	3		1800
B	3,743	800	0	748.6	0
C	2,405	800	0	481	0
			Total:	4836	5000



LANDSCAPE NOTES:

1. LANDSCAPE PLAN IS CONCEPTUAL ONLY AND IS SUBJECT TO CHANGE. DEVELOPER IS TO SUBMIT REVISED LANDSCAPE PLAN TO THE GOVERNING ENTITY FOR APPROVAL IF THIS PLAN CHANGES.
2. THE OWNER OF THE PROPERTY IS RESPONSIBLE FOR MAINTAINING THE TRESS AND SHRUBS.
3. TREES SHALL COMPLY WITH THE APPROVED LIST FOUND IN TABLE 2 OF SECTION 78-176 OF THE CITY OF MONTGOMERY CODE OF ORDINANCES.
4. PRIOR TO CERTIFICATE OF OCCUPANCY, HOME BUILDER IS TO INSTALL PROPOSED TREES.

TYPICAL LOT LANDSCAPING PLAN
N.T.S.

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HILLS OF TOWN CREEK SECTION 5

LANDSCAPING PLAN

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 60' (24x36) 1" = 120' (11x17)	SHEET	07

JONATHAN T. WHITE
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PROFESSIONAL ENGINEER
STATE OF TEXAS
04/30/2024

CITY OF MONTGOMERY, CITY ENGINEER
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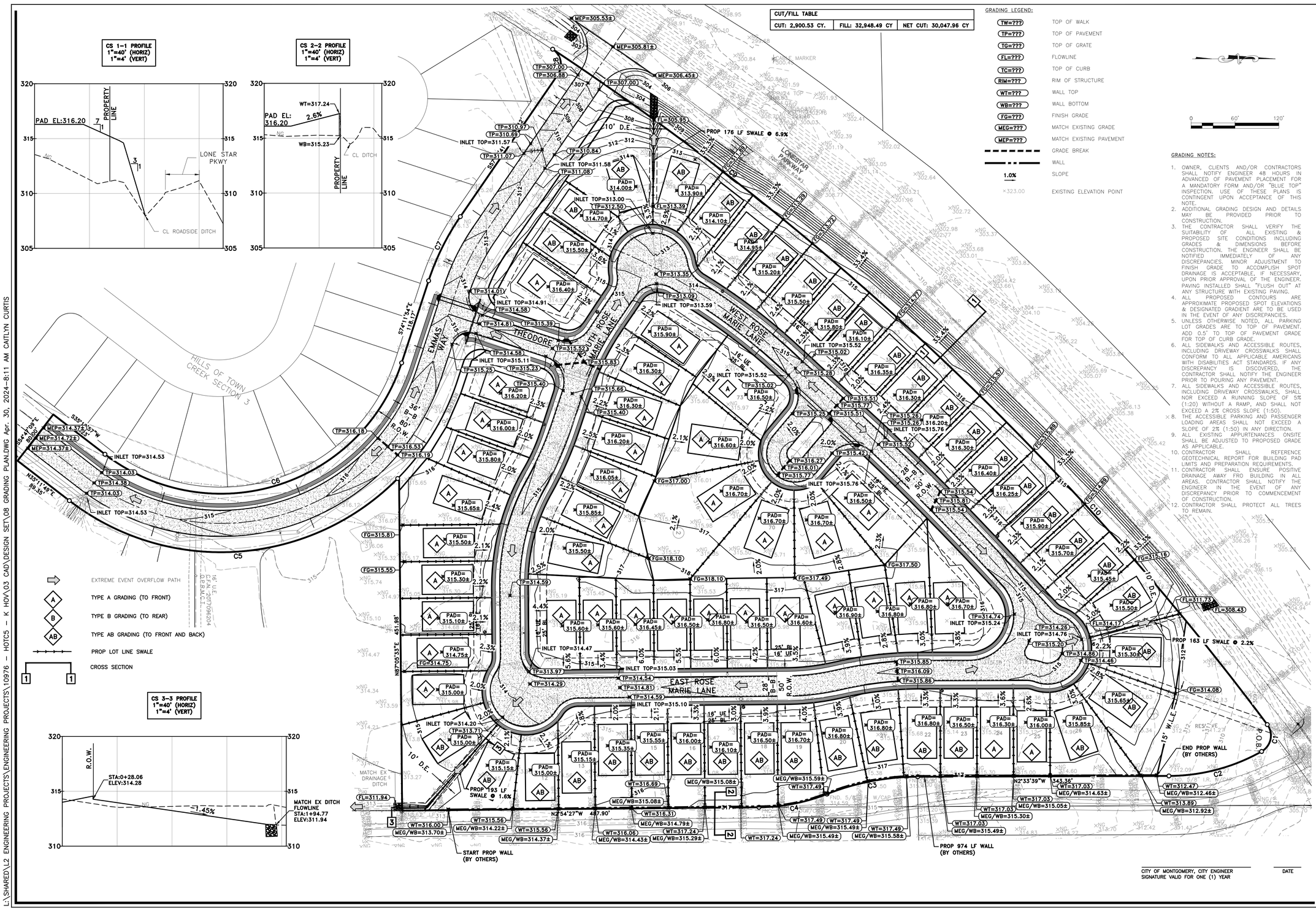

GRADING NOTES:

1. OWNER, CLIENTS AND/OR CONTRACTORS SHALL NOTIFY ENGINEER 48 HOURS IN ADVANCED OF PAVEMENT PLACEMENT FOR A MANDATORY FORM AND/OR "BLUE TOP" INSPECTION. USE OF THESE PLANS IS CONTINGENT UPON ACCEPTANCE OF THIS NOTE.
2. ADDITIONAL GRADING DESIGN AND DETAILS MAY BE PROVIDED PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING & PROPOSED SITE CONDITIONS INCLUDING GRADES & DIMENSIONS BEFORE CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES. MINOR ADJUSTMENT TO FINISH GRADE TO ACCOMPLISH SPOT DRAINAGE IS ACCEPTABLE, IF NECESSARY, UPON PRIOR APPROVAL OF THE ENGINEER. PAVING INSTALLED SHALL "FLUSH OUT" AT ANY STRUCTURE WITH EXISTING PAVING.
4. ALL PROPOSED CONTOURS ARE APPROXIMATE PROPOSED SPOT ELEVATIONS & DESIGNATED GRADIENT ARE TO BE USED IN THE EVENT OF ANY DISCREPANCIES.
5. UNLESS OTHERWISE NOTED, ALL PARKING LOT GRADES ARE TO TOP OF PAVEMENT. ADD 0.5' TO TOP OF PAVEMENT GRADE FOR TOP OF CURB GRADE.
6. ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS SHALL CONFORM TO ALL APPLICABLE AMERICANS WITH DISABILITIES ACT STANDARDS. IF ANY DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO POURING ANY PAVEMENT.
7. ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL NOR EXCEED A RUNNING SLOPE OF 5% (1:20) WITHOUT A RAMP, AND SHALL NOT EXCEED A 2% CROSS SLOPE (1:50).
8. THE ACCESSIBLE PARKING AND PASSENGER LOADING AREAS SHALL NOT EXCEED A SLOPE OF 2% (1:50) IN ANY DIRECTION.
9. ALL EXISTING APPURTENANCES ONSITE SHALL BE ADJUSTED TO PROPOSED GRADE AS APPLICABLE.
10. CONTRACTOR SHALL REFERENCE GEOTECHNICAL REPORT FOR BUILDING PAD LIMITS AND PREPARATION REQUIREMENTS.
11. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AWAY FRO BUILDING IN ALL AREAS. CONTRACTOR SHALL NOTIFY THE ENGINEER IN THE EVENT OF ANY DISCREPANCY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
12. CONTRACTOR SHALL PROTECT ALL TREES TO REMAIN.

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

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PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK SECTION 5

GRADING PLAN

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 60' (24x36) 1" = 120' (11x17)	SHEET	08

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

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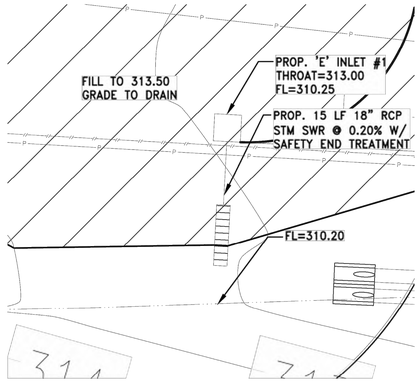
L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K. HOV\03 CAD\DESIGN SET\08 GRADING PLAN.DWG Apr. 30, 2024-8:11 AM CAITLYN CURTIS



DETAIL 'A'
SCALE: 1"=10'

LEGEND

- PROPERTY LINE
- PROPOSED STORM SEWER (BY OTHERS)
- PROPOSED SANITARY SEWER (BY OTHERS)
- PROPOSED WATERLINE (BY OTHERS)
- PROPOSED PAVEMENT (BY OTHERS)
- 295 EXISTING CONTOUR MAJOR
- 294 EXISTING CONTOUR MINOR
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING EASEMENT
- EXISTING BUILDING LINE
- EXISTING POWERLINE
- EXISTING DITCH
- EXISTING FENCE
- PROPOSED RIGHT-OF-WAY
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE
- PROPOSED PAVEMENT
- PROPOSED EASEMENT
- PROPOSED DRAINAGE AREAS

AREA / CFS — 100 YR STORM EVENT UNLESS NOTED OTHERWISE. CALCULATED WITH RATIONAL METHOD, TC = 10 MIN. (TYP.)

CFS — CUMULATIVE AREA STORM EVENT

TC = TIME OF CONCENTRATION

PROPOSED FLOW DIRECTION (DEVELOPED)

Note 1: DA's D1 thru D12 shall not discharge more than the flow indicated. Future development to utilize mitigation as needed to reduce flow appropriately.

Note 2: Future development in DA's D19 and D20 shall provide storm water conveyance for developed flows directly to detention pond via storm sewer and extreme event swales.

Note 3: Drainage System's A, B, & C shall discharge directly to road ditches in the amounts shown. Excess flow shall be mitigated as appropriate in future development. A restrictor may be required to mitigate flows to TXDOT drainage facility capacities.

Note 4: Drainage System E shall discharge directly to the Town Creek Tributary in future development.

Note 5: Drainage System Total Flows as shown in Drainage System labels are calculated using TR-55 Methodology with a SCS Type III Storm. Expect some variation between calculated rational flows which were utilized in the storm sewer design (shown in circles).

Note 6: The Drainage and Grading plan for any future development in systems "C" & "E" must be reviewed and approved by TXDOT.

Chris Roznos — CITY OF MONTGOMERY, CITY ENGINEER — DATE 10/20/2020
SIGNATURE VALID FOR ONE (1) YEAR

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Civil • Consulting • Management

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
CHEATHAM

PROJECT TITLE
THE HILLS OF TOWN CREEK
SECTION 1 SUBDIVISION PLANS
OVERALL DRAINAGE AREAS

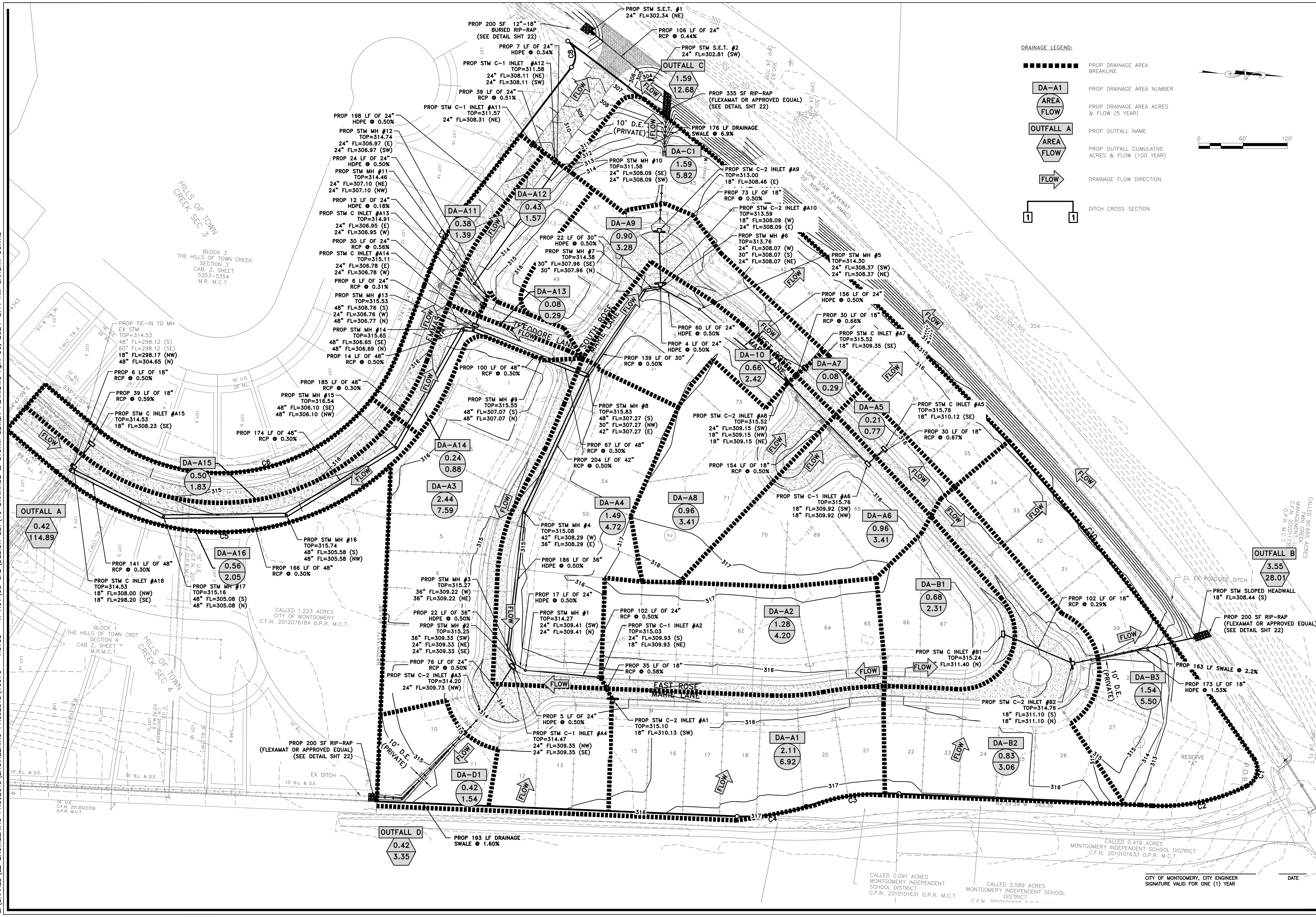
ENGINEER CONTACT INFO.:
LSQUARED ENGINEERING, LLC.
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
AT THE INTERSECTION OF LONESTAR PARKWAY AND HIGHWAY 105 MONTGOMERY COUNTY, TEXAS

PROJECT LEGAL DESCRIPTION
12.384 Acres of land being part of that certain 79.9035 Acre Tract of land conveyed from MONTGOMERY INDEPENDENT SCHOOL DISTRICT to MONTGOMERY ENERGY RESOURCES, INC., lying in the BENJAMIN RIGBY LEAGUE, Abstract 31

SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED
PROFESSIONAL ENGINEER
12/26/2012

FIRM No.	T1235
DATE:	11/12/2012
PROJECT No.	10003
DRAWN BY	CBJ
SCALE	1"=200'
DRAWING No.	09



L SQUARED ENGINEERING
MUNICIPAL COMMERCIAL RESIDENTIAL
WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 11235
(MAIN OFFICE)
3307 W. DAVIS STREET #100
CONROE, TEXAS 77304
OFFICE: 936-647-0420
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK SECTION 5
DRAINAGE AND STORM SEWER PLAN

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" =60' (24x36) 1" = 120' (11x17)	SHEET	10

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER

[illegible]
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

SYS 'A1'

5 Year

Inlet Info

Inlet/MH	From	Inlet/MH	To	Drainage Area	Total Drainage Area	Runoff Co. "C"	DA C*A	Total C*A	Drainage Area Time of Conc. (Min)	Total Time of Conc. (Min)	Intensity (I)	Cf	Drainage Area Flow (cfs)	Total Flow (cfs)	Number of Barrels	Culvert Size (ft)	Slope	Area (A)	Perimeter (P)	R=(A/P)	Length (ft)	Roughness (n)	$Q_{capacity}$ (CFS)	$V_{full\ flow}$ (FPS)	Upstream FL	Downstream FL	HGL Change In Head (ft)	HGL Hydraulic Gradeline %	HGL Elevation of Hyd. Grad. Upstream (ft)	HGL Elevation of Hyd. Grad. Downstream(ft)
Inlet A1		Inlet A2		2.11	2.11	0.55	1.16	1.16	13.36	13.36	5.96	1.00	6.92	6.92	1	1.5	0.005	1.77	4.71	0.375	35	0.013	7.32	4.14	310.10	309.93	0.15	0.43	312.67	312.51
Inlet A2		MH1		1.28	3.39	0.55	0.70	1.86	13.36	13.36	5.96	1.00	4.20	11.11	1	2	0.005	3.14	6.28	0.500	102	0.013	16.15	5.14	309.93	309.41	0.25	0.24	312.51	312.27
MH1		MH2		0.00	3.39	0.55	0.00	1.86	0.00	13.36	5.96	1.00	0.00	11.11	1	2	0.005	3.14	6.28	0.500	17	0.011	18.34	5.84	309.41	309.33	0.03	0.17	312.27	312.24
Inlet A3		Inlet A4		2.44	2.44	0.55	1.34	1.34	15.19	15.19	5.65	1.00	7.59	7.59	1	2	0.005	3.14	6.28	0.500	76	0.013	15.99	5.09	309.73	309.35	0.09	0.11	312.33	312.25
Inlet A4		MH2		1.49	3.93	0.55	0.82	2.16	14.53	15.19	5.65	1.00	4.72	12.22	1	2	0.004	3.14	6.28	0.500	5	0.011	16.91	5.38	309.35	309.33	0.01	0.21	312.25	312.24
MH2		MH3		0.00	7.32	0.55	0.00	4.03	0.00	15.19	5.65	1.00	0.00	22.76	1	3	0.005	7.07	9.42	0.750	22	0.011	55.73	7.88	309.33	309.22	0.02	0.08	312.24	312.22
MH3		MH4		0.00	7.32	0.55	0.00	4.03	0.00	15.19	5.65	1.00	0.00	22.76	1	3	0.005	7.07	9.42	0.750	186	0.011	55.73	7.88	309.22	308.29	0.16	0.08	311.45	311.29
MH4		MH8		0.00	7.32	0.55	0.00	4.03	0.00	15.19	5.65	1.00	0.00	22.76	1	3.5	0.005	9.62	11.00	0.875	204	0.013	71.14	7.39	308.29	307.27	0.10	0.05	311.21	311.11
Inlet A5		Inlet A6		0.21	0.21	0.55	0.12	0.12	10.00	10.00	6.66	1.00	0.77	0.77	1	1.5	0.005	1.77	4.71	0.375	30	0.013	7.43	4.20	310.07	309.92	0.00	0.01	311.71	311.71
Inlet A6		Inlet A8		0.96	1.17	0.55	0.53	0.64	10.88	10.88	6.45	1.00	3.41	4.15	1	1.5	0.005	1.77	4.71	0.375	154	0.013	7.43	4.20	309.92	309.15	0.24	0.16	311.71	311.47
Inlet A7		Inlet A8		0.08	0.08	0.55	0.04	0.04	10.00	10.88	6.45	1.00	0.29	0.28	1	1.5	0.005	1.77	4.71	0.375	30	0.013	7.43	4.20	309.30	309.15	0.00	0.00	311.47	311.47
Inlet A8		MH5		0.96	2.21	0.55	0.53	1.22	10.88	10.88	6.45	1.00	3.41	7.84	1	2	0.005	3.14	6.28	0.500	156	0.011	18.90	6.02	309.15	308.37	0.13	0.09	311.47	311.33
MH5		MH6		0.00	2.21	0.55	0.00	1.22	0.00	10.88	6.45	1.00	0.00	7.84	1	2	0.005	3.14	6.28	0.500	60	0.011	18.90	6.02	308.37	308.07	0.05	0.09	311.33	311.28
Inlet A9		Inlet A10		0.90	0.90	0.55	0.50	0.50	10.15	10.15	6.62	1.00	3.28	3.28	1	1.5	0.005	1.77	4.71	0.375	73	0.013	7.48	4.23	308.46	308.09	0.07	0.10	311.35	311.28
Inlet A10		MH6		0.66	1.56	0.55	0.36	0.86	10.00	10.15	6.62	1.00	2.42	5.68	1	2	0.005	3.14	6.28	0.500	4	0.011	18.90	6.02	308.09	308.07	0.00	0.05	311.28	311.28
MH6		MH7		0.00	3.77	0.55	0.00	2.07	0.00	10.15	6.62	1.00	0.00	13.72	1	2.5	0.005	4.91	7.85	0.625	22	0.011	34.27	6.98	308.07	307.96	0.02	0.08	311.28	311.26
MH7		MH8		0.00	3.77	0.55	0.00	2.07	0.00	10.15	6.62	1.00	0.00	13.72	1	2.5	0.005	4.91	7.85	0.625	139	0.013	28.89	5.89	307.96	307.27	0.16	0.11	311.26	311.11
MH8		MH9		0.00	11.09	0.55	0.00	6.10	0.00	15.19	5.65	1.00	0.00	34.49	1	4	0.003	12.57	12.57	1.000	67	0.013	78.48	6.25	307.27	307.07	0.04	0.06	311.11	311.07
MH9		MH13		0.00	11.09	0.55	0.00	6.10	0.00	15.19	5.65	1.00	0.00	34.49	1	4	0.003	12.57	12.57	1.000	100	0.013	78.68	6.26	307.07	306.77	0.06	0.06	310.83	310.77
Inlet A11		Inlet A12		0.38	0.38	0.55	0.21	0.21	10.00	10.00	6.66	1.00	1.39	1.39	1	1.5	0.005	1.77	4.71	0.375	39	0.013	7.52	4.26	308.31	308.11	0.01	0.02	310.75	310.74
Inlet A12		MH10		0.43	0.81	0.55	0.24	0.45	10.00	10.00	6.66	1.00	1.57	2.97	1	1.5	0.003	1.77	4.71	0.375	7	0.011	6.63	3.75	308.11	308.09	0.00	0.06	310.74	310.74
MH10		MH11		0.00	0.81	0.55	0.00	0.45	0.00	10.00	6.66	1.00	0.00	2.97	1	2	0.005	3.14	6.28	0.500	198	0.011	18.90	6.02	308.09	307.10	0.02	0.01	310.74	310.71
MH11		MH12		0.00	0.81	0.55	0.00	0.45	0.00	10.00	6.66	1.00	0.00	2.97	1	2	0.005	3.14	6.28	0.500	24	0.011	19.67	6.26	307.10	306.97	0.00	0.01	310.71	310.71
MH12		Inlet A13		0.00	0.81	0.55	0.00	0.45	0.00	10.00	6.66	1.00	0.00	2.97	1	2	0.002	3.14	6.28	0.500	12	0.011	10.91	3.47	306.97	306.95	0.00	0.01	310.71	310.71
Inlet A13		Inlet A14		0.08	0.89	0.55	0.04	0.49	10.00	10.00	6.66	1.00	0.29	3.26	1	2	0.006	3.14	6.28	0.500	30	0.013	17.03	5.42	306.95	306.78	0.01	0.02	310.71	310.70
Inlet A14		MH13		0.24	1.13	0.55	0.13	0.62	10.00	10.00	6.66	1.00	0.88	4.14	1	2	0.003	3.14	6.28	0.500	6	0.013	13.06	4.16	306.78	306.76	0.00	0.03	310.70	310.70
MH13		MH14		0.00	12.22	0.55	0.00	6.72	0.00	15.19	5.65	1.00	0.00	38.00	1	4	0.005	12.57	12.57	1.000	14	0.013	101.57	8.08	306.76	306.69	0.01	0.07	310.70	310.69
MH14		MH15		0.00	12.22	0.55	0.00	6.72	0.00	15.19	5.65	1.00	0.00	38.00	1	4	0.003	12.57	12.57	1.000	185	0.013	78.32	6.23	306.65	306.10	0.13	0.07	310.23	310.10
MH15		MH16		0.00	12.22	0.55	0.00	6.72	0.00	15.19	5.65	1.00	0.00	38.00	1	4	0.003	12.57	12.57	1.000	174	0.013	78.53	6.25	306.10	305.58	0.12	0.07	309.92	309.79
MH16		MH17		0.00	12.22	0.55	0.00	6.72	0.00	15.19	5.65	1.00	0.00	38.00	1	4	0.003	12.57	12.57	1.000	166	0.013	78.83	6.27	305.58	305.08	0.12	0.07	309.79	309.68
MH17		OUT		0.00	15.99	0.55	0.00	8.79	0.00	15.19	5.65	1.00	0.00	49.73	1	4	0.003	12.57	12.57	1.000	141	0.013	79.32	6.31	305.08	304.65	0.17	0.12	309.68	309.51
Inlet A15		Inlet A16		0.50	0.50	0.55	0.28	0.28	10.00	10.15	5.65	1.00	1.83	1.55	1	1.5	0.006	1.77	4.71	0.375	39	0.013	8.06	4.56	308.23	308.00	0.01	0.02	309.51	309.50
Inlet A16		OUT		0.56	17.05	0.55	0.31	9.38	10.00	15.19	5.65	1.00	2.05	53.02	1	4	0.005	12.57	12.57	1.000	6	0.013	101.57	8.08	298.20	298.17	0.01	0.14	302.18	302.17

Starting TW Elevation: 302.17

100 Year

Inlet Info

Inlet/MH	From	Inlet/MH	To	Drainage Area	Total Drainage Area	Runoff Co. "C"	DA C*A	Total C*A	Drainage Area Time of Conc. (Min)	Total Time of Conc. (Min)	Intensity (I)	Cf	Drainage Area Flow (cfs)	Total Flow (cfs)	Number of Barrels	Diameter (ft)	Slope	Area (A)	Perimeter (P)	R=(A/P)	Length (ft)	Roughness (n)	$Q_{capacity}$ (CFS)	$V_{full\ flow}$ (FPS)	Upstream FL	Downstream FL	HGL Change In Head (ft)	HGL Hydraulic Gradeline %	HGL Elevation of Hyd. Grad. Upstream (ft)	HGL Elevation of Hyd. Grad. Downstream(ft)
Inlet A1		Inlet A2		2.11	2.11	0.55	1.16	1.16	13.36	13.36	10.35	1.25	15.02	15.02	1	1.5	0.005	1.77	4.71	0.375	35	0.013	7.32	4.14	310.10	309.93	0.72	2.04	315.04	314.33
Inlet A2		MH1		1.28	3.39	0.55	0.70	1.86	13.36	13.36	10.35	1.25	9.11	24.12	1	2	0.005	3.14	6.28	0.500	102	0.013	16.15	5.14	309.93	309.41	1.16	1.14	314.33	313.17
MH1		MH2		0.00	3.39	0.55	0.00	1.86	0.00	13.36	10.35	1.25	0.00	24.12	1	2	0.005	3.14	6.28	0.500	17	0.011	18.34	5.84	309.41	309.33	0.14	0.81	313.17	313.03
Inlet A3		Inlet A4		2.44	2.44	0.55	1.34	1.34	15.19	15.19	9.80	1.25	16.44	16.44	1	2	0.005	3.14	6.28	0.500	76	0.013	15.99	5.09	309.73	309.35	0.40	0.53	313.48	313.08
Inlet A4		MH2		1.49	3.93	0.55	0.82	2.16	14.53	15.19	9.80	1.25	10.23	26.48	1	2	0.004	3.14	6.28	0.500	5	0.011	16.91	5.38	309.35	309.33	0.05	0.98	313.08	313.03
MH2		MH3		0.00	7.32	0.55	0.00	4.03	0.00	15.19	9.80	1.25	0.00	49.32	1	3	0.005	7.07	9.42	0.750	22	0.011	55.73	7.88	309.33	309.22	0.09	0.39	313.03	312.94
MH3		MH4		0.00	7.32	0.55	0.00	4.03	0.00	15.19	9.80	1.25	0.00	49.32	1	3	0.005	7.07	9.42	0.750	186	0.011	55.73	7.88	309.22	308.29	0.73	0.39	312.94	312.22
MH4		MH8		0.00	7.32	0.55	0.00	4.03	0.00	15.19	9.80	1.25	0.00	49.32	1	3.5	0.005	9.62	11.00	0.875	204	0.013	71.14	7.39	308.29	307.27	0.49	0.24	312.22	311.73
Inlet A5		Inlet A6		0.21	0.21	0.55	0.12	0.12	10.00	10.00	11.60	1.25	1.67	1.67	1	1.5	0.005	1.77	4.71	0.375	30	0.013	7.43	4.20	310.07	309.92	0.01	0.03	314.57	314.57
Inlet A6		Inlet A8		0.96	1.17	0.55	0.53	0.64	10.88	10.88	11.23	1.25	7.41	9.03	1	1.5	0.005	1.77	4.71	0.375	154	0.013	7.43	4.20	309.92	309.15	1.14	0.74	314.57	313.43
Inlet A7		Inlet A8		0.08	0.08	0.55	0.04	0.04	10.00	10.88	11.23	1.25	0.64	0.62	1	1.5	0.005	1.77	4.71	0.375	30	0.013	7.43	4.20	309.30	309.15	0.00	0.00	313.43	313.43
Inlet A8		MH5		0.96	2.21	0.55	0.53	1.22	10.88	10.88	11.23	1.25	7.41	17.06	1	2	0.005	3.14	6.28	0.500	156	0.011	18.90	6.02	309.15	308.37	0.64	0.41	313.43	312.79
MH5		MH6		0.00	2.21	0.55	0.00	1.22	0.00	10.88	11.23	1.25	0.00	17.06	1	2	0.005	3.14	6.28	0.500	60	0.011	18.90	6.02	308.37	308.07	0.24	0.41	312.79	312.55
Inlet A9		Inlet A10		0.90	0.90	0.55	0.50	0.50	10.15	10.15	11.53	1.25	7.13	7.13	1	1.5	0.005	1.77	4.71	0.375	73	0.013	7.48	4.23	308.46	308.09	0.34	0.46	312.89	312.56
Inlet A10		MH6		0.66	1.56	0.55	0.36	0.86	10.00	10.15	11.53	1.25	5.26	12.37	1	2	0.005	3.14	6.28	0.500	4	0.011	18.90	6.02	308.09	308.07	0.01	0.21	312.56	312.55
MH6		MH7		0.00	3.77	0.55	0.00	2.07	0.00	10.15	11.53	1.25	0.00	29.88	1	2.5	0.005	4.91	7.85	0.625	22	0.011	34.27	6.98	308.07	307.96	0.08	0.38	312.55	312.46
MH7		MH8		0.00	3.77	0.55	0.00	2.07	0.00	10.15	11.53	1.25	0.00	29.88	1	2.5	0.005	4.91	7.85	0.625	139	0.013	28.89	5.89	307.96	307.27	0.74	0.53	312.46	311.73
MH8		MH9		0.00	11.09	0.55	0.00	6.10	0.00	15.19	9.80	1.25	0.00	74.73	1	4	0.003	12.57	12.57	1.000	67	0.013	78.48	6.25	307.27	307.07	0.18	0.27	311.73	311.54
MH9		MH13		0.00	11.09	0.55	0.00	6.10	0.00	15.19	9.80	1.25	0.00	74.73	1	4	0.003	12.57	12.57	1.000	100	0.013	78.68	6.26	307.07	306.77	0.27	0.27	311.54	311.27
Inlet A11		Inlet A12		0.38	0.38	0.55	0.21	0.21	10.00	10.00	11.60	1.25	3.03	3.03	1	1.5	0.005	1.77	4.71	0.375	39	0.013	7.52	4.26	308.31	308.11	0.03	0.08	311.46	311.43
Inlet A12		MH10		0.43	0.81	0.55	0.24	0.45	10.00	10.00	11.60	1.25	3.43	6.46	1	1.5	0.003	1.77	4.71	0.375	7	0.011	6.63	3.75	308.11	308.09	0.02	0.27	311.43	311.41
MH10		MH11		0.00	0.81	0.55	0.00	0.45	0.00	10.00	11.60	1.25	0.00	6.46	1	2	0.005	3.14	6.28	0.500	198	0.011	18.90	6.02	308.09	307.10	0.12	0.06	311.41	311.29
MH11		MH12		0.00	0.81	0.55	0.00	0.45	0.00	10.00	11.60	1.25	0.00	6.46	1	2	0.005	3.14	6.28	0.500	24	0.011	19.67	6.26	307.10	306.97	0.01	0.06	311.29	311.28
MH12		Inlet A13		0.00	0.81	0.55	0.00	0.45	0.00	10.00	11.60	1.25	0.00	6.46	1	2	0.002	3.14	6.28	0.500	12	0.011	10.91	3.47	306.97	306.95	0.01	0.06	311.28	311.27
Inlet A13		Inlet A14		0.08	0.89	0.55	0.04	0.49	10.00	10.00	11.60	1.25	0.64	7.09	1	2	0.006	3.14	6.28	0.500	30	0.013	17.03	5.42	306.95	306.78	0.03	0.10	311.27	311.24
Inlet A14		MH13		0.24	1.13	0.55	0.13	0.62	10.00	10.00	11.60	1.25	1.91	9.01	1	2	0.003	3.14	6.28	0.500	6	0.013	13.06	4.16	306.78	306.76	0.01	0.16	311.24	311.23
MH13		MH14		0.00	12.22	0.55	0.00	6.72	0.00	15.19	9.80	1.25	0.00	82.34	1	4	0.005	12.57	12.57	1.000	14	0.013	101.57	8.08	306.76	306.69	0.05	0.33	311.23	311.19
MH14		MH15		0.00	12.22	0.55	0.00	6.72	0.00	15.19	9.80	1.25	0.00	82.34	1	4	0.003	12.57	12.57	1.000	185	0.013	78.32	6.23	306.65	306.10	0.61	0.33	311.19	310.58
MH15		MH16		0.00	12.22	0.55	0.00	6.72	0.00	15.19	9.80	1.25	0.00	82.34	1	4	0.003	12.57	12.57	1.000	174	0.013	78.53	6.25	306.10	305.58	0.57	0.33	310.58	310.01
MH16		MH17		0.00	12.22	0.55	0.00	6.72	0.00	15.19	9.80	1.25	0.00	82.34	1	4	0.003	12.57	12.57	1.000	166	0.013	78.83	6.27	305.58	305.08	0.55	0.33	310.01	309.46
MH17		OUT		0.00	15.99	0.55	0.00	8.79	0.00	15.19	9.80	1.25	0.00	107.74	1	4	0.003	12.57	12.57	1.000	141	0.013	79.32	6.31	305.08	304.65	0.79	0.56	309.46	308.67
Inlet A15		Inlet A16		0.50	0.50	0.55	0.28	0.28	10.00	15.19	9.80	1.25	3.99	3.37	1	1.5	0.006	1.77	4.71	0.375	39	0.013	8.06	4.56	308.23	308.00	0.04	0.10	309.54	309.50
Inlet A16		OUT		0.56	17.05	0.55	0.31	9.38	10.00	15.19	9.80	1.25	4.46	114.89	1	4	0.005	12.57	12.57	1.000	6	0.013	101.57	8.08	298.20	298.17	0.04	0.64	308.71	308.67

Starting TW Elevation: 308.67

SYS 'B'

5 Year

Inlet Info

Inlet/MH	From	Inlet/MH	To	Drainage Area	Total Drainage Area	Runoff Co. "C"	DA C*A	Total C*A	Drainage Area Time of Conc. (Min)	Total Time of Conc. (Min)	Intensity (I)	Drainage Area Flow (cfs)	Total Flow (cfs)	Number of Barrels	Culvert Size (ft)	Slope	Area (A)	Perimeter (P)	R=(A/P)	Length (ft)	Roughness (n)	$Q_{capacity}$ (CFS)	$V_{full\ flow}$ (FPS)	Upstream FL	Downstream FL	HGL Change In Head (ft)	HGL Hydraulic Gradeline %	HGL Elevation of Hyd. Grad. Upstream (ft)	HGL Elevation of Hyd. Grad. Downstream(ft)
Inlet B1		Inlet B2		0.68	0.68	0.55	0.37	0.37	15.46	15.46	5.61	2.10	2.10	1	1.5	0.003	1.77	4.71	0.375	102	0.013	5.69	3.22	311.40	311.10	0.04	0.04	310.22	310.18
Inlet B2		OUT		0.83	1.51	0.55	0.46	0.83	10.00	15.46	5.61	3.04	4.66	1	1.5	0.015	1.77	4.71	0.375	173	0.011	15.39	8.71	311.10	308.44	0.24	0.14	310.18	309.94

Starting TW Elevation: 309.94

1

100 Year

Inlet Info

Inlet/MH	From	Inlet/MH	To	Drainage Area	Total Drainage Area	Runoff Co. "C"	DA C*A	Total C*A	Drainage Area Time of Conc. (Min)	Total Time of Conc. (Min)	Intensity (I)	Drainage Area Flow (cfs)	Total Flow (cfs)	Number of Barrels	Diameter (ft)	Slope	Area (A)	Perimeter (P)	R=(A/P)	Length (ft)	Roughness (n)	$Q_{capacity}$ (CFS)	$V_{full\ flow}$ (FPS)	Upstream FL	Downstream FL	HGL Change In Head (ft)	HGL Hydraulic Gradeline %	HGL Elevation of Hyd. Grad. Upstream (ft)	HGL Elevation of Hyd. Grad. Downstream(ft)
Inlet B1		Inlet B2		0.68	0.68	0.55	0.37	0.37	15.46	15.46	9.73	3.64	3.64	1	1.5	0.003	1.77	4.71	0.375	102	0.013	5.69	3.22	311.40	311.10	0.12	0.12	310.79	310.67
Inlet B2		OUT		0.83	1.51	0.55	0.46	0.83	10.00	15.46	9.73	5.29	8.08	1	1.5	0.015	1.77	4.71	0.375	173	0.011	15.39	8.71	311.10	308.44	0.73	0.42	310.67	309.94

Starting TW Elevation: 309.94

4. Calculate the length of curb inlet required for total interception using Equation 10-12.

$$L_T = x Q^{0.42} S^{0.3} \left(\frac{1}{n S_e}\right)^{0.6}$$

Equation 10-12.

where:

L_T = length of curb inlet required (ft, or m)

x = 0.6 for English measurement and 0.82 for metric

Q = flow rate in gutter (cfs or m^3/s)

S = longitudinal slope (ft/ft, or m/m)

n = Manning's roughness coefficient

S_e = equivalent cross slope (ft/ft, or m/m).

If no bypass flow is allowed, the inlet length is assigned a nominal dimension of at least L_T, which should be an available (nominal) standard curb opening length. The exact values of L_T should not be used if doing so requires special details, special drawings, structural design, and costly construction.

If bypass flow is allowed, the inlet length is rounded down to the next available standard (nominal) curb opening length.

Inlet No.	Inlet Type	Calculated Minimum Length (ft)	100-Yr Flow	Proposed Inlet Size	Proposed Inlet Length (ft)
A1	On-Grade	12.06	15.02	C-2	15
A2	On-Grade	9.78	9.11	C-1	10
A3	Sag	13.18	16.44	C-2	15
A4	Sag	9.70	10.23	C-1	10
A5	Sag	0.11	1.67	C	5
A6	Sag	5.16	7.41	C-1	10
A7	On-Grade	3.90	0.64	C	5
A8	On-Grade	10.96	7.61	C-2	15
A9	Sag	12.93	7.13	C-2	15
A10	Sag	10.65	5.26	C-2	15
A11	On-Grade	9.08	3.03	C-1	10
A12	On-Grade	9.56	3.43	C-1	10
A13	Sag	1.00	0.64	C	5
A14	Sag	1.79	1.91	C	5
A15	Sag	3.76	3.99	C	5
A16	Sag	4.22	4.46	C	5
B1	Sag	3.86	3.64	C	5
B2	Sag	5.62	8.28	C-2	15

CITY ENGINEER
ONE (1) YEAR

DATE

L SQUARED ENGINEERING
MUNICIPAL COMMERCIAL RESIDENTIAL
WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 12329
(MAIN OFFICE)
3307 W. DAVIS STREET #100
CONROE, TEXAS 77304
OFFICE: 936-647-0420
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
DRAINAGE CALCULATIONS

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

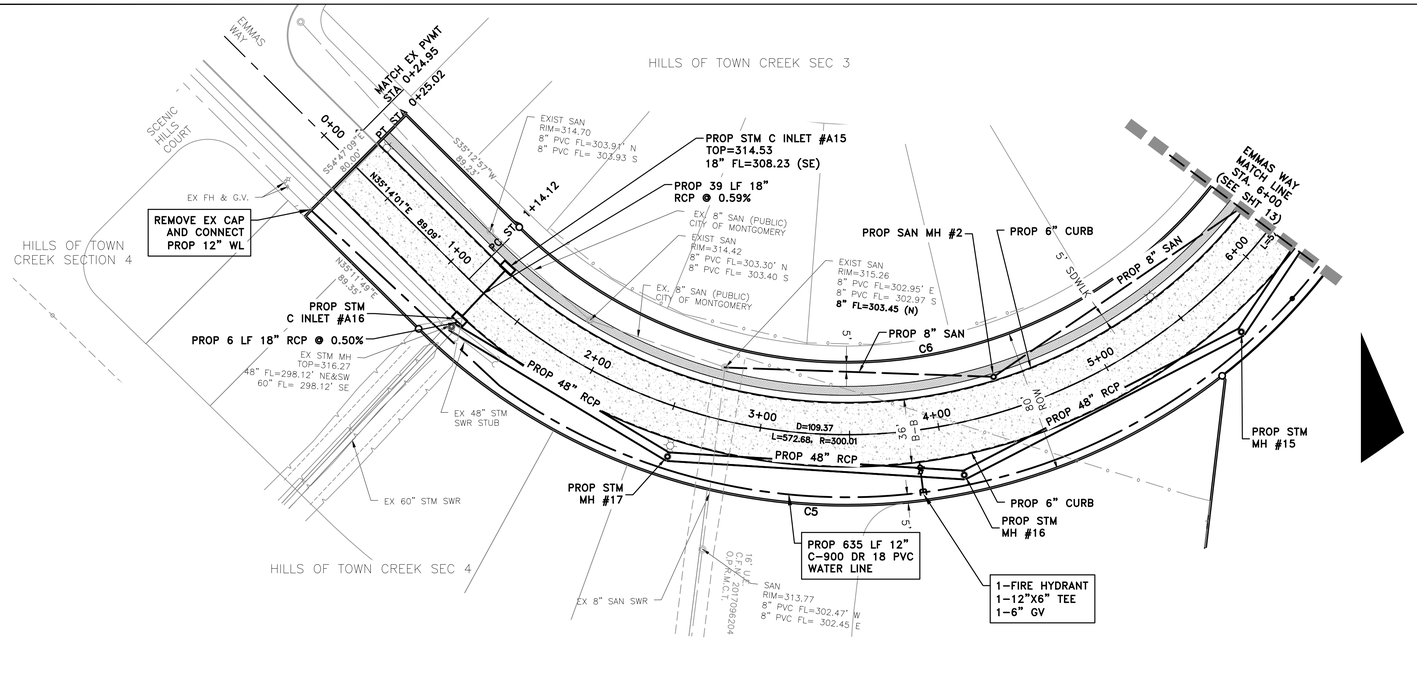
DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE		SHEET	11

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\ SHARED DRIVES\ 10976 - EMMA'S WAY\ 10976 - DRAWINGS\ 10976 - DRAINAGE CALCULATIONS.DWG



LEGEND:

- EX ADJOINER LINE, ADJ
- EX SANITARY, SAN
- EX WATERLINE, WL
- EX STORM SEWER, STM
- EX DRAINAGE PATH, FL
- EX HIGH BANK, HB
- EX EASEMENT, ESMT
- EX BUILDING LINE, BL
- P EX OVERHEAD POWER, P
- UG EX UNDERGROUND POWER, UG
- FO EX FIBER, FO
- T EX TELEPHONE, T
- G EX GAS LINE, G
- X EX FENCE, FNC
- PROJECT BOUNDARY LINE, BNDY
- PROP SANITARY, SAN
- PROP WATERLINE, WL
- PROP STORM SEWER, STM
- PROP DRAINAGE PATH, FL
- PROP HIGH BANK, HB
- PROP EASEMENT, ESMT
- PROP BUILDING LINE, BL
- P PROP OVERHEAD POWER, P
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- FO PROP FIBER, FO
- T PROP TELEPHONE, T
- G PROP GAS LINE, G
- X PROP FENCE, FNC
- PROP PAVEMENT, PVMT
- PROP BACK OF CURB, BC
- (S) PROP STACK

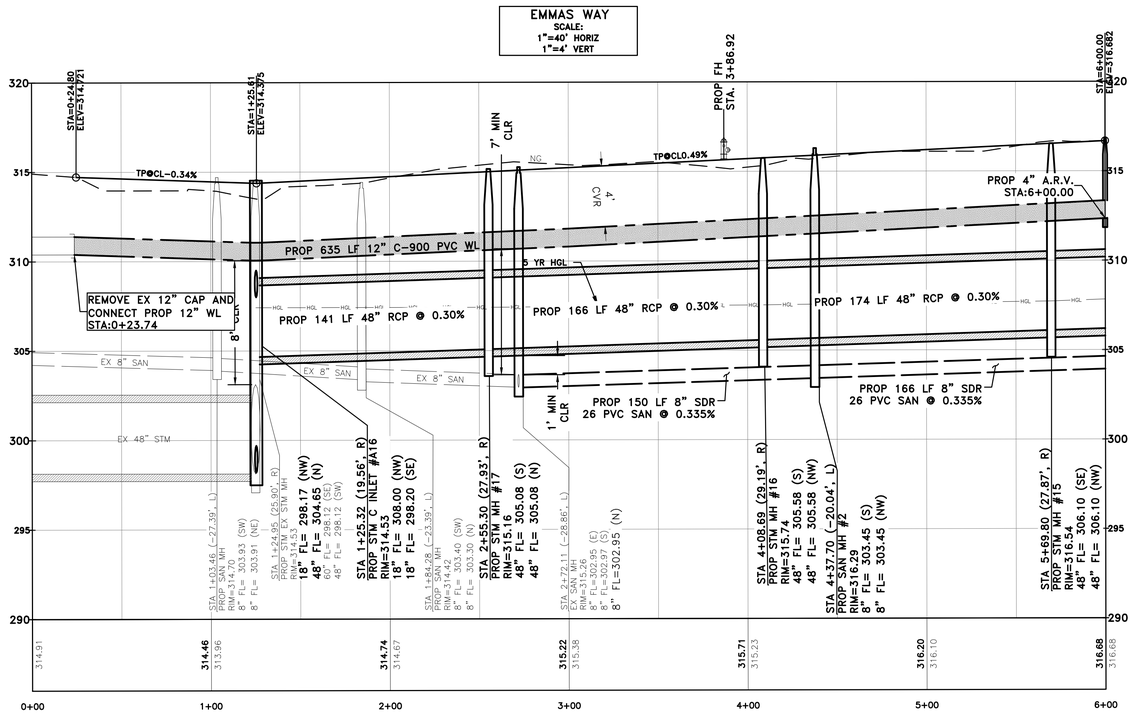


Table 7.3 - PROTECTION REQUIREMENTS AT WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	WATER OVER SEWER				SEWER OVER WATER			
	EXISTING SS	PROP SS	EXISTING SS	PROP SS	EXISTING WL	PROP WL	EXISTING WL	PROP WL
Minimum flow vertical clearance	18"	6"	6"	6"	18"	6"	6"	6"
Class I full cradle (min 180 deg arc, minimum 6in thick) of concrete around SS pipe. Backfill of undisturbed trench or WL, granular backfill if disturbed or from excavation of WL	√	√	√	√	√	√		√
Class I full cradle (min 180 deg arc) of concrete around WL. Granular backfill if undisturbed trench or SS, granular backfill if from excavation of WL		√			√		√	√
Replace 1 full section of existing SS with pressure-rated DIP or pressure-rated PVC pipe with adapters and restrained joints for both DIP and PVC pipe	√		√		√		√	
Double DIP for total distance WL dist (no less than 20 feet), PVC pipe is only allowed if manual accept TAC) 10ft-6ft, and uncontained joints for both DIP and PVC pipe	√	√	√	√	√	√	√	√
Embed SS with 12in fcw for total length of 3 pipe segments or 1 foot beyond the outer couplings, all	√	√	√	√	√	√	√	√
Class I full cradle (min 180 deg arc) of SS pipe. Backfill of undisturbed trench or WL. Double encased pipes on SS, spaced at least 8 ft horizontally from centerline of WL or ensure the inferior DIP pipe becomes pipe (w/in 10 ft) becomes full class lower with pressure of 2 times th				√	√	√		

1. Minimum clearance is 2 feet for non-pressure rated SS and pressure rated SS (with at least 150 psi pressure rating). If less than 2 feet can not be achieved, then the line is to be encased.
2. Minimum clearance is 2 feet for non-pressure rated SS and 1 foot for pressure rated SS.
3. Required if existing SS is disturbed and/or there is evidence of leakage.
4. Not required for augered WL unless there is evidence of leakage, completely fill augered hole with bentonite/clay mixture.
5. Not required for augered SS, completely fill augered hole with bentonite/clay mixture.
6. Not allowed.
7. Both Waterline and Wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards.
8. Restraint joint sections including water line protection shall be shown on profile view.

NOTES:

1. ALL LONGSIDE LEADS SHALL INCLUDE STACKS, RISERS, TEES, WYES, AND ALL APPURTENANCES TO END AT A DEPTH OF 4'-5' BELOW NATURAL GROUND. (SEE DETAIL SHT. 25)
2. ALL SANITARY SEWER SERVICE LINES TO BE 1% SLOPE, UNLESS OTHERWISE NOTED
3. ALL FIRE HYDRANTS TO BE LOCATED 3' BEHIND BACK OF CURB.
4. ALL UTILITY LEADS UNDER PAVEMENT IN CUL-DE-SACS AND/OR KNUCKLES TO BE BACKFILLED WITH CEMENT STABILIZED SAND UP TO PAVEMENT SUBGRADE.
5. SEE PROFILE FOR ACTUAL LOCATION OF EACH WATERLINE APPURTENANCE. PROFILE VIEW GOVERNS OVER PLAN VIEW.
6. HGL IS FOR THE 5-YR EVENT IN STORM SEWER.
7. WATER AND SANITARY SHALL MAINTAIN 9' HORIZONTAL CLEARANCE.
8. STORM AND SANITARY SHALL MAINTAIN 5' HORIZONTAL CLEARANCE.
9. STORM AND WATER SHALL MAINTAIN 4' HORIZONTAL CLEARANCE.

SANITARY SEWER CONNECTION NOTE: THE CONTRACTOR SHALL CONNECT THE PROPOSED 8-INCH SANITARY SEWER LINE TO THE SANITARY SEWER MANHOLE BY MEANS OF CORE AND BOOT AT SPECIFIED FLOWLINE. THE OPENING IN THE SIDE OF THE MANHOLE SHALL NOT BE MORE THAN 3-INCHES NOR LESS THAN 1-INCH IN DIAMETER THAN THE OUTSIDE DIAMETER FOR THE PROPOSED PIPE. THE PROPOSED PIPE SHALL NOT PROTRUDE MORE THAN 3-INCHES PAST THE INSIDE FACE OF THE MANHOLE WALL. FILL THE ENTIRE VOID AROUND THE PROPOSED PIPE WITH NON-SHRINK WATERPROOF GROUT. CONTRACTOR TO CONSTRUCT SLOPE AT INVERT OF MANHOLE UNDER POINT OF SANITARY SEWER CONNECTION. THE CONTRACTOR SHALL BACKFILL THE EXCAVATION AROUND THE EXISTING MANHOLE WITH CEMENT-SAND.

CITY OF MONTGOMERY, CITY ENGINEER SIGNATURE VALID FOR ONE (1) YEAR

DATE

L SQUARED ENGINEERING
MUNICIPAL COMMERCIAL RESIDENTIAL
WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 22320
(MAIN OFFICE)
3307 W. DAVIS STREET #100
CONROE, TEXAS 77304
OFFICE: 936-647-0420
(SECONDARY OFFICE)
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK SECTION 5
EMMAS WAY PLAN & PROFILE STA 0+00 - 6+00

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

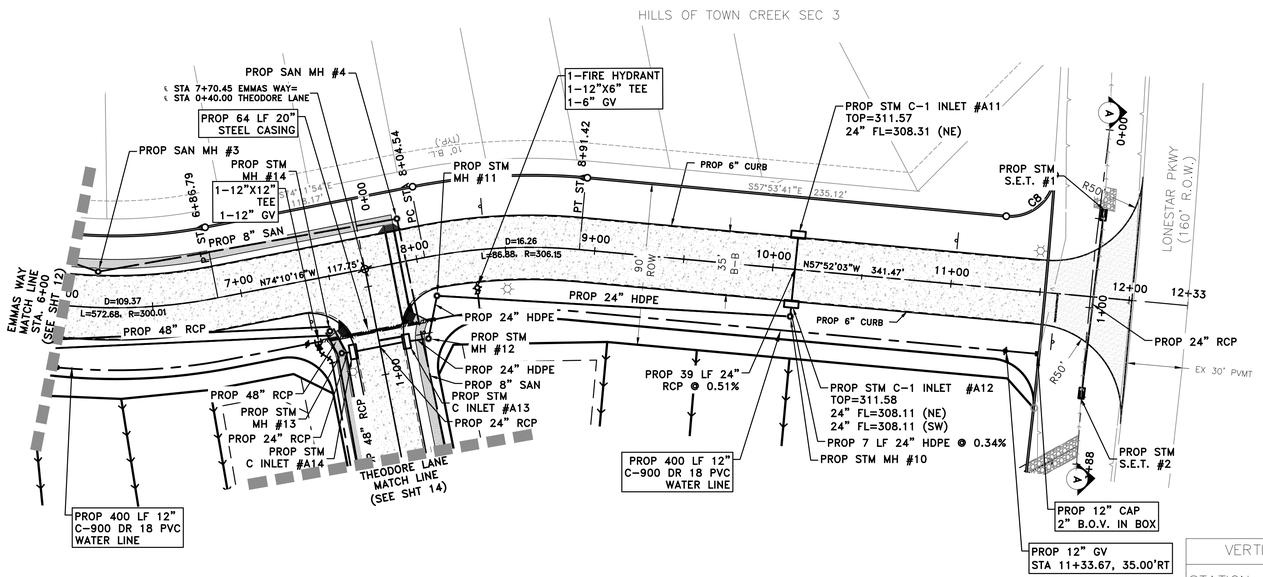
DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 40' (24x36) 1" = 80' (11x17)	SHEET	12

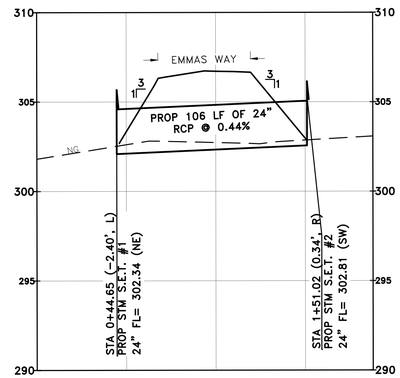
JONATHAN T. WHITE 127058 LICENSED PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\12 EMMAS WAY PLAN & PROFILE.DWG Apr. 30, 2024 - 8:12 AM CAITLYN CURTIS



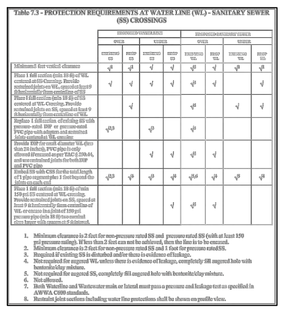
EMMAS WAY CULVERT CS A–A PROFILE



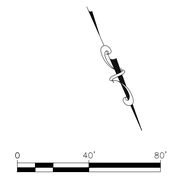
LEGEND:

- 1" DOUBLE WATER METER
- 3/4" SINGLE WATER METER
- 6" DOUBLE SAN SWR LEAD
- 4" SINGLE SAN SWR LEAD

VERTICAL CURVE #1 TABLE			VERTICAL CURVE #2 TABLE		
STATION	ELEV	SLOPE	STATION	ELEV	SLOPE
6+52.50	316.42'	-0.50%	9+80.56	311.96'	-1.24%
6+54.80	316.41'	-0.51%	9+84.80	311.91'	-1.30%
6+64.80	316.35'	-0.59%	9+94.80	311.76'	-1.50%
6+74.80	316.28'	-0.72%	10+04.80	311.58'	-1.78%
6+84.80	316.19'	-0.85%	10+14.80	311.37'	-2.06%
6+94.80	316.09'	-0.98%	10+24.80	311.14'	-2.35%
7+00.00	316.04'	-1.08%	10+32.18	310.95'	-2.59%
7+04.80	315.98'	-1.15%	10+34.80	310.87'	-2.73%
7+14.80	315.86'	-1.24%	10+44.80	310.58'	-2.91%
7+24.80	315.72'	-1.37%	10+54.80	310.26'	-3.19%
7+34.80	315.57'	-1.50%	10+64.80	309.92'	-3.47%
7+44.80	315.41'	-1.63%	10+74.80	309.54'	-3.76%
7+47.50	315.36'	-1.72%	10+83.80	309.18'	-4.02%



VERTICAL CURVE #3 TABLE		
STATION	ELEV	SLOPE
11+23.88	307.52'	-4.15%
11+24.80	307.48'	-4.12%
11+34.80	307.10'	-3.78%
11+44.80	306.79'	-3.15%
11+50.00	306.65'	-2.67%
11+54.80	306.53'	-2.36%
11+64.80	306.34'	-1.89%
11+74.80	306.22'	-1.27%
11+76.12	306.20'	-0.91%



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- EX DRAINAGE PATH, FL
- EX HIGH BANK, HB
- EX EASEMENT, ESMT
- EX BUILDING LINE, BL
- P EX OVERHEAD POWER, P
- UG EX UNDERGROUND POWER, UG
- FO EX FIBER, FO
- T EX TELEPHONE, T
- G EX GAS LINE, G
- X EX FENCE, FNC
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- X PROP FENCE, FNC
- PROP PAVEMENT, PVMT
- PROP BACK OF CURB, BC
- PROP STACK

NOTES:

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CITY OF MONTGOMERY, CITY ENGINEER SIGNATURE VALID FOR ONE (1) YEAR

DATE

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3307 W. DAVIS STREET #100
CONROE, TEXAS 77304
OFFICE: 936-647-0420
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK SECTION 5
EMMAS WAY PLAN & PROFILE STA 6+00 - END

DRAWING ISSUE

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1	04/30/24	JTW	FOR PERMIT

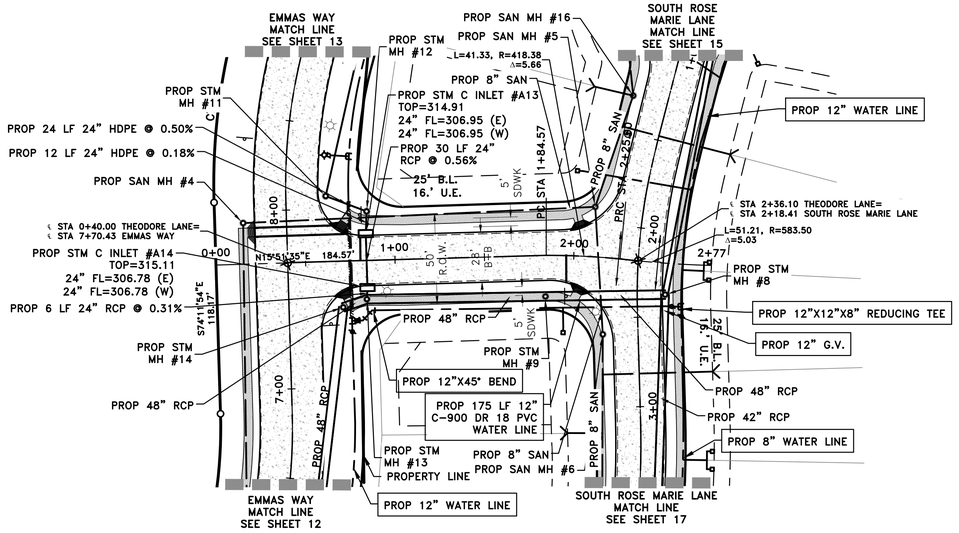
DRAWING INFORMATION

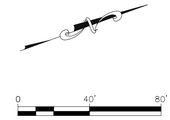
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 40' (24x36) 1" = 80' (11x17)	SHEET	13

JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K. HOV\03 CAD\DESIGN SET\12 EMMAS WAY PLAN & PROFILE.DWG Apr. 30, 2024–8:12 AM CAITLYN CURTIS





LEGEND:

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- EX SANITARY, SAN
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- EX STORM SEWER, STM
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- PROP DRAINAGE PATH, FL
- PROP HIGH BANK, HB
- PROP EASEMENT, ESMT
- PROP BUILDING LINE, BL
- **P** PROP OVERHEAD POWER, P
- **UG** PROP UNDERGND POWER, UG
- **FO** PROP FIBER, FO
- **T** PROP TELEPHONE, T
- **G** PROP GAS LINE, G
- **X** PROP FENCE, FNC
- PROP PAVEMENT, PVMT
- PROP BACK OF CURB, BC
- PROP STACK

NOTES:

1. ALL LONGSIDE LEADS SHALL INCLUDE STACKS, RISERS, TEES, WYES, AND ALL APPURTENANCES TO END AT A DEPTH OF 4'-5' BELOW NATURAL GROUND. (SEE DETAIL SHT. 25)
2. ALL SANITARY SEWER SERVICE LINES TO BE 1% SLOPE, UNLESS OTHERWISE NOTED
3. ALL FIRE HYDRANTS TO BE LOCATED 3' BEHIND BACK OF CURB.
4. ALL UTILITY LEADS UNDER PAVEMENT IN CUL-DE-SACS AND/OR KNUCKLES TO BE BACKFILLED WITH CEMENT STABILIZED SAND UP TO PAVEMENT SUBGRADE.
5. SEE PROFILE FOR ACTUAL LOCATION OF EACH WATERLINE APPURTENANCE. PROFILE VIEW GOVERNS OVER PLAN VIEW.
6. HGL IS FOR THE 5-YR EVENT IN STORM SEWER.
7. WATER AND SANITARY SHALL MAINTAIN 9' HORIZONTAL CLEARANCE.
8. STORM AND SANITARY SHALL MAINTAIN 5' HORIZONTAL CLEARANCE.
9. STORM AND WATER SHALL MAINTAIN 4' HORIZONTAL CLEARANCE.

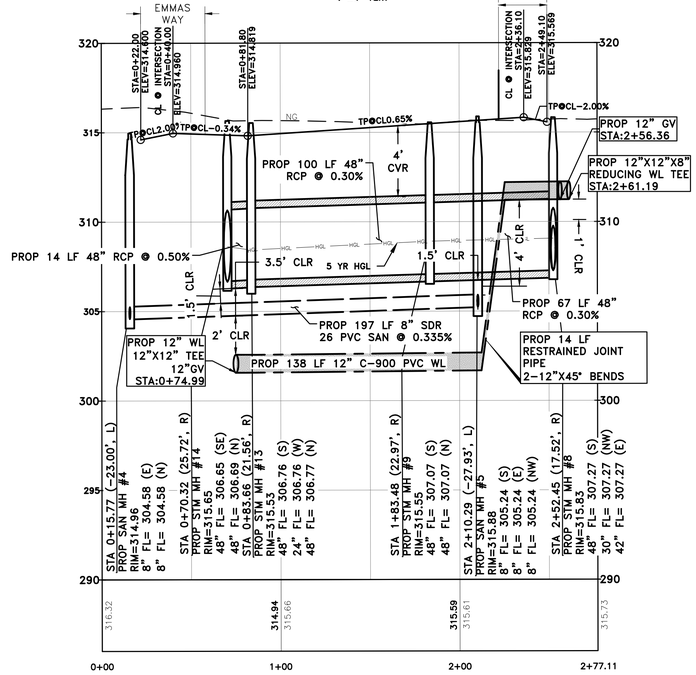
SANITARY SEWER CONNECTION NOTE: THE CONTRACTOR SHALL CONNECT THE PROPOSED 8-INCH SANITARY SEWER LINE TO THE SANITARY SEWER MANHOLE BY MEANS OF CORE AND BOOT AT SPECIFIED FLOWLINE. THE OPENING IN THE SIDE OF THE MANHOLE SHALL NOT BE MORE THAN 3-INCHES NOR LESS THAN 1-INCH IN DIAMETER THAN THE OUTSIDE DIAMETER FOR THE PROPOSED PIPE. THE PROPOSED PIPE SHALL NOT PROTRUDE MORE THAN 3-INCHES PAST THE INSIDE FACE OF THE MANHOLE WALL. FILL THE ENTIRE VOID AROUND THE PROPOSED PIPE WITH NON-SHRINK WATERPROOF GROUT. CONTRACTOR TO CONSTRUCT SLOPE AT INVERT OF MANHOLE UNDER POINT OF SANITARY SEWER CONNECTION. THE CONTRACTOR SHALL BACKFILL THE EXCAVATION AROUND THE EXISTING MANHOLE WITH CEMENT-SAND.

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

THEODORE LANE

SCALE:
1"=40' VERT
1"=4' VERT



LEGEND:

- 1" DOUBLE WATER METER
- 3/4" SINGLE WATER METER
- 6" DOUBLE SAN SWR LEAD
- 4" SINGLE SAN SWR LEAD

Table 7.3 - PROTECTION REQUIREMENTS AT WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	WL CROSSING SS				SS CROSSING WL			
	WL CROSSING SS		SS CROSSING WL		WL CROSSING SS		SS CROSSING WL	
	PROTECTION SS	WATER MAIN SS	PROTECTION WL	WATER MAIN WL	PROTECTION SS	WATER MAIN SS	PROTECTION WL	WATER MAIN WL
Minimum) foot vertical clearance	18"	18"	18"	18"	18"	18"	18"	18"
Class I full section (min 90 lb/yd³ SW, centered on SS) bedding. Results in centered joints on WL, spaced at least 9 ft horizontally from centerline of SS.	√	√	√	√	18"	√		√
Class I full section (min 90 lb/yd³ SW, centered on SS) bedding. Results in centered joints on SS, spaced at least 9 ft horizontally from centerline of WL.		√			18"		18"	√
Replace 1 full section of existing SS with pressure-rated SDP or pressure-rated HDPE (DR 11 or thicker) centered on WL, extended 10 ft beyond each WL crossing.	18"		18"		18"			
Encase SDP for small diameter WL (less than 24 inches), PVC pipe (c-only effused DI encased as per TAC § 290.44), and unrestrained joints for both SDP and PVC pipe.			√	√	18"	√		
Encase DIP with 4 ft of the total length of 1 pipe segment plus 1 foot beyond the joint length each end.	18"	18"	18"	18"	18"	18"	18"	18"
Class I full section (min 90 lb/yd³ SW, centered on SS) bedding. Results in centered joints on SS, spaced at least 9 ft horizontally from centerline of WL or encase the jointed SDP pipe or polyethylene SS for unrestrained joints near with a length 9 ft apart.				√	18"	√		

1. Minimum clearance is 2 feet for non-pressure rated SS and pressure rated SS (with at least 150 psi pressure rating). If less than 2 feet can not be achieved, then the line is to be encased.
2. Minimum clearance is 3 feet for non-pressure rated SS and 1 foot for pressure rated SS.
3. Required if existing SS is disturbed and/or there is evidence of leakage.
4. Not required for augered WL unless there is evidence of leakage, completely fill augered hole with bentonite/city mixture.
5. Not required for augered SS, completely fill augered hole with bentonite/city mixture.
6. Not allowed.
7. Both Waterline and Wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards.
8. Restrained joint sections including water line protections shall be shown on profile view.

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13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
THEODORE LANE PLAN & PROFILE

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

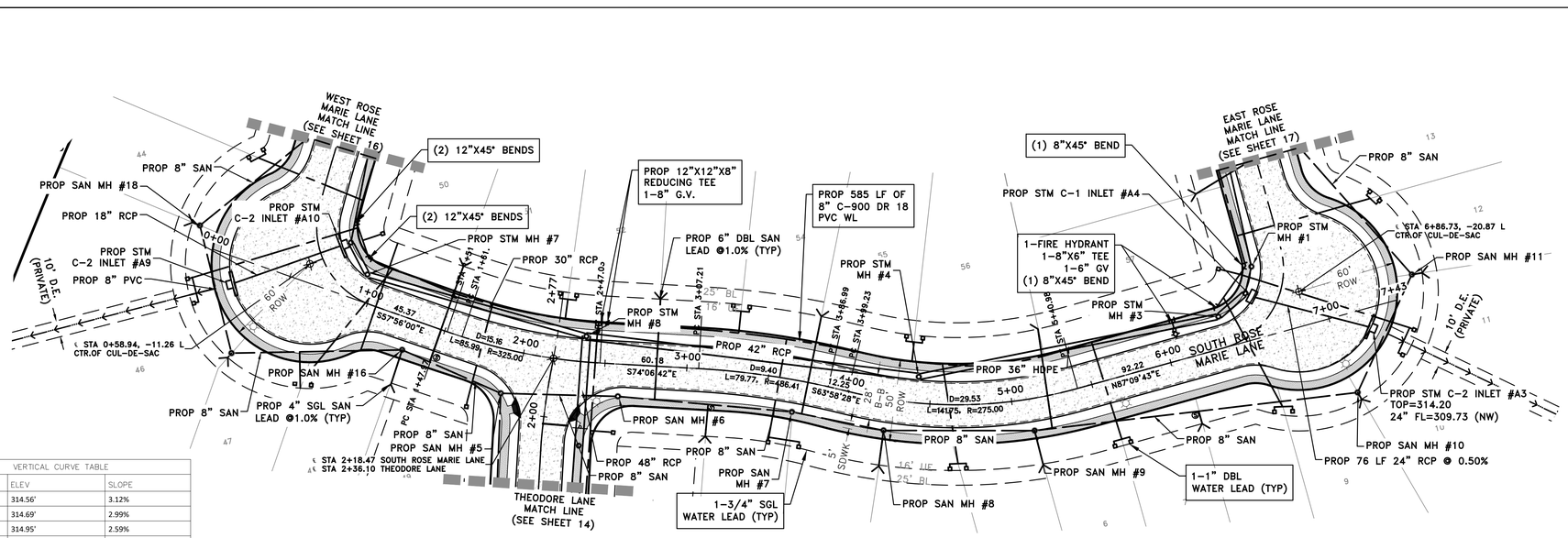
DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 40' (24x36) 1" = 80' (11x17)	SHEET	14

JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K. HOV\03 CAD\DESIGN SET\14 STREET A PLAN & PROFILE.DWG Apr. 30, 2024-8:12 AM CAITLYN CURTIS



SOUTH ROSE MARIE LANE
SCALE:
1"=40' VERT
1"=4' VERT

VERTICAL CURVE TABLE		
STA.	ELEV	SLOPE
0+87.73	314.56'	3.12%
0+92.27	314.69'	2.99%
1+02.27	314.95'	2.59%
1+11.13	315.14'	2.06%
1+12.27	315.16'	1.78%
1+22.27	315.30'	1.47%
1+32.27	315.39'	0.91%
1+34.53	315.41'	0.57%

SAN LEAD TABLE			
STATION & OFFSET	LENGTH	START FL	END FL
0+09.58, 22.05	16.45	306.36	306.53
1+05.59, 28.43	69.43	306.11	306.81
1+29.34, 19.55	22.23	310.94	311.16
1+47.58, 20.93	61.94	305.83	306.45
2+81.47, 20.44	61.45	305.63	306.24
3+14.55, 21.45	19.54	311.04	311.24
3+74.34, 19.56	60.56	305.93	306.54
4+24.52, 19.08	21.93	310.51	310.73
5+10.90, 19.42	21.66	310.82	311.04
5+20.99, 20.24	61.36	306.45	307.06
6+08.45, 33.13	7.87	306.74	306.82
7+04.86, 47.95	4.83	310.46	310.51
7+06.71, -113.49	67.14	307.61	308.28

NOTE:
ALL LEADS OVER 6' DEEP ARE REQUIRED TO HAVE A STACK ADDED PER DETAIL SO NEAREST FLOWLINE IS NOT DEEPER THAN 6' AT THE CONNECTION.

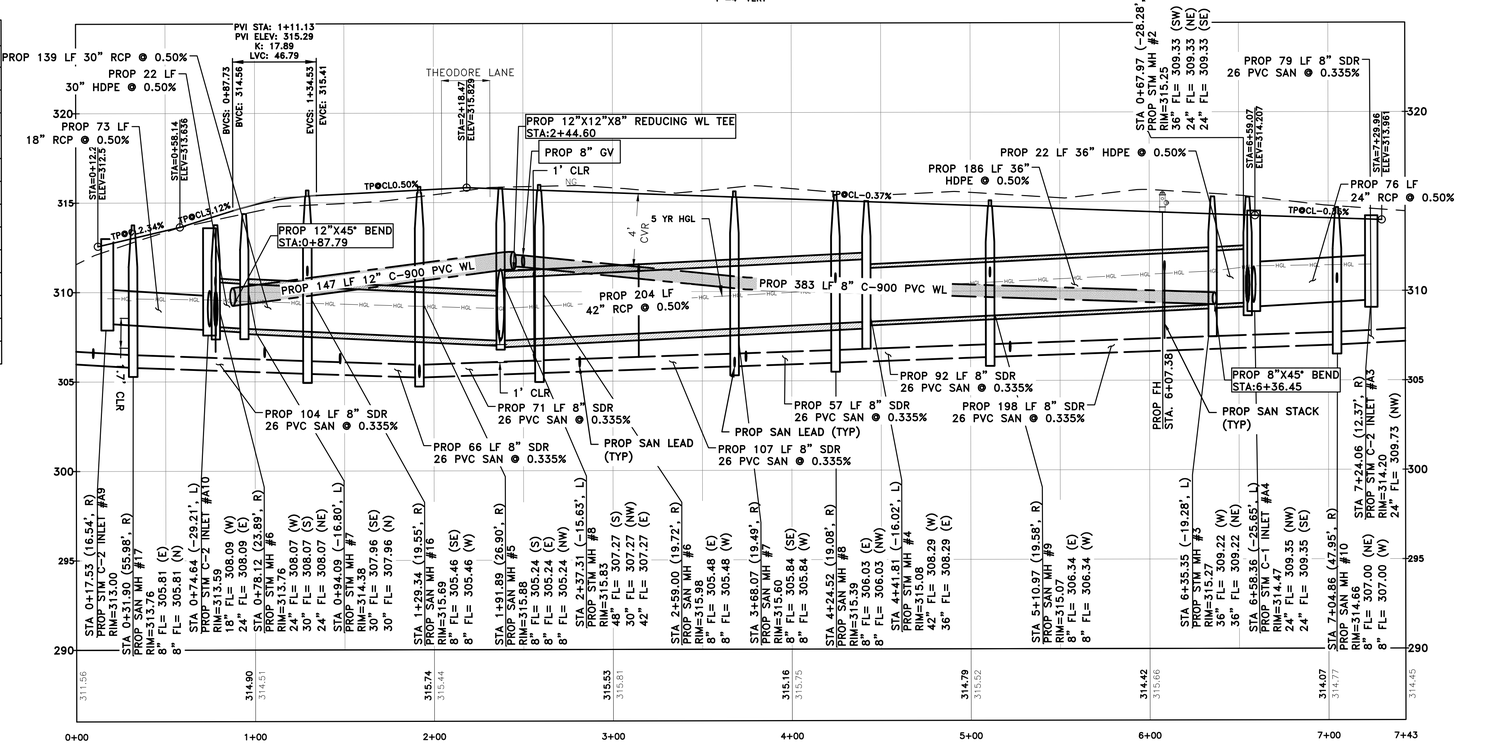


Table 7.3 - PROTECTION REQUIREMENTS AT WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	ENGINEERED ENVIRONMENT				ENGINEERED UNDISTURBED SOIL			
	WATER		SEWER		WATER		SEWER	
	EXISTING OR PROPOSED SS	PROPOSED SS	EXISTING OR PROPOSED WL	PROPOSED WL	EXISTING OR PROPOSED WL	PROPOSED WL	EXISTING OR PROPOSED SS	PROPOSED SS
	✓	✓	✓	✓	✓	✓	✓	✓
Minimum 6 feet vertical clearance								
Class 1 full conform (pcfa 33-41) of WL crossing SS, encased in SSL, extended for a minimum of 10 feet on each side of the crossing	✓	✓	✓	✓	✓	✓	✓	✓
Class 1 full conform (pcfa 33-41) of SS crossing of WL. Crossing, Provide encased joints on WL, extended for 9 feet on each side of the crossing		✓			✓		✓	✓
Option 1 full conform of SS, AWWA C900 pressure-rated DIP or pressure-rated PVC pipe with adapter, and centered on the crossing	#13		#5		#5			
Provide DIP for entire diameter WL (for a min 20 feet), PVC pipe (only allowed if encased as per TAC) 290.46, and encased joints for both DIP and PVC pipe			✓	✓	#5	✓	#5	#5
Option 2 with CSS sleeve total length of 9 ft also required for 1 foot beyond for joints on each end	#13	#5	#5	#5	#5	#5	#5	#5
Class 1 full conform (pcfa 33-41) of min 150 psi SS crossing of WL, encasing pressure-rated pipe for a min 10 feet and at least 6 inches of clearance between WL or encase less joints of 150 psi pressure pipe (with SS) for a total of 20 feet, lower with a minimum of 18 inches of.				✓	#5	✓	#5	#5

1. Minimum clearance is 2 feet for non-pressure rated SS and pressure rated SS (with at least 150 psi pressure rating) and 4 feet for non-pressure rated SS. Both SS must be in compliance.
2. Add 18 inches of clearance to 2 feet for non-pressure rated SS and 4 feet for pressure rated SS.
3. Required if existing SS is disturbed and/or there is evidence of leakage.
4. Not required for engineered WL, unless there is evidence of leakage, completely fill engraved hole with bentonite/clay solution.
5. Not required for engineered SS, completely fill engraved hole with bentonite/clay solution.
6. Not allowed.
7. Both Waterline and Wastewater mole or lateral must pass a pressure and leakage test as specified in AWWA, C600 standards.
8. Bentonite Joint uniform (including water line protections shall be shown on profile view.

NOTES:
1. ALL LONGSIDE LEADS SHALL INCLUDE STACKS, RISERS, TEES, WYES, AND ALL APPURTENANCES TO END AT A DEPTH OF 4'-5' BELOW NATURAL GROUND. (SEE DETAIL SHT. 25)
2. ALL SANITARY SEWER SERVICE LINES TO BE 1% SLOPE, UNLESS OTHERWISE NOTED
3. ALL FIRE HYDRANTS TO BE LOCATED 3' BEHIND BACK OF CURB.
4. ALL UTILITY LEADS UNDER PAVEMENT IN CUL-DE-SACS AND/OR KNUCKLES TO BE BACKFILLED WITH CEMENT STABILIZED SAND UP TO PAVEMENT SUBGRADE.
5. SEE PROFILE FOR ACTUAL LOCATION OF EACH WATERLINE APPURTENANCE. PROFILE VIEW GOVERNS OVER PLAN VIEW.
6. HGL IS FOR THE 5-YR EVENT IN STORM SEWER.
7. WATER AND SANITARY SHALL MAINTAIN 9' HORIZONTAL CLEARANCE.
8. STORM AND SANITARY SHALL MAINTAIN 5' HORIZONTAL CLEARANCE.
9. STORM AND WATER SHALL MAINTAIN 4' HORIZONTAL CLEARANCE.

SANITARY SEWER CONNECTION NOTE: THE CONTRACTOR SHALL CONNECT THE PROPOSED 8-INCH SANITARY SEWER LINE TO THE SANITARY SEWER MANHOLE BY MEANS OF CORE AND BOOT AT SPECIFIED FLOWLINE. THE OPENING IN THE SIDE OF THE MANHOLE SHALL NOT BE MORE THAN 3-INCHES NOR LESS THAN 1-INCH IN DIAMETER THAN THE OUTSIDE DIAMETER FOR THE PROPOSED PIPE. THE PROPOSED PIPE SHALL NOT PROTRUDE MORE THAN 3-INCHES PAST THE INSIDE FACE OF THE MANHOLE WALL. FILL THE ENTIRE VOID AROUND THE PROPOSED PIPE WITH NON-SHRINK WATERPROOF GROUT. CONTRACTOR TO CONSTRUCT SLOPE AT INVERT OF MANHOLE UNDER POINT OF SANITARY SEWER CONNECTION. THE CONTRACTOR SHALL BACKFILL THE EXCAVATION AROUND THE EXISTING MANHOLE WITH CEMENT-SAND.

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

0 40' 80'

LEGEND:
- 1" DOUBLE WATER METER
- 3/4" SINGLE WATER METER
- 6" DOUBLE SAN SWR LEAD
- 4" SINGLE SAN SWR LEAD

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HOUSTON, TX 77040

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EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
SOUTH ROSE MARIE LANE PLAN & PROFILE 0+00-7+43

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 40' (24x36) 1" = 80' (11x17)	SHEET	15

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\15 STREET B PLAN & PROFILE.DWG Apr. 30, 2024-8:13 AM CAITLYN CURTIS

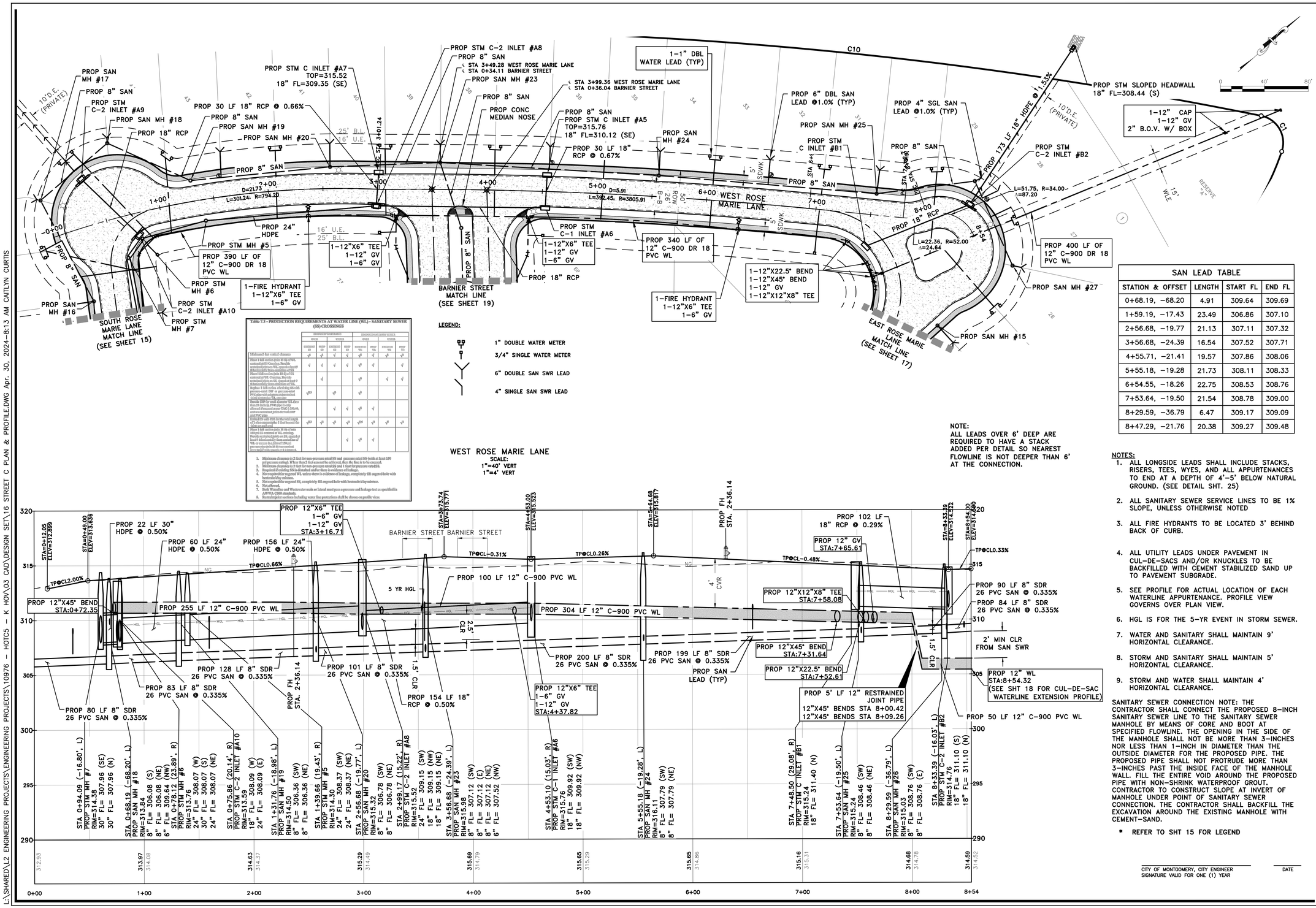

Table 7.3 - PROTECTION REQUIREMENTS AT WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	WL parallel to SS (edge to edge)				WL crossing SS (edge to edge)			
	WL is ABOVE SS		WL is BELOW SS		WL is ABOVE SS		WL is BELOW SS	
	Preferred	Minimum	Preferred	Minimum	Preferred	Minimum	Preferred	Minimum
	4'	3'	4'	3'	4'	3'	4'	3'
Water line is laid in open trench	√	√	√	√	√	√		√
Water line is laid in open trench with one full length of WL centered on the crossing. Provide mechanical joints on WL, upstream and downstream of the crossing.	√	√	√	√	√	√		√
Water line is laid in open trench with one full length of WL centered on the crossing. Provide mechanical joints on WL, upstream and downstream of the crossing.		√			√		√	√
Water line is laid in open trench with one full length of WL centered on the crossing. Provide mechanical joints on WL, upstream and downstream of the crossing.	√[2]		√[2]		√			
Water line is laid in open trench with one full length of WL centered on the crossing. Provide mechanical joints on WL, upstream and downstream of the crossing.	√[2]	√	√[2]	√	√	√	√	√
Water line is laid in open trench with one full length of WL centered on the crossing. Provide mechanical joints on WL, upstream and downstream of the crossing.	√[2]	√	√[2]	√	√[6]	√	√	√
Water line is laid in open trench with one full length of WL centered on the crossing. Provide mechanical joints on WL, upstream and downstream of the crossing.				√	√	√		

1. Minimum clearance is 2 feet for non-pressure rated SS and pressure rated SS (sink at least 109 psi pressure rating). If less than 2 feet can not be achieved, then the line is to be encased.
2. Minimum clearance is 2 feet for non-pressure rated SS and 1 foot for pressure rated SS.
3. Required if existing SS is disturbed and/or there is evidence of leakage.
4. Not required for segment WL enters there is evidence of leakage, completely fill angered hole with bentonite/clay mixture.
5. Not required for segment SS, completely fill angered hole with bentonite/clay mixture.
6. Not allowed.
7. Both Waterline and Wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards.
8. Flexible joint sections including water line protections shall be shown on profile view.

NOTE:
ALL LEADS OVER 6' DEEP ARE REQUIRED TO HAVE A STACK ADDED PER DETAIL SO NEAREST FLOWLINE IS NOT DEEPER THAN 6' AT THE CONNECTION.

SAN LEAD TABLE			
STATION & OFFSET	LENGTH	START FL	END FL
0+68.19, -68.20	4.91	309.64	309.69
1+59.19, -17.43	23.49	306.86	307.10
2+56.68, -19.77	21.13	307.11	307.32
3+56.68, -24.39	16.54	307.52	307.71
4+55.71, -21.41	19.57	307.86	308.06
5+55.18, -19.28	21.73	308.11	308.33
6+54.55, -18.26	22.75	308.53	308.76
7+53.64, -19.50	21.54	308.78	309.00
8+29.59, -36.79	6.47	309.17	309.09
8+47.29, -21.76	20.38	309.27	309.48

NOTES:

1. ALL LONGSIDE LEADS SHALL INCLUDE STACKS, RISERS, TEES, WYES, AND ALL APPURTENANCES TO END AT A DEPTH OF 4'-5' BELOW NATURAL GROUND. (SEE DETAIL SHT. 25)
2. ALL SANITARY SEWER SERVICE LINES TO BE 1% SLOPE, UNLESS OTHERWISE NOTED
3. ALL FIRE HYDRANTS TO BE LOCATED 3' BEHIND BACK OF CURB.
4. ALL UTILITY LEADS UNDER PAVEMENT IN CUL-DE-SACS AND/OR KNUCKLES TO BE BACKFILLED WITH CEMENT STABILIZED SAND UP TO PAVEMENT SUBGRADE.
5. SEE PROFILE FOR ACTUAL LOCATION OF EACH WATERLINE APPURTENANCE. PROFILE VIEW GOVERNS OVER PLAN VIEW.
6. HGL IS FOR THE 5-YR EVENT IN STORM SEWER.
7. WATER AND SANITARY SHALL MAINTAIN 9' HORIZONTAL CLEARANCE.
8. STORM AND SANITARY SHALL MAINTAIN 5' HORIZONTAL CLEARANCE.
9. STORM AND WATER SHALL MAINTAIN 4' HORIZONTAL CLEARANCE.

SANITARY SEWER CONNECTION NOTE: THE CONTRACTOR SHALL CONNECT THE PROPOSED 8-INCH SANITARY SEWER LINE TO THE SANITARY SEWER MANHOLE BY MEANS OF CORE AND BOOT AT SPECIFIED FLOWLINE. THE OPENING IN THE SIDE OF THE MANHOLE SHALL NOT BE MORE THAN 3-INCHES NOR LESS THAN 1-INCH IN DIAMETER THAN THE OUTSIDE DIAMETER FOR THE PROPOSED PIPE. THE PROPOSED PIPE SHALL NOT PROTRUDE MORE THAN 3-INCHES PAST THE INSIDE FACE OF THE MANHOLE WALL. FILL THE ENTIRE VOID AROUND THE PROPOSED PIPE WITH NON-SHRINK WATERPROOF GROUT. CONTRACTOR TO CONSTRUCT SLOPE AT INVERT OF MANHOLE UNDER POINT OF SANITARY SEWER CONNECTION. THE CONTRACTOR SHALL BACKFILL THE EXCAVATION AROUND THE EXISTING MANHOLE WITH CEMENT-SAND.

* REFER TO SHT 15 FOR LEGEND

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

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13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
WEST ROSE MARIE LANE PLAN & PROFILE 0+00-8+54

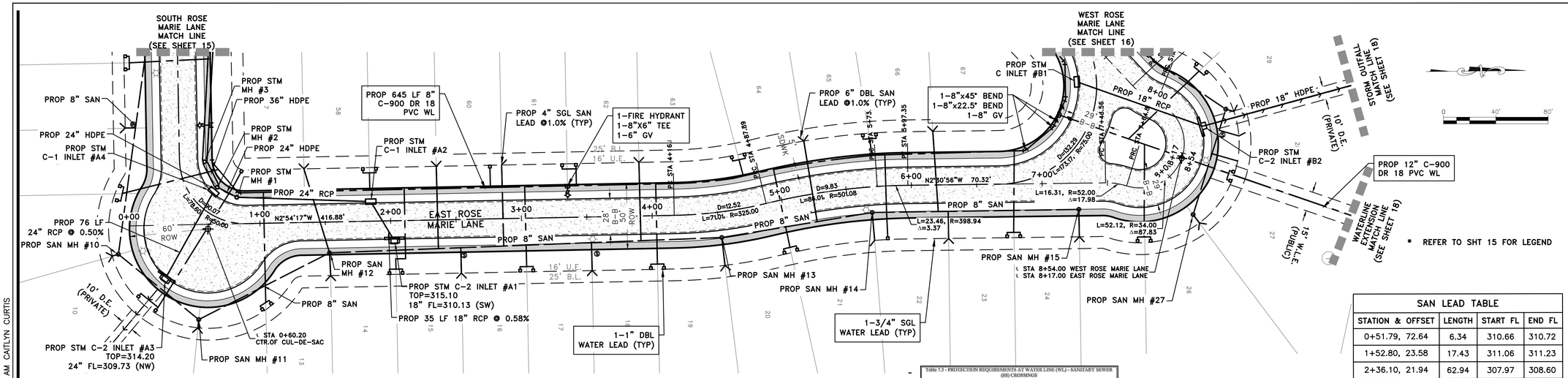
DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 40' (24x36) 1" = 80' (11x17)	SHEET	16

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\16 STREET C PLAN & PROFILE.DWG Apr. 30, 2024-8:13 AM CAITLYN CURTIS



LEGEND:

- 1" DOUBLE WATER METER
- 3/4" SINGLE WATER METER
- 6" DOUBLE SAN SWR LEAD
- 4" SINGLE SAN SWR LEAD

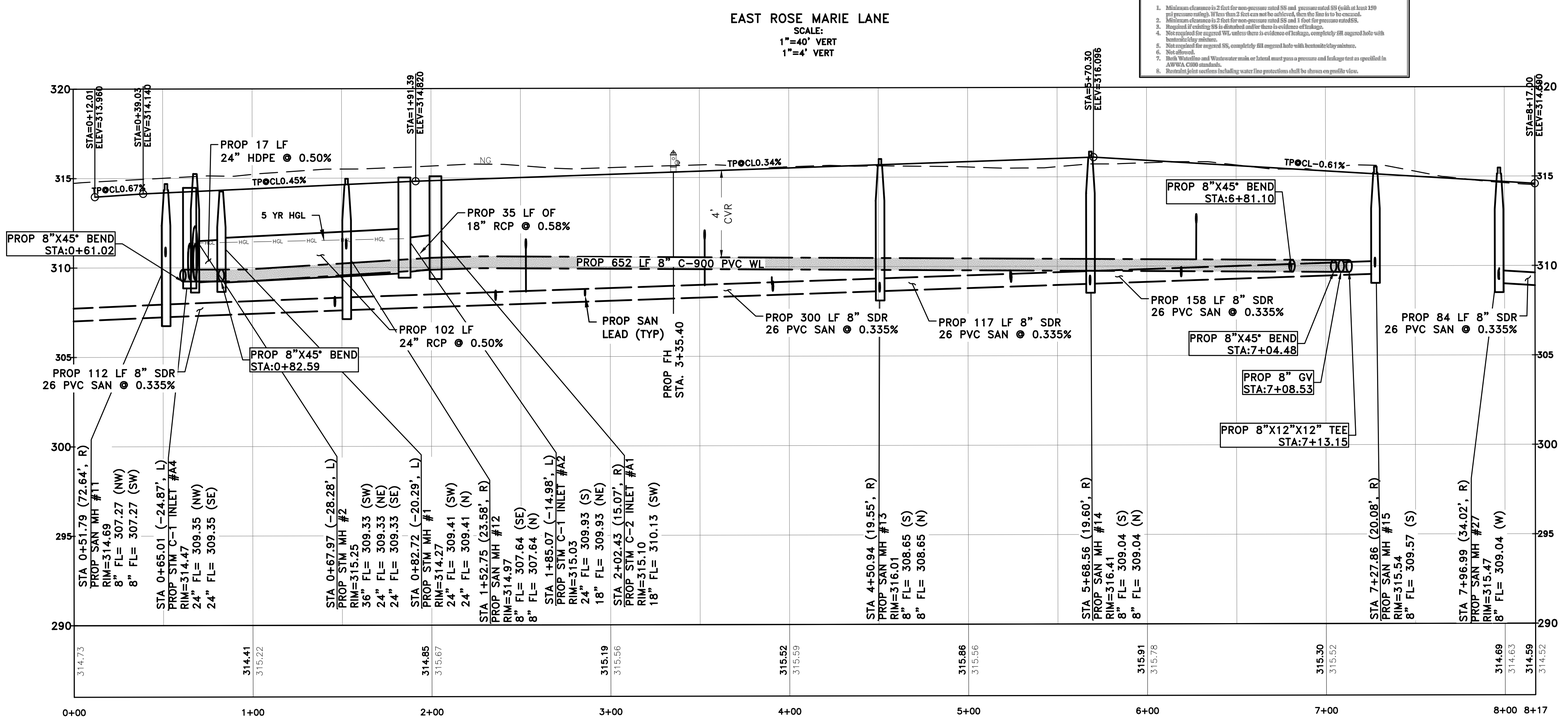
NOTE:
ALL LEADS OVER 6' DEEP ARE REQUIRED TO HAVE A STACK ADDED PER DETAIL SO NEAREST FLOWLINE IS NOT DEEPER THAN 6' AT THE CONNECTION.

Table 7.3 - PROTECTION REQUIREMENTS AT WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	WATER LINE OVER SS				SS OVER WATER LINE			
	WATER		SEWER		SEWER		WATER	
	CONFORMS TO SS	SPECIAL SS	CONFORMS TO SS	SPECIAL SS	CONFORMS TO WL	SPECIAL WL	CONFORMS TO WL	SPECIAL WL
1. Minimum clear vertical clearance	18"	6"	18"	6"	18"	6"	18"	6"
Phase 1 full section (min 10 ft) of WL centered at SS Crossing. Possible scattered joints on WL, spaced at least 9 ft horizontally from centerline of SS.		√	√	√		18"		√
Phase 2 full section (min 10 ft) of SS centered at WL Crossing. Possible scattered joints on SS, spaced at least 9 ft horizontally from centerline of WL.			√			18"	√	√
Replace 9 ft full section of existing WL with pressure-rated DIP or pressure-rated PVC pipe with adapters and restrained joints centered at SS crossing.	18"			18"		18"		
Encase DIP for small diameter WL pipe (16" and smaller) in 8 mil LDPE tube sleeved 18 inches on each side of SS, and harness/related joints the both DIP and PVC pipe.			√	√	√	18"	√	
Embed SS with CDS fill to the total length of 9 ft plus an additional 3 feet beyond the WL on each side.	18"	18"	18"		18"	18"	18"	18"
Phase 2 full section (min 10 ft) of both DIP or SS centered at WL crossing. Possible scattered joints on SS, spaced at least 9 ft horizontally from centerline of WL. Harness the deflected DIP or pressure pipe (min 10 ft) to centerline. Cross hatch with centers at 6 ft interval.				√	√	18"	√	

1. Minimum clearance is 2 feet for non-pressure rated SS and pressure rated SS (with at least 150 psi pressure rating). If less than 2 feet can not be achieved, then the Sss is to be encased.
2. Minimum clearance is 2 feet for non-pressure rated SS and 1 foot for pressure rated SS.
3. Required if existing SS is disturbed and/or there is evidence of leakage.
4. Not required for engered WL, unless there is evidence of leakage, completely fill angered hole with bentonite/clay mixture.
5. Not required for engered SS, completely fill angered hole with bentonite/clay mixture.
6. Not allowed.
7. Both Texas Commission and Wastewater main or lateral must pass a pressure and leakage test as specified in AWWA, C600 standards.
8. Restraint Joint conform Including water line protections shall be shown on profile view.

SAN LEAD TABLE			
STATION & OFFSET	LENGTH	START FL	END FL
0+51.79, 72.64	6.34	310.66	310.72
1+52.80, 23.58	17.43	311.06	311.23
2+36.10, 21.94	62.94	307.97	308.60
2+53.22, 21.60	19.40	308.02	308.22
2+86.08, 20.95	61.95	308.22	308.84
3+53.19, 19.62	21.38	308.35	308.57
3+90.66, −40.88	59.77	309.08	308.48
4+50.94, 19.55	21.46	308.60	308.81
5+24.12, 21.46	62.46	308.93	309.55
5+68.56, 19.60	21.41	308.98	309.19
6+20.38, 20.32	61.42	309.23	309.84
6+27.96, 20.31	20.70	309.26	309.46
7+27.86, 20.08	20.92	309.95	310.16
7+96.99, 34.02	7.98	309.25	309.33



NOTES:

1. ALL LONGSIDE LEADS SHALL INCLUDE STACKS, RISERS, TEES, WYES, AND ALL APPURTENANCES TO END AT A DEPTH OF 4'-5' BELOW NATURAL GROUND. (SEE DETAIL SHT. 25)
2. ALL SANITARY SEWER SERVICE LINES TO BE 1% SLOPE, UNLESS OTHERWISE NOTED
3. ALL FIRE HYDRANTS TO BE LOCATED 3' BEHIND BACK OF CURB.
4. ALL UTILITY LEADS UNDER PAVEMENT IN CUL-DE-SACS AND/OR KNUCKLES TO BE BACKFILLED WITH CEMENT STABILIZED SAND UP TO PAVEMENT SUBGRADE.
5. SEE PROFILE FOR ACTUAL LOCATION OF EACH WATERLINE APPURTENANCE. PROFILE VIEW GOVERNS OVER PLAN VIEW.
6. HGL IS FOR THE 5-YR EVENT IN STORM SEWER.
7. WATER AND SANITARY SHALL MAINTAIN 9' HORIZONTAL CLEARANCE.
8. STORM AND SANITARY SHALL MAINTAIN 5' HORIZONTAL CLEARANCE.
9. STORM AND WATER SHALL MAINTAIN 4' HORIZONTAL CLEARANCE.

SANITARY SEWER CONNECTION NOTE: THE CONTRACTOR SHALL CONNECT THE PROPOSED 8-INCH SANITARY SEWER LINE TO THE SANITARY SEWER MANHOLE BY MEANS OF CORE AND BOOT AT SPECIFIED FLOWLINE. THE OPENING IN THE SIDE OF THE MANHOLE SHALL NOT BE MORE THAN 3-INCHES NOR LESS THAN 1-INCH IN DIAMETER THAN THE OUTSIDE DIAMETER FOR THE PROPOSED PIPE. THE PROPOSED PIPE SHALL NOT PROTRUDE MORE THAN 3-INCHES PAST THE INSIDE FACE OF THE MANHOLE WALL. FILL THE ENTIRE VOID AROUND THE PROPOSED PIPE WITH NON-SHRINK WATERPROOF GROUT. CONTRACTOR TO CONSTRUCT SLOPE AT INVERT OF MANHOLE UNDER POINT OF SANITARY SEWER CONNECTION. THE CONTRACTOR SHALL BACKFILL THE EXCAVATION AROUND THE EXISTING MANHOLE WITH CEMENT-SAND.

CITY OF MONTGOMERY, CITY ENGINEER SIGNATURE VALID FOR ONE (1) YEAR

DATE

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HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
EAST ROSE MARIE LANE PLAN & PROFILE 0+00-8+17

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

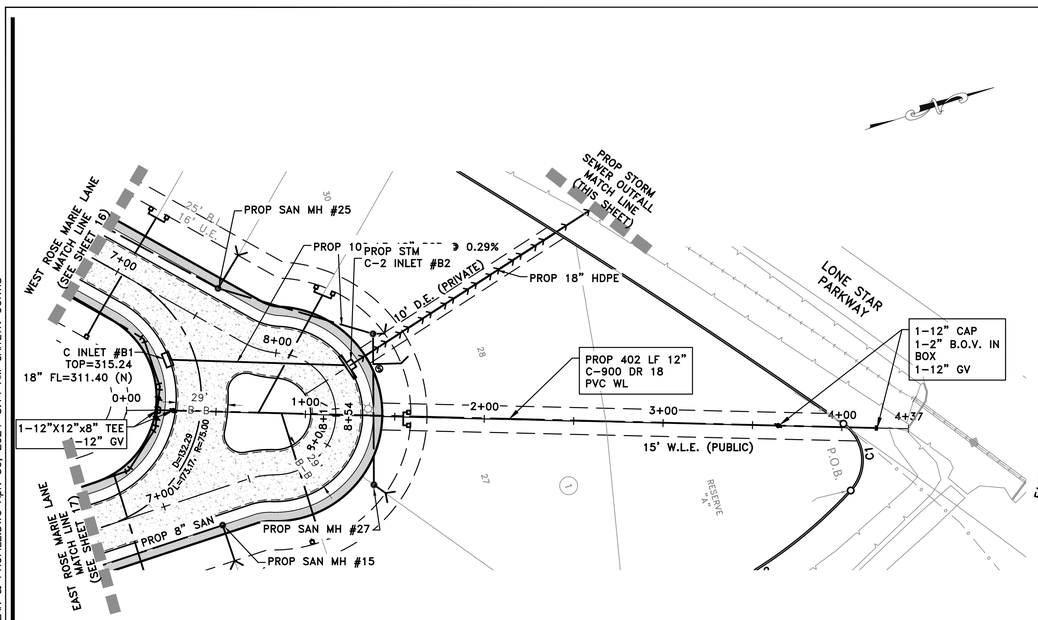
DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 40' (24x36) 1" = 80' (11x17)	SHEET	17

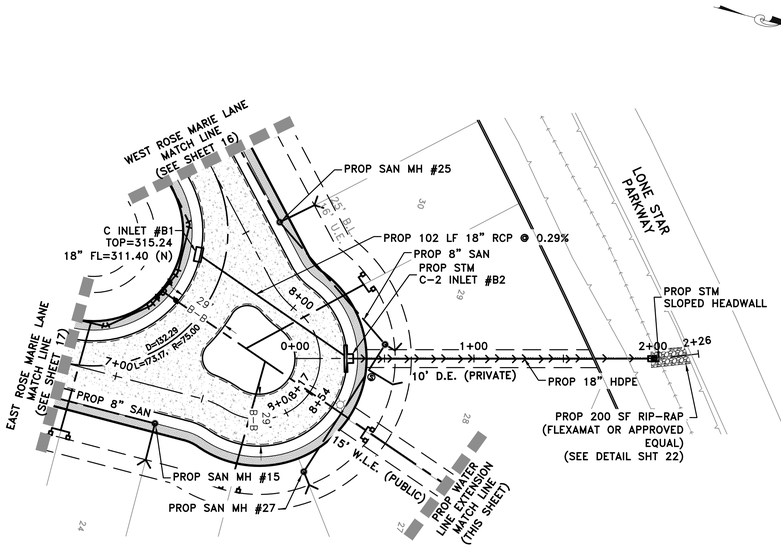
STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

* REFER TO SHT 15 FOR LEGEND

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\17 STREET D PLAN & PROFILE.DWG Apr. 30, 2024-8:13 AM CAITLYN CURTIS





0 40' 80'

LEGEND:

	EX ADJOINER LINE, ADJ
	EX SANITARY, SAN
	EX WATERLINE, WL
	EX STORM SEWER, STM
	EX DRAINAGE PATH, FL
	EX HIGH BANK, HB
	EX EASEMENT, ESMT
	EX BUILDING LINE, BL
P	EX OVERHEAD POWER, P
UG	EX UNDERGROUND POWER, UG
FO	EX FIBER, FO
T	EX TELEPHONE, T
G	EX GAS LINE, G
X	EX FENCE, FNC
	PROJECT BOUNDARY LINE, BNDY
	PROP SANITARY, SAN
	PROP WATERLINE, WL
	PROP STORM SEWER, STM
	PROP DRAINAGE PATH, FL
	PROP HIGH BANK, HB
	PROP EASEMENT, ESMT
	PROP BUILDING LINE, BL
P	PROP OVERHEAD POWER, P
UG	PROP UNDERGND POWER, UG
FO	PROP FIBER, FO
T	PROP TELEPHONE, T
G	PROP GAS LINE, G
X	PROP FENCE, FNC
	PROP PAVEMENT, PVMT
	PROP BACK OF CURB, BC
	PROP STACK

LEGEND:

	1" DOUBLE WATER METER
	3/4" SINGLE WATER METER
	6" DOUBLE SAN SWR LEAD
	4" SINGLE SAN SWR LEAD

PROP WATER LINE EXTENSION

SCALE:
1"=40' VERT
1"=4' VERT

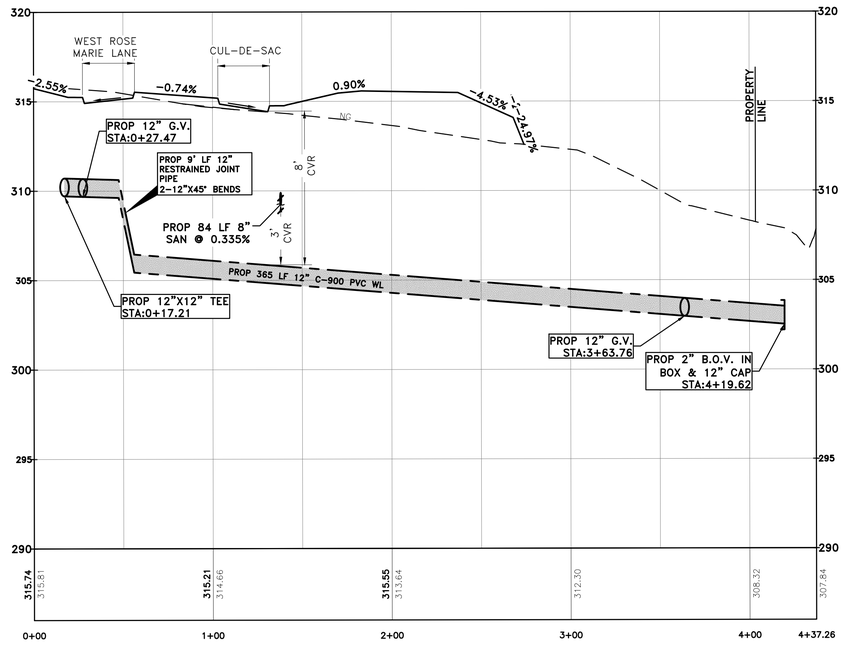


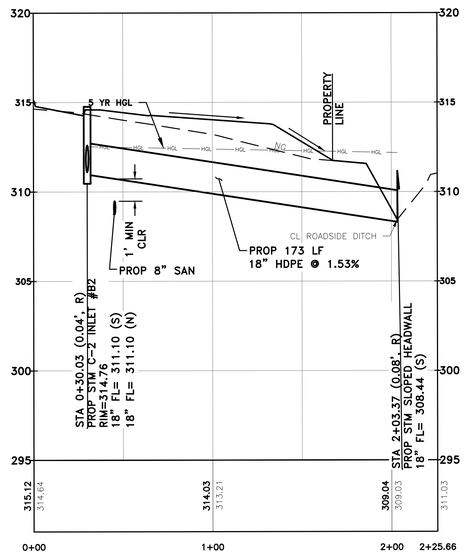
Table 7.3 - PROTECTION REQUIREMENTS AT WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	WATER UNDER SANITARY				SANITARY UNDER WATER			
	WATER		SANITARY		WATER		SANITARY	
	EXISTING SS	PROP SS	EXISTING SS	PROP SS	EXISTING WL	PROP WL	EXISTING WL	PROP WL
Minimum clear vertical clearance	18"	18"	18"	18"	18"	18"	18"	18"
Water & SS crossing main SS (or of WL centered on SS) Crossing. Provide centered joints on WL, equivalent to pt B functionality for these orientations of WL	√	√	√	√	√	√		√
Water & SS crossing main SS (or of SS centered on WL) Crossing. Provide centered joints on SS, equivalent to pt B functionality for these orientations of WL		√			√		√	√
Replace 1 full section of existing SS with pressure-rated DIP or pressure-rated PVC pipe with mechanical restrained joints and with adequate bedding	1,2,3		1,2		√			
Provide DIP for small diameter WL (less than 24-inches), PVC pipe is only allowed if encased in per NMCL 108.04, and two centered joints for both DIP and PVC			√	√	√	√		
Embed SS with CSS for 6 feet each length of 1 pipe segment plus 1 foot beyond the joints on each end	1,2,3	1,2	1,2	1,2	1,2,4	1,2	1,2	1,2
Water & SS crossing main SS (or of WL centered on SS) Crossing. Provide centered joints on SS, equivalent to pt B functionality for these orientations of WL, or encase bell (DIP) or pressure pipe joints SS (or centered on WL) joints with concrete 6 ft lateral				√	√	√		

1. Minimum clearance is 2-foot for non-pressure-rated SS and pressure-rated SS (with at least 150 psi pressure rating). If less than 2-foot can not be achieved, then the line is to be encased.
2. Minimum clearance is 3-foot for non-pressure-rated SS and 1-foot for pressure-rated SS.
3. Required if existing SS is disturbed and/or there is evidence of leakage.
4. Not required for augered WL unless there is evidence of leakage, completely fill augered hole with bentonite/clay mixture.
5. Not required for augered SS, completely fill augered hole with bentonite/clay mixture.
6. Not allowed.
7. Both Waterline and Wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards.
8. Maintain joint uniform including water line protections shall be shown on profile view.

PROP STORM SEWER OUTFALL

SCALE:
1"=40' VERT
1"=4' VERT



NOTES:

1. ALL LONGSIDE LEADS SHALL INCLUDE STACKS, RISERS, TEES, WYES, AND ALL APPURTENANCES TO END AT A DEPTH OF 4'–5' BELOW NATURAL GROUND. (SEE DETAIL SHT. 25)
2. ALL SANITARY SEWER SERVICE LINES TO BE 1% SLOPE, UNLESS OTHERWISE NOTED
3. ALL FIRE HYDRANTS TO BE LOCATED 3' BEHIND BACK OF CURB.
4. ALL UTILITY LEADS UNDER PAVEMENT IN CUL–DE–SACS AND/OR KNUCKLES TO BE BACKFILLED WITH CEMENT STABILIZED SAND UP TO PAVEMENT SUBGRADE.
5. SEE PROFILE FOR ACTUAL LOCATION OF EACH WATERLINE APPURTENANCE. PROFILE VIEW GOVERNS OVER PLAN VIEW.
6. HGL IS FOR THE 5–YR EVENT IN STORM SEWER.
7. WATER AND SANITARY SHALL MAINTAIN 9' HORIZONTAL CLEARANCE.
8. STORM AND SANITARY SHALL MAINTAIN 5' HORIZONTAL CLEARANCE.
9. STORM AND WATER SHALL MAINTAIN 4' HORIZONTAL CLEARANCE.

SANITARY SEWER CONNECTION NOTE: THE CONTRACTOR SHALL CONNECT THE PROPOSED 8–INCH SANITARY SEWER LINE TO THE SANITARY SEWER MANHOLE BY MEANS OF CORE AND BOOT AT SPECIFIED FLOWLINE. THE OPENING IN THE SIDE OF THE MANHOLE SHALL NOT BE MORE THAN 3–INCHES NOR LESS THAN 1–INCH IN DIAMETER THAN THE OUTSIDE DIAMETER FOR THE PROPOSED PIPE. THE PROPOSED PIPE SHALL NOT PROTRUDE MORE THAN 3–INCHES PAST THE INSIDE FACE OF THE MANHOLE WALL. FILL THE ENTIRE VOID AROUND THE PROPOSED PIPE WITH NON–SHRINK WATERPROOF GROUT. CONTRACTOR TO CONSTRUCT SLOPE AT INVERT OF MANHOLE UNDER POINT OF SANITARY SEWER CONNECTION. THE CONTRACTOR SHALL BACKFILL THE EXCAVATION AROUND THE EXISTING MANHOLE WITH CEMENT–SAND.

CITY OF MONTGOMERY, CITY ENGINEER
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PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
PROP WATER LINE & STM EXTENSION PLAN & PROFILE

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

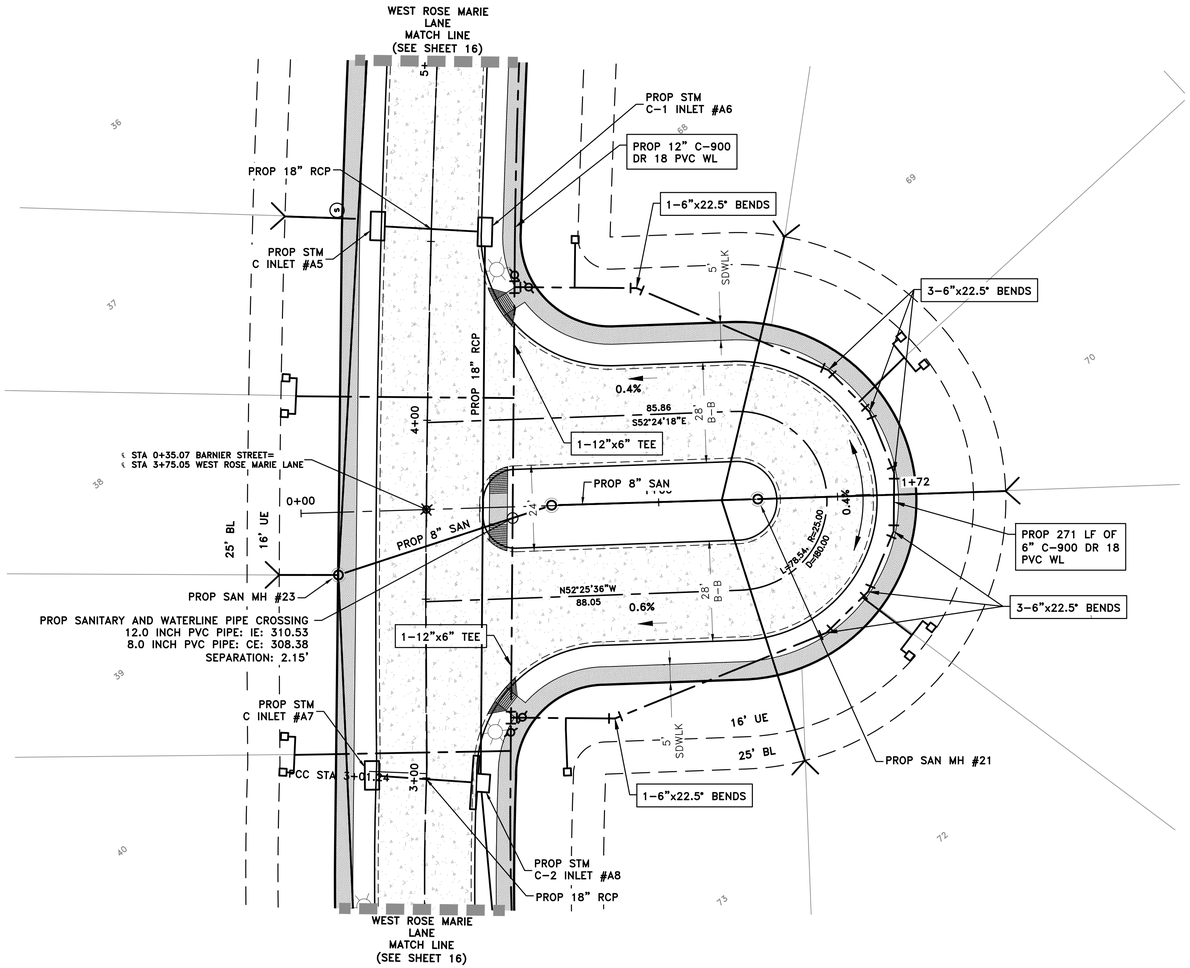
DRAWING INFORMATION

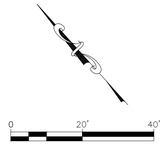
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 40' (24x36) 1" = 80' (11x17)	SHEET	18

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 – HOTC5 – K HOV\03 CAD\DESIGN SET\18 STREET D WATER LINE AND STM PLAN & PROFILE.DWG Apr. 30, 2024–8:14 AM CAITLYN CURTIS



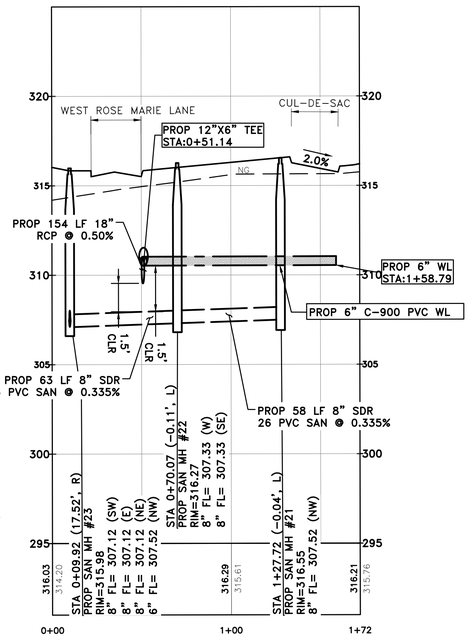


LEGEND:

- 1" DOUBLE WATER METER
- 3/4" SINGLE WATER METER
- 6" DOUBLE SAN SWR LEAD
- 4" SINGLE SAN SWR LEAD

SAN LEAD TABLE			
STATION & OFFSET	LENGTH	START FL	END FL
1+17.65, −0.02	75.75	311.82	312.58
1+17.65, −0.02	76.37	311.82	312.58
1+27.72, −0.04	69.31	312.13	312.82

BARNIER STREET
SCALE:
1"=40' HORIZ
1"=4' VERT



NOTE:
ALL LEADS OVER 6' DEEP ARE REQUIRED TO HAVE A STACK ADDED PER DETAIL SO NEAREST FLOWLINE IS NOT DEEPER THAN 6' AT THE CONNECTION.

LEGEND:

EX ADJOINER LINE, ADJ	
EX SANITARY, SAN	
EX WATERLINE, WL	
EX STORM SEWER, STM	
EX DRAINAGE PATH, FL	
EX HIGH BANK, HB	
EX EASEMENT, ESMT	
EX BUILDING LINE, BL	
P	EX OVERHEAD POWER, P
UG	EX UNDERGROUND POWER, UG
FO	EX FIBER, FO
T	EX TELEPHONE, T
G	EX GAS LINE, G
X	EX FENCE, FNC
PROJECT BOUNDARY LINE, BNDY	
PROP SANITARY, SAN	
PROP WATERLINE, WL	
PROP STORM SEWER, STM	
PROP DRAINAGE PATH, FL	
PROP HIGH BANK, HB	
PROP EASEMENT, ESMT	
PROP BUILDING LINE, BL	
P	PROP OVERHEAD POWER, P
UG	PROP UNDERGND POWER, UG
FO	PROP FIBER, FO
T	PROP TELEPHONE, T
G	PROP GAS LINE, G
X	PROP FENCE, FNC
PROP PAVEMENT, PVMT	
PROP BACK OF CURB, BC	
PROP STACK	

NOTES:

1. ALL LONGSIDE LEADS SHALL INCLUDE STACKS, RISERS, TEES, WYES, AND ALL APPURTENANCES TO END AT A DEPTH OF 4'-5' BELOW NATURAL GROUND. (SEE DETAIL SHT. 25)
2. ALL SANITARY SEWER SERVICE LINES TO BE 1% SLOPE, UNLESS OTHERWISE NOTED
3. ALL FIRE HYDRANTS TO BE LOCATED 3' BEHIND BACK OF CURB.
4. ALL UTILITY LEADS UNDER PAVEMENT IN CUL-DE-SACS AND/OR KNUCKLES TO BE BACKFILLED WITH CEMENT STABILIZED SAND UP TO PAVEMENT SUBGRADE.
5. SEE PROFILE FOR ACTUAL LOCATION OF EACH WATERLINE APPURTENANCE. PROFILE VIEW GOVERNS OVER PLAN VIEW.
6. HGL IS FOR THE 5-YR EVENT IN STORM SEWER.
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9. STORM AND WATER SHALL MAINTAIN 4' HORIZONTAL CLEARANCE.

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DATE

Table 7.3 - PROTECTION REQUIREMENTS AT WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

	SEWER CROSSING OVER WATER				SEWER CROSSING UNDER WATER			
	SSXWOVER SS	SSXPOV SS	WXSSOVER SS	WXPOV SS	SSXWUNDER WL	SSXPUN WL	WXSSUNDER WL	WXPUN WL
Minimum free vertical clearance	18"	18"	18"	18"	18"	18"	18"	18"
Where 1 full section (min. 18 in) of WL centered on SS. Encircle. Provide extra bedding on WL, extended from 9 ft beyond SS to 9 ft beyond SS (min. 27 ft)	√	√	√	√	9'[1]	√		√
Where 1 full section (min. 18 in) of SS centered at WL. Encircle. Provide sealed joints on SS, spaced at least 9 ft horizontally from centerline of WL		√			9'[1]		√	√
Replace 1 full section, extending 9ft (9ft beyond each side of WL crossing) of SS PVC pipe with stronger and sealed joints centered at WL crossing	9'[2]		9'		9'[1]			
Provide 20ft (or one full length) of WL (Ductile Iron Pipe) encased in 8 mil polyethylene tube per AWWA C105/A21.5, and be centered at 10ft on the both ESP and PVC pipe			√	√	√	√		
Embed SS with CDF for the total length, or 3 pipe segments (whichever is greater) of SS pipe centered at WL	9'[2]	9'	9'	9'	9'[1]	9'	9'	9'
Where 1 full section (min. 18 in) of min. 150 psi SS centered at WL crossing. Provide sealed joints on SS, spaced at least 9 ft horizontally from centerline of WL. Pressure test SS to 150 psi for 10 minutes prior to BSI for review of pressure test. Submit a minimum of 3 photos.				√	9'[1]	√	√	

1. Minimum clearance is 2 feet for non-pressure rated SS and pressure rated SS (with at least 150 psi pressure rating). If less than 2 feet can not be achieved, then the line is to be encased.
2. Minimum clearance is 2 feet for non-pressure rated SS and 1 foot for pressure rated SS.
3. Required if sealing SS is disturbed and/or there is evidence of leakage.
4. Not required for augered WL unless there is evidence of leakage, completely fill augered hole with bentonite/clay-solution.
5. Not required for augered SS, completely fill augered hole with bentonite/clay-solution.
6. Not allowed.
7. Both Waterline and Wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards.
8. Perimeter joint sections including water line protections shall be chosen on profile view.

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MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
BARNIER STREET PLAN & PROFILE 0+00-1+72

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 20' (24x36) 1" = 40' (11x17)	SHEET	19

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

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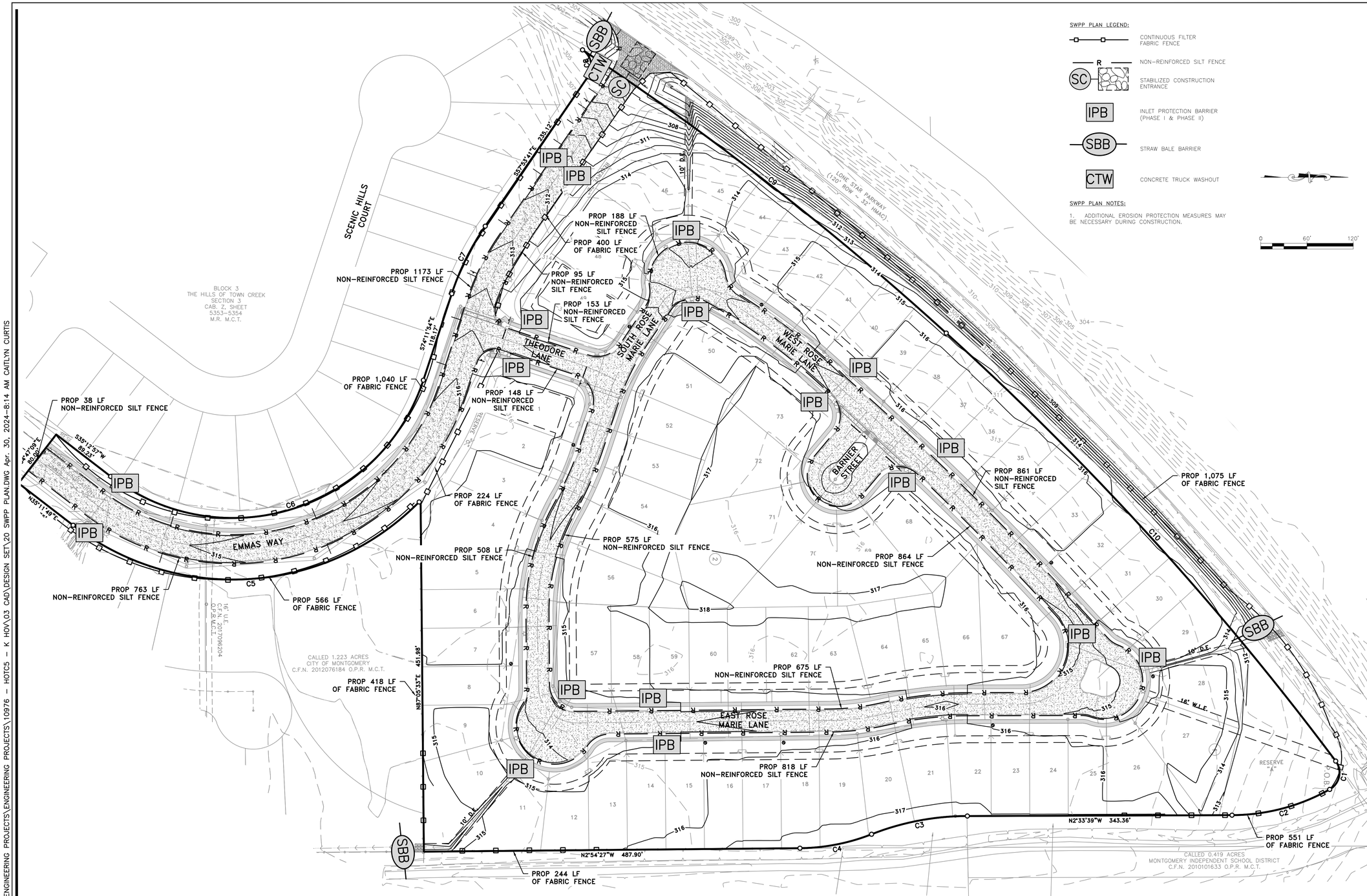

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HOUSTON, TX 77040

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HILLS OF TOWN CREEK
SECTION 5
SWPP PLAN

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	1" = 60' (24x36) 1" = 120' (11x17)	SHEET	20

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

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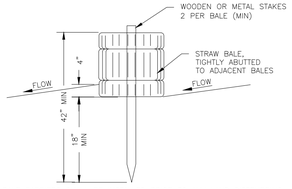
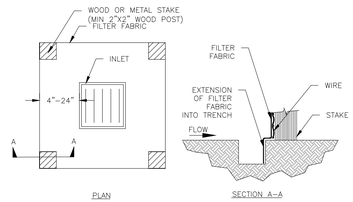


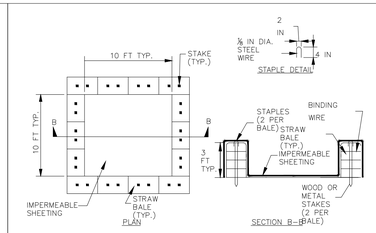
NOTES:
1. STRAW BALE BARRIERS SHALL BE INSTALLED PRIOR TO ANY LAND DISTRURBING ACTIVITIES.
2. BALES SHALL CONSIST OF APPROXIMATELY 5 CF OF CERTIFIED WEED FREE HAY OR STRAW AND WEIGH NOT LESS THAN 35 POUNDS.
3. BALES ARE TO BE PLACED IN A SINGLE ROW WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.
4. EACH BALE IS TO BE SECURELY ANCHORED WITH AT LEAST TWO STAKES AND THE FIRST STAKE IS TO BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
5. STAKES ARE TO BE A MINIMUM OF 42" LONG. METAL STAKES SHALL BE STANDARD "T" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD STAKES SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2".
6. BALES ARE TO BE BOUND WITH EITHER WIRE OR STRING AND ORIENTED SUCH THAT THE BINDINGS ARE AROUND THE SIDES AND NOT ALONG THE TOPS AND BOTTOMS OF THE BALE.
7. GAPS BETWEEN BALES ARE TO BE CHINKED (FILLED BY WEDGING) WITH STRAW OR THE SAME MATERIAL AS THE BALE.
8. END BALES ARE TO EXTEND UPSLOPE SO THE TRAPPED RUNOFF CANNOT FLOW AROUND THE ENDS OF THE BARRIER.
9. CONTRACTOR SHALL INSPECT STRAW BALE BARRIERS IMMEDIATELY AFTER EACH RAINFALL. AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
10. DAMANGED OR INEFFECTIVE BARRIERS SHALL PROMPTLY BE REPAIRED. UNTRENCHED BALES NEED TO BE REPAIRED WITH COMPACTED BACKFILL MATERIAL.
11. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALE BARRIERS WHEN IT ACCUMULATES TO APPROXIMATELY ½ THE HEIGHT OF THE BARRIER.
12. STRAW BALE BARRIERS SHALL BE REMOVED WHEN ADEQUATED VEGETATIVE COVER IS ATTAINED.

STRAW BALE BARRIER DETAIL
NTS



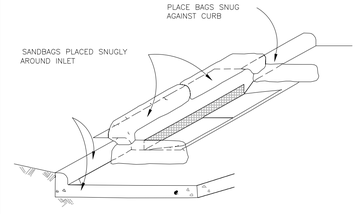
NOTES:
1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POST WITH STAPLES.
3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE, WITH TIES SPACED EVERY 24" AT TOP & MIDSECTION.
4. MINIMUM HEIGHT OF FILTER SHOULD BE 18 INCHES AND A MAXIMUM OF 36 INCHES ABOVE NATURAL GROUND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED 6" AT THE POSTS, & FOLDED.
6. SEE STANDARD SPECIFICATION FOR FILTER FABRIC BARRIER.

SILT FENCE INLET PROTECTION BARRIER
NTS



NOTES:
1. CAN BE TWO STACKED BALES OR PARTIALLY EXCAVATED TO REACH 3" MINIMUM DEPTH
2. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
3. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
4. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
5. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
6. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.

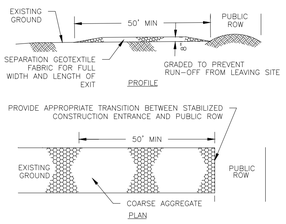
CONCRETE TRUCK WASHOUT DETAIL
NTS



SEE CONSTRUCTION HANDBOOK SECTION 4.3.4 FOR SANDBAG DESIGN AND MAINTENANCE REQUIREMENTS

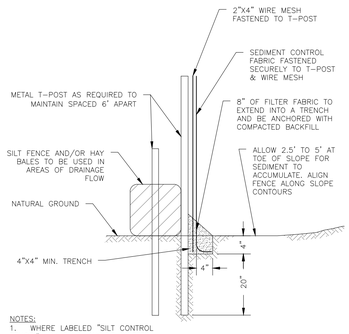
GENERAL NOTES:
1. BAGS OR WATTLES CAN BE USED FOR THIS APPLICATION.
2. PROVIDE WOVEN OR UNWOVEN GEOTEXTILE FILTER FABRIC FOR BAGS.
3. PROVIDE COARSE SAND AND AGGREGATE MIX FOR FILL MATERIAL FOR BAGS. USE ONLY PARTICLES CONSISTING OF CLEAN, HARD, DURABLE MATERIALS FREE FROM ADHERENT COATINGS, SALT, ALKALI, DIRT, CLAY, LOAM, SHALE, SOFT OR FLAKY MATERIALS, OR ORGANIC AND INJURIOUS MATTER.
4. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.

INLET PROTECTION BARRIER FOR STAGE 1 INLETS
NTS



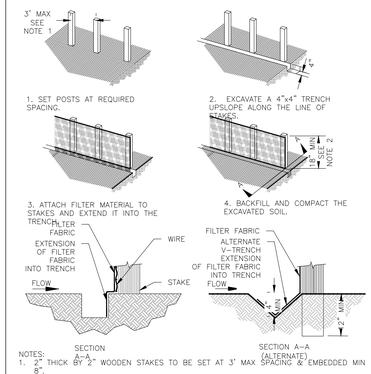
NOTES:
1. LENGTH SHALL BE AS SHOWN ON THE CONSTR. DRAWINGS, BUT NOT LESS THAN 50 FEET.
2. THICKNESS SHALL BE NOT LESS THAN 8 INCHES.
3. WIDTH SHALL BE NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
4. STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTR. EXIT, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
5. STABILIZED AREA MAY BE WIDENED/ LENGTHENED TO ACCOMMODATE A TRUCK WASHING AREA.
6. AN OUTLET SEDIMENT TRAP MUST BE PROVIDED FOR THE TRUCK WASHING AREA.
7. SEE STANDARD SPECIFICATION FOR STABILIZED CONSTRUCTION EXIT.
8. STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED FREE OF SEDIMENT FOR THE DURATION OF THE PROJECT.

STABILIZED CONSTRUCTION EXIT DETAIL
NTS



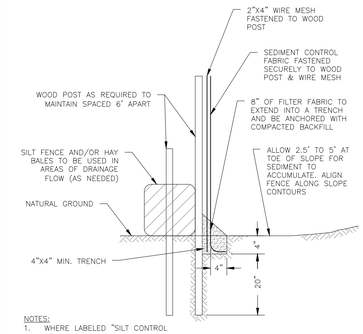
NOTES:
1. WHERE LABELED "SILT CONTROL FENCE," HAY BALE MAY BE OMITTED.
2. WHERE LABELED "HAY BALLE BARRIER," THE ENTRIE SILT FENCE ASSEMBLY SHALL BE BUILT

SILT FENCE ASSEMBLY
NTS



NOTES:
1. 2" THICK BY 2" WOODEN STAKES TO BE SET AT 3' MAX SPACING & EMBEDDED MIN 8".
2. IF PREASSEMBLED FENCE W/SUPPORT NETTING USED, SPACING OF POSTS MAY BE INCREASED TO 8' MAX.
3. ATTACH FILTER FABRIC TO WOODEN STAKES.
4. FILTER FABRIC FENCE SHALL HAVE MIN HEIGHT OF 18" & MAX HEIGHT OF 36" ABOVE NAT. GRND.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6" AT THE POSTS, AND FOLDED.
6. SEE STANDARD SPECIFICATION FOR FILTER FABRIC FENCE.

FILTER FABRIC FENCE DETAIL
NTS



NOTES:
1. WHERE LABELED "SILT CONTROL FENCE," HAY BALE MAY BE OMITTED.
2. WHERE LABELED "HAY BALLE BARRIER," THE ENTRIE SILT FENCE ASSEMBLY SHALL BE BUILT

NON-REINFORCED SILT FENCE ASSEMBLY
NTS

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

L SQUARED ENGINEERING
MUNICIPAL COMMERCIAL RESIDENTIAL
WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 22235
(MAIN OFFICE)
3307 W. DAVIS STREET #100
CONROE, TEXAS 77304
OFFICE: 936-647-0420
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
SWPP DETAILS

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

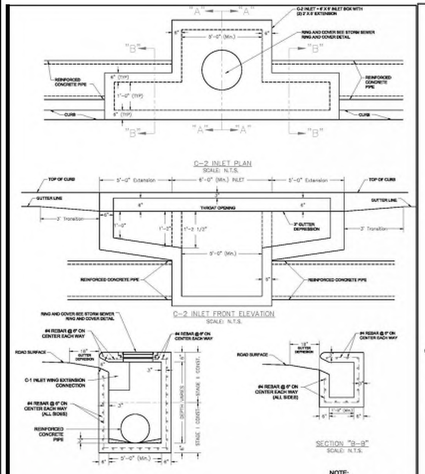
DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS NOTED	SHEET	21

JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

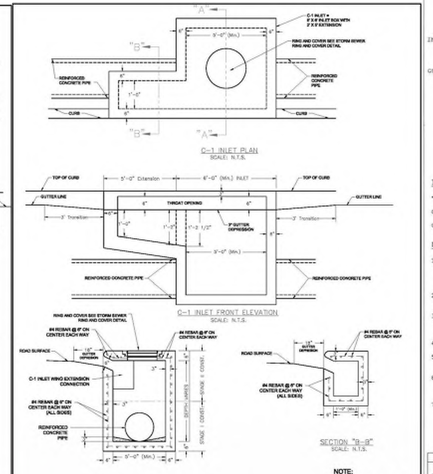
*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\21 SWPP DETAILS.DWG Apr. 30, 2024 - 8:14 AM CAITLYN CURTIS



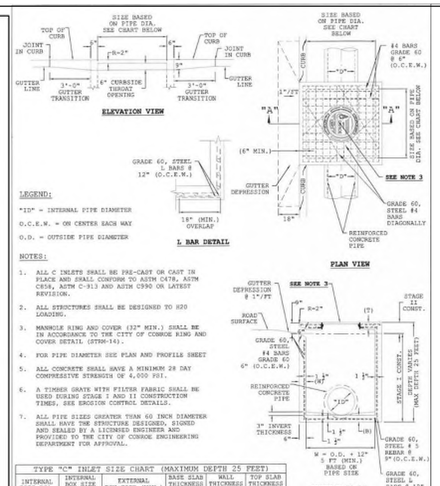
CITY OF CONROE ENGINEERING
300 W. DAVIS P.O. BOX 3066
CONROE, TEXAS 77305 (936) 522-3100

STANDARD "TYPE C-2" INLET DETAIL



CITY OF CONROE ENGINEERING
300 W. DAVIS P.O. BOX 3066
CONROE, TEXAS 77305 (936) 522-3100

STANDARD "TYPE C-1" INLET DETAIL



TYPE "C" INLET SIZE CHART (MAXIMUM DEPTH 25 FEET)

INTERNAL PIPE DIA.	INTERNAL BOX SIZE (MIN.)	EXTERNAL BOX SIZE (MIN.)	BASE SLAB THICKNESS (B) (MIN.)	WALL THICKNESS (W) (MIN.)	TOP SLAB THICKNESS (T) (MIN.)
24" to 48"	5' x 5'	6' x 6'	6"	6"	6"
60"	6' x 6'	7' x 7'	6"	8"	8"

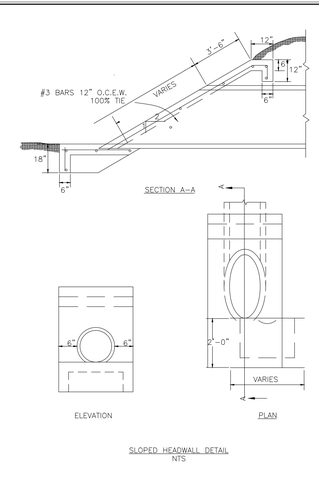
CITY OF CONROE ENGINEERING
300 W. DAVIS P.O. BOX 3066
CONROE, TEXAS 77305 (936) 522-3100

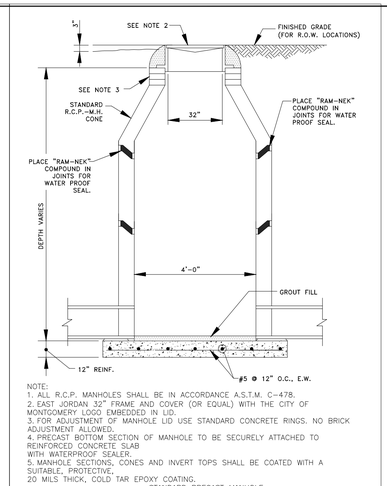
STORM WATER SYSTEM "TYPE C" INLET

Revision Date 03/ 03 /2020

Approved By:

STRM-09





NOTE:
1. ALL R.C.P. MANHOLES SHALL BE IN ACCORDANCE A.S.T.M. C-478.
2. EAST JORDAN 32" FRAME AND COVER (OR EQUAL) WITH THE CITY OF MONTGOMERY LOGO EMBEDDED IN LID.
3. FOR ADJUSTMENT OF MANHOLE LID USE STANDARD CONCRETE RINGS. NO BRICK ADJUSTMENT ALLOWED.
4. PRECAST BOTTOM SECTION OF MANHOLE TO BE SECURELY ATTACHED TO REINFORCED CONCRETE SLAB WITH WATERPROOF SEALER.
5. MANHOLE SECTIONS, CONES AND INVERT TOPS SHALL BE COATED WITH A SUITABLE, PROTECTIVE, 20 MILS THICK, COLD TAR EPOXY COATING.

STANDARD PRECAST MANHOLE
NTS

L SQUARED ENGINEERING
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13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

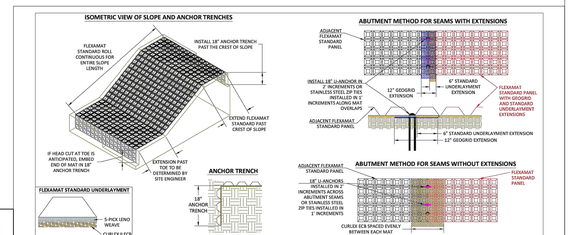
HILLS OF TOWN CREEK
SECTION 5
DRAINAGE & STORM SEWER DETAILS

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS NOTED	SHEET	22

04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE



FLEXAMAT STANDARD - SLOPE ARMORING

CONSTRUCTION NOTES:
1. AN ENGINEER OR MANUFACTURERS REPRESENTATIVE SHALL BE ONSITE FOR THE START OF THE INSTALLATION.
2. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND.
3. PRIOR TO FLEXAMAT STANDARD INSTALLATION SEED AND FERTILIZE SUBGRADE WITH SITE SPECIFIC SEED MIX IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
4. INSTALL FLEXAMAT STANDARD MATS THAT ARE CONTINUOUS FOR ENTIRE SLOPE LENGTH. FOR SLOPES LONGER THAN 50', USE MATS WITH EXTENSIONS CUT TO THE LENGTH OF THE SLOPE. INSTALL MATS SO THAT THE MATTING EXTENDS PAST THE CREST OF SLOPE AND INTO AN 18" ANCHOR TRENCH.
   4.1. FOR ARMORED SLOPE LENGTHS OF OR LESS, INSTALL CURLEX ECB EQUALLY UNDER ADJACENT MATS. SECURE SEAM WITH #3 REBAR 18" U-ANCHORS IN 2' INCREMENTS ACROSS THE LENGTH OF THE ABUTMENT.
   4.2. ARMORED SLOPE LENGTHS LONGER THAN 50', INSTALL NEXT MAT OVER EXTENSIONS.
5. INSTALL SUBSEQUENT MATS OVER THE GEOGRID EXTENSION AND STANDARD UNDERLAYMENT EXTENSION OF THE PREVIOUSLY INSTALLED MAT. ENSURE THE GEOGRID AND STANDARD UNDERLAYMENT EXTENSIONS ARE LAYING FLAT ON THE SUBGRADE BEFORE INSTALLING ADJACENT MAT OVER THE EXTENSIONS.
6. INSTALL #3 REBAR 18" U-ANCHORS IN 2' INCREMENTS ACROSS THE GEOGRID AND STANDARD EXTENSION ABUTMENT. INSTALL ANCHORS PERPENDICULAR TO THE SLOPE DIRECTLY BEHIND FIRST ROW OF BLOCKS ON THE ADJACENT MAT.
7. AT THE END OF THE ARMORED SLOPE, IF HEAD CUT IS ANTICIPATED, EMBED THE MAT 18" IN A TERMINATION TRENCH. FILL AND COMPACT TERMINATION TRENCH WITH SUITABLE FILL.

MOTZ ENTERPRISES, INC.
Flexamat
(513)772-6689
info@Flexamat.com
Flexamat.com

REV: 1

CITY OF MONTGOMERY STORM SEWER MANHOLE COVER	DRAINAGE D–5

CITY OF MONTGOMERY, CITY ENGINEER SIGNATURE VALID FOR ONE (1) YEAR

DATE

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ⑤

Slope	Dia of Pipe (D)	Values for One Pipe W	X	Y	L	Reinf Conc (CY) ①	Conc (CY) ①	Values to be Added for Each Add'l Pipe Reinf X and W (Lbs)	Conc (CY) ①
3:1	33"	14'-5 3/4"	4'-8"	9'-6"	10'-11 3/4"	316	3.4	4'-8"	84	1.2
	36"	15'-7 3/4"	4'-11 1/2"	10'-3"	11'-10"	349	3.8	5'-1"	96	1.4
	42"	17'-11 1/2"	5'-6 1/2"	11'-9"	13'-6 3/4"	430	4.9	5'-10"	119	1.8
	48"	21'-1 3/4"	6'-1 1/2"	14'-0"	16'-2"	535	6.5	6'-7"	146	2.4
	54"	23'-5 1/2"	6'-8 1/2"	15'-6"	17'-10 1/2"	628	7.8	7'-6"	186	3.0
	60"	25'-9 1/2"	7'-3 1/2"	17'-0"	19'-7 1/2"	717	9.2	8'-3"	219	3.5
	66"	28'-1"	7'-10 1/2"	18'-6"	21'-4 1/2"	809	10.7	8'-9"	242	4.0
	72"	30'-4 1/2"	8'-5 1/2"	20'-0"	23'-1 1/2"	922	12.3	9'-4"	272	4.6
4:1	33"	18'-1 3/4"	4'-8"	12'-8"	14'-7 3/4"	423	4.8	4'-8"	101	1.5
	36"	19'-7"	4'-11 1/2"	13'-8"	15'-9 1/2"	470	5.5	5'-1"	115	1.7
	42"	22'-5 1/2"	5'-6 1/2"	15'-8"	18'-1"	581	7.0	5'-10"	141	2.2
	48"	26'-6 1/2"	6'-1 1/2"	18'-8"	21'-6 1/2"	728	9.4	6'-7"	175	3.0
	54"	29'-5"	6'-8 1/2"	20'-8"	23'-10 1/2"	893	11.3	7'-6"	226	3.7
	60"	32'-3 1/2"	7'-3 1/2"	22'-8"	26'-2"	994	13.4	8'-3"	264	4.4
	66"	35'-2 1/2"	7'-10 1/2"	24'-8"	28'-5 1/2"	1,138	15.6	8'-9"	300	5.0
	72"	38'-1 1/2"	8'-5 1/2"	26'-8"	30'-9 1/2"	1,295	18.0	9'-4"	334	5.7
6:1	33"	25'-5 1/2"	4'-8"	19'-0"	21'-11 1/2"	673	8.3	4'-8"	127	2.1
	36"	27'-5 1/2"	4'-11 1/2"	20'-6"	23'-4"	733	9.5	5'-1"	144	2.4
	42"	31'-6 1/2"	5'-6 1/2"	23'-6"	27'-1 1/2"	920	12.1	5'-10"	179	3.1
	48"	37'-3 1/2"	6'-1 1/2"	28'-0"	32'-4"	1,189	16.6	6'-7"	231	4.1
	54"	41'-4 1/2"	6'-8 1/2"	31'-0"	35'-9 1/2"	1,422	20.0	7'-6"	300	5.1
	60"	45'-4 3/4"	7'-3 1/2"	34'-0"	39'-3"	1,629	23.8	8'-3"	353	6.1

① Quantities shown are for concrete pipe and will increase slightly for metal pipe installation.

② For vehicle safety, reduce curb heights, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

③ Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.

④ Dimensions shown are usual and maximum.

⑤ Quantities shown are for one structure end. (One headwall)

⑥ Min Length = 6' + 2' x $\left|\frac{12 \times H - 7}{12 \times 1}\right|$

Max Length = 12 x H - 3' x $\left|\frac{12 \times H - 7}{12 \times 1}\right|$ - 1'

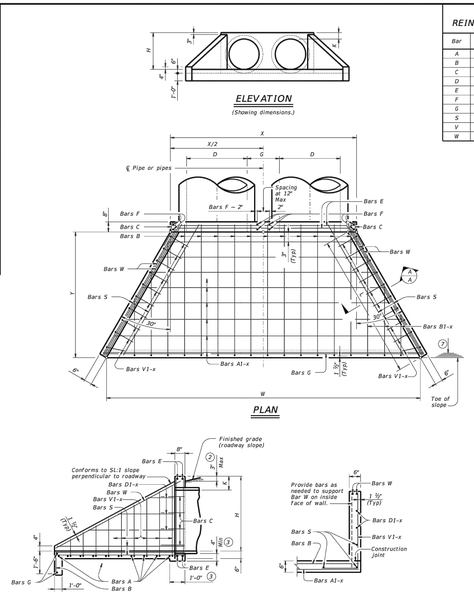
⑦ Lengths of wings based on SL:1 slope along this line.

TABLE OF REINFORCING STEEL ③

Bar	Size	Spa	No
A	#4	1'-0"	–
B	#3	1'-6"	–
C	#4	1'-0"	–
D	#3	1'-0"	–
E	#5	–	4
F	#5	–	–
G	#3	–	2
S	#4	–	6
V	#4	1'-0"	–
W	#5	–	4

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K ④	H
33"	1'-11"	1'-0"	3'-9"
36"	2'-1"	1'-0"	4'-0"
42"	2'-4"	1'-0"	4'-6"
48"	2'-7"	1'-3"	5'-3"
54"	3'-0"	1'-3"	5'-9"
60"	3'-3"	1'-3"	6'-3"
66"	3'-6"	1'-3"	6'-9"
72"	3'-9"	1'-3"	7'-3"



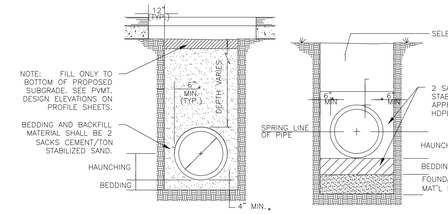
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

SHEET 1 OF 3

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT WITH FLARED WINGS
FOR 0° SKEW PIPE CULVERTS
TYPE I ~ CROSS DRAINAGE
SETP-FW-0

File: CD-SETP-FW0-20.dgn	dn: GAF	ck: CAT	dw: BBH	ck: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.



FOUNDATION:
A FOUNDATION IS REQUIRED WHEN THE TRENCH BOTTOM IS UNSTABLE. ANY FOUNDATION THAT WILL SUPPORT A RIGID PIPE WITHOUT CAUSING LOSS OF GRADE OR FLEXURAL BREAKING WILL BE MORE THAN ADEQUATE FOR PVC PIPES.

BEDDING:
THE BEDDING DIRECTLY UNDERNEATH THE PIPE IS REQUIRED ONLY TO BRING THE TRENCH BOTTOM UP TO GRADE. IT SHOULD NOT BE SO THICK OR SOFT THAT THE PIPE WILL SETTLE AND LOSE GRADE. THE PURPOSE OF THE BEDDING IS TO PROVIDE A FIRM, STABLE AND UNIFORM SUPPORT OF THE PIPE. A LAYER OF MATERIAL SUFFICIENT TO ESTABLISH LINE, GRADE, AND SUPPORT SHOULD BE PLACED. BELL HOLES SHOULD BE EXCAVATED TO INSURE UNIFORM BEARING.

HAUNCHING:
HAUNCHING AND INITIAL BACKFILL ARE THE MOST IMPORTANT IN TERMS OF LIMITING THE DEFLECTION OF AREAS HORIZONTAL A FLEXIBLE PIPE. THESE AREAS SHOULD BE COMPACTED TO REQUIRED OR SPECIFIED DENSITY.

NOTE 1: WHEN USING HDPE PIPE, THE BACKFILL MATERIAL SHALL BE CEMENT STABILIZED SAND (2 SACK CEMENT/TON) OR OTHER APPORVED BACKFILL MATERIAL AS SPECIFIED BY THE ENGINEER, AND IN ACCORDANCE TO CITY OF CONROE HDPE SPECIFICATION, SECTION 6.F FURTHER, THE BACKFILL MATERIAL SHALL BE USED FOR THE WHOLE DEPTH AND WIDTH OF ALL DITCHES, TRENCHES, ETC. UNDER ANY ROADWAY OR PAVED SURFACES. WHEN PIPES ARE NOT UNDER PAVED SURFACES, THE BACKFILL MATERIAL SHALL BE USED TO A MINIMUM OF 6" UNDER AND AROUND THE PIPE, BUT SHALL COVER THE FULL WIDTH OF THE TRENCH TO THE UNDISTURBED WALLS. THE MINIMUM DIMENSION OF THE TRENCH FOR THE HDPE PIPE SHALL BE AS SPECIFIED IN THE HDPE SPECIFICATION, TABLE 6.1.

NOTE 2: ONLY RCP (REINFORCED CONC PIPE) SHALL BE USED UNDER THE PAVED SURFACE OF ROADWAYS. PIPE MAY ONLY BE PLACED UNDER A ROADWAY WHEN IT RUNS PERPENDICULAR TO A ROADWAY. PIPE MAY RUN LONGITUDINALLY BESIDE THE ROADWAY IN THE R.O.W.

NOTE 3: BACKFILL ABOVE THE BEDDING SHALL CONFORM TO "TYPICAL STORM SEW. BACKFILL AND TRENCH REPAIR" STANDARD DRAWING D–5.

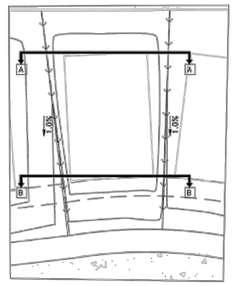
ASTM D–2321
DESCRIPTION OF EMBEDMENT MATERIALS
CLASS I

ANGULAR, 1/4" TO 1–1/2" GRADED STONE, INCLUDING A NUMBER OF FILL MATERIALS THAT HAVE REGIONAL SIGNIFICANCE, SUCH AS CORAL, SLAG, CINDERS, CRUSHED STONE AND CRUSHED SHELLS. CLASS I COARSE SANDS AND GRAVELS WITH MAXIMUM PARTICLE SIZE OF 1–1/2", INCLUDING VARIOUSLY GRADED SANDS, AND GRAVELS CONTAINING SMALL PERCENTAGES OF FINES, GENERALLY GRANULAR AND NONCOHESIVE, EITHER WET OR DRY. SOIL TYPES GW, GP, SW, AND SP ARE INCLUDED IN THIS CLASS. CLASS III FINE SAND AND CLAYEY GRAVELS, INCLUDING FINE SANDS AND SAND–CLAY MIXTURES, AND GRAVEL CLAY MIXTURES. SOIL TYPES GM, GC, SM AND SC ARE INCLUDED IN THIS CLASS.

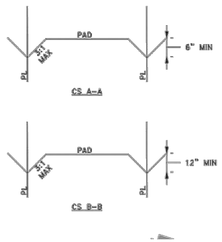
STORM SEWER BEDDING AND TRENCH DETAIL
NTS

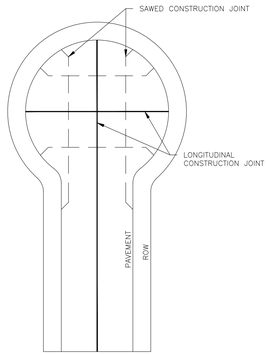
DATE: FILE:

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 – HOTC5 – K HOV\03 CAD\DESIGN SET\22 DRAINAGE & STORM SEWER DETAILS.DWG Apr. 30, 2024–8:14 AM CAITLYN CURTIS

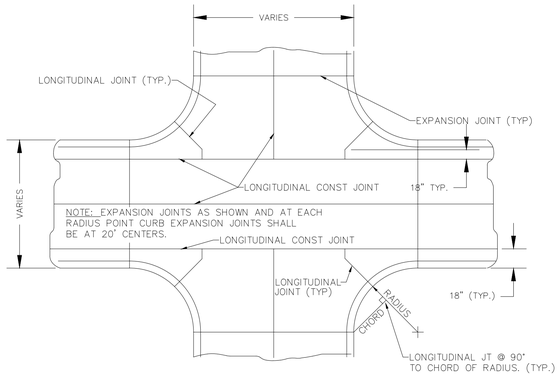


TYPICAL "A" LOT GRADING DETAIL
NTS

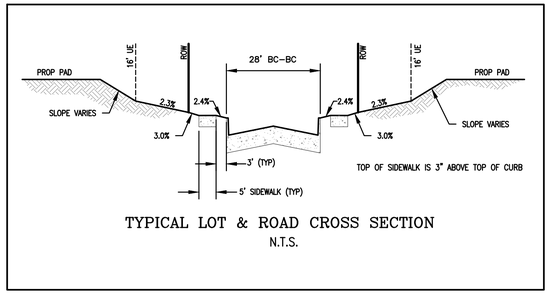




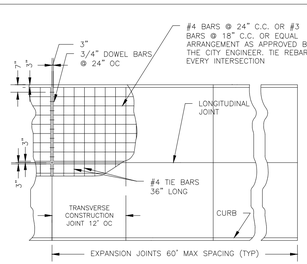
CONCRETE CONSTRUCTION JOINT DETAIL FOR CUL DE SAC
NTS



CONCRETE INTERSECTION

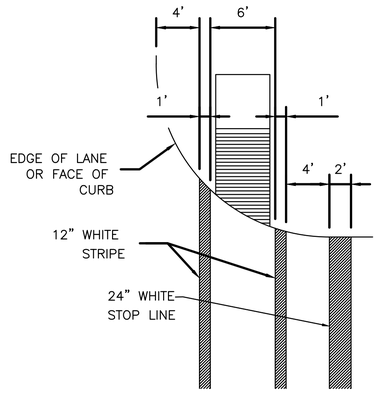


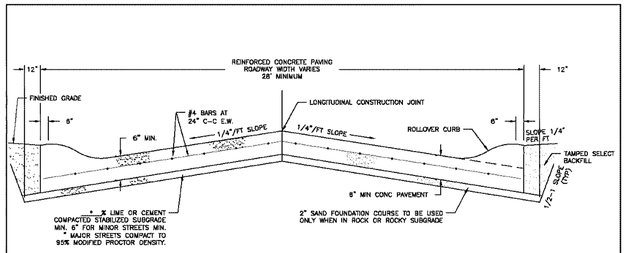
TYPICAL LOT & ROAD CROSS SECTION
N.T.S.



TYPICAL CONCRETE PAVEMENT DETAIL
NTS

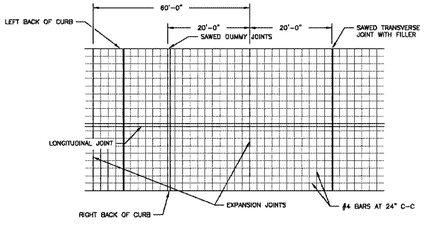
TYPICAL CROSSWALK PLACEMENT





REINFORCED CONCRETE PAVEMENT
(N.T.S.)

*MUST BE FILLED OUT BASED ON A GEOTECHNICAL REPORT SUBMITTED WITH THE PLANS FOR APPROVAL. THE GEOTECHNICAL REPORT SHALL INDICATE THE PERCENTAGE OF LIME OR CEMENT REQUIRD EVERY 200 FEET AT THE SUBGRADE DEPTH.

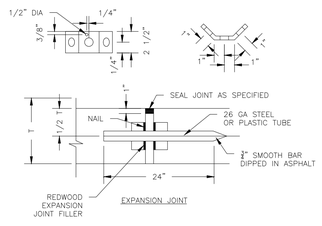


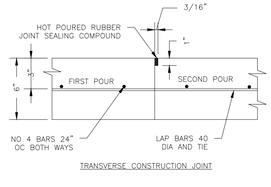
NOTE:

FOR PLASTICITY > 20 - USE LIME STAB.
FOR PLASTICITY < 10 - USE CEM. STAB.
FOR SILTY CLAYS - USE LIME - FLY ASH

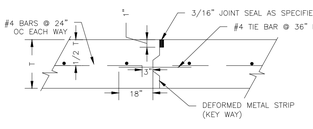
FOR P.I. BETWEEN 10 AND 20, THE LAB CERTIFICATION IS REQUIRED IF NO STABILIZATION IS USED.

CONSTRUCT SAWED JOINTS AT 20' CENTERS. EXPANSION JOINS TO BE AT INTERSECTIONS, BRIDGES AND OTHER STRUCTURE AND AT SPACINGS NOT TO EXCEED 60'. ALL JOINTS TO BE PROPERLY SEALED. A MANUALLY OPERATED SCREED EQUIPPED WITH A POWER VIBRATOR MAY BE USED. HAND FINISH SHALL BE USED WHEN NECESSARY.

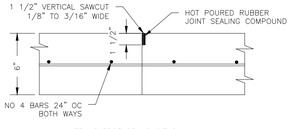




TRANSVERSE CONSTRUCTION JOINT

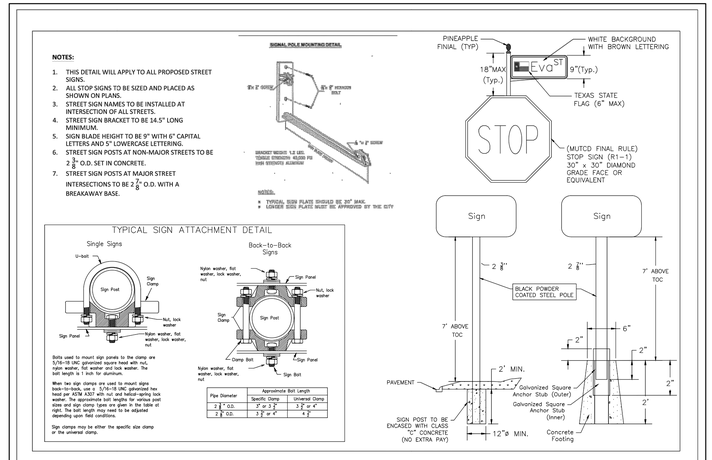


LONGITUDINAL JOINT



TRANSVERSE OR LONGITUDINAL SAWED DUMMY JOINT (CONTRACTION JOINT)

CONCRETE CONSTRUCTION JOINT DETAILS
NTS



CITY OF MONTGOMERY
STANDARD STREET SIGN

PAVING
P-6

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

REVISIONS
10-2013 REVISED NOTES

CITY OF MONTGOMERY
TYPICAL RESIDENTIAL CONCRETE PAVING WITH ROLLOVER CURB

PAVING
P-2

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WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 22329
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HOUSTON, TX 77040

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MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
PAVING DETAILS 1 OF 3

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

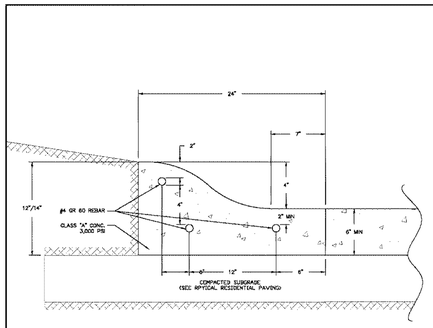
DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS NOTED	SHEET	23

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

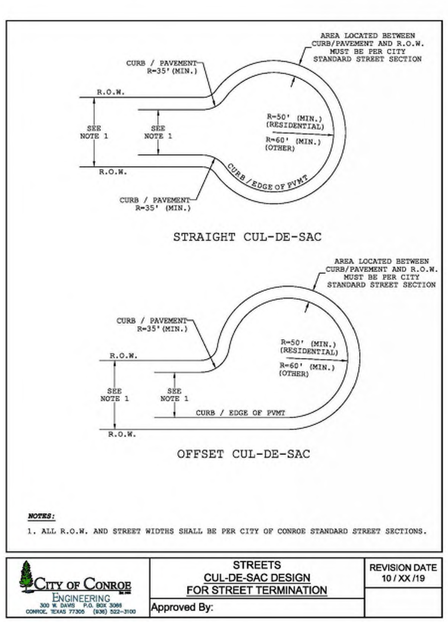
*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K. HOV\03 CAD\DESIGN SET\24 PAVING DETAILS.DWG Apr. 30, 2024-8:14 AM CAITLYN CURTIS



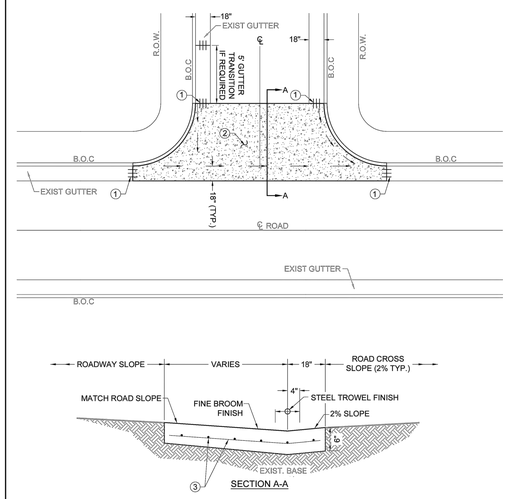
NOTES:
1. ALL HONEYCOMBING SHALL BE GROUTED TO PROVIDE A UNIFORM SURFACE.
2. WHEN HONEYCOMBING IS EXCESSIVE AS DETERMINED BY THE INSPECTOR, CURB AND GUTTER SHALL BE REPLACED.
3. BACKFILL BEHIND CURBS SHALL BE ACCOMPLISHED WITHIN 7 DAYS.
4. CURB AND GUTTER CONCRETE SHALL BE CLASS "A" (3000 PSI). CURB POURED WITH PAVEMENT SHALL MATCH PAVEMENT.
5. REINFORCING STEEL AS SHOWN.
6. EXPANSION JOINTS AT A MAXIMUM LENGTH OF 60 FEET.
7. SAWED CONTRACTION JOINTS EVERY 20 FEET BETWEEN EXPANSION JOINTS.
8. ALL JOINTS ARE TO BE PROPERLY SEALED.

REVISIONS	CITY OF MONTGOMERY	PAVING
10-2013 REVISED NOTES	ROLLOVER CURB & GUTTER	P-5



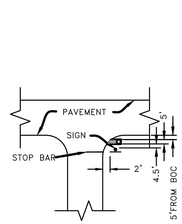
NOTES:
1. ALL R.O.W. AND STREET WIDTHS SHALL BE PER CITY OF CONROE STANDARD STREET SECTIONS.

CITY OF CONROE ENGINEERING 300 W. DAVIS P.O. BOX 3066 CONROE, TEXAS 77305 (936) 522-3100	STREETS CUL-DE-SAC DESIGN FOR STREET TERMINATION	REVISION DATE 10 / XX /19
	Approved By:	

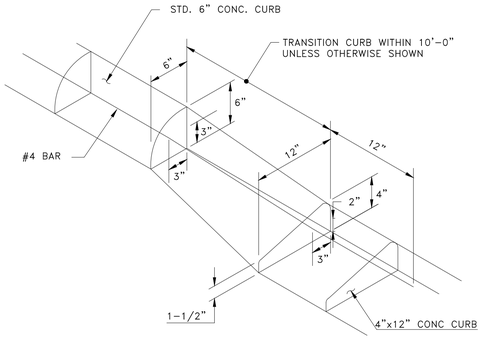


NOTES:
① 1/2" EXPANSION JOINTS (SEALED, GRAY COLOR TO MATCH) WITH SMOOTH DOWELS, #4, 18" LENGTH, ONE END COATED.
② 6" CLASS "A" CONCRETE, (4000 psi) CURED WITH WHITE PIGMENTED COMPOUND.
③ #4 REINFORCING STEEL, 12" O.C., BOTH WAYS.

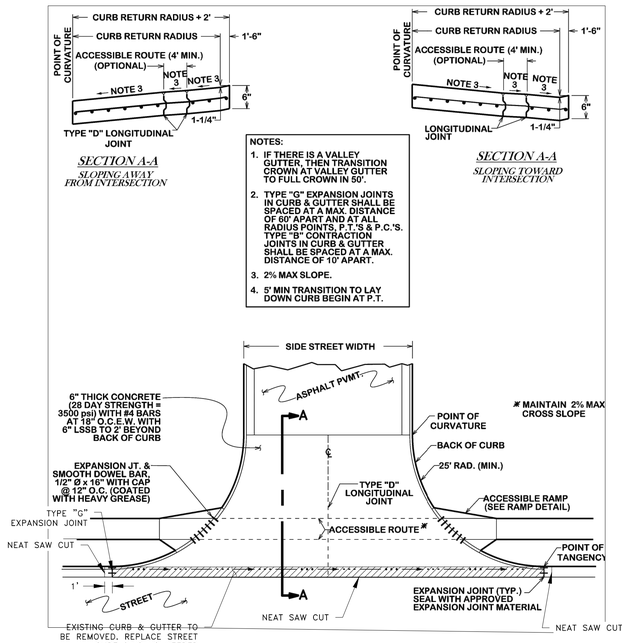
CITY OF CONROE ENGINEERING 300 W. DAVIS P.O. BOX 3066 CONROE, TEXAS 77305 (936) 522-3100	STREETS CONCRETE VALLEY / GUTTER AT ROAD INTERSECTION	REVISION DATE 04/26/2024
	Approved By:	ST-XX



SIGN LOCATION
N.T.S.

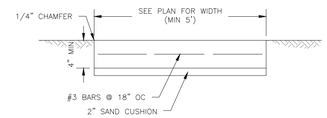


TYPICAL CURB TRANSITION
N.T.S.



NOTES:
1. **IF THERE IS A VALLEY GUTTER, THEN TRANSITION CROWN AT VALLEY GUTTER TO FULL CROWN IN 50'.**
2. **TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAX. DISTANCE OF 60' APART AND AT ALL RADIUS POINTS, P.T.'S & P.C.'S. TYPE "B" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAX. DISTANCE OF 10' APART.**
3. **2% MAX SLOPE.**
4. **5' MIN TRANSITION TO LAY DOWN CURB BEGIN AT P.T.**

TYPICAL STREET CONCRETE APRON
N.T.S.



NOTES:
1. SIDEWALKS SHALL NOT EXCEED 5% RUNNING SLOPE OR 2% CROSS SLOPE.
2. CONCRETE IS 3000 PSI OR EQUIVALENT TO SPECIFICATIONS.
3. SIDEWALKS TO BE MIN. OF 3' FROM BACK OF CURB.

TYPICAL SIDEWALK DETAIL
NTS

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21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

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K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
PAVING DETAILS 2 OF 3

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS NOTED	SHEET	24

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

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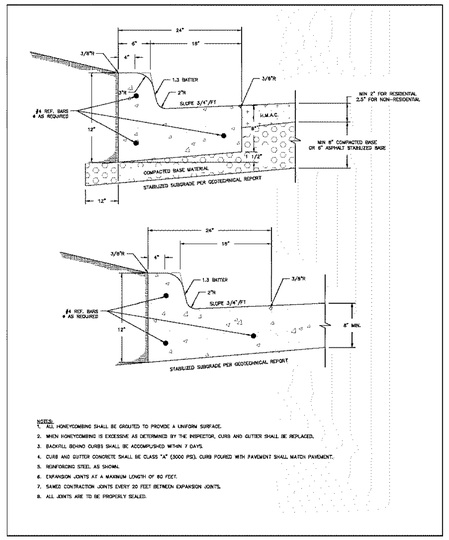

NOTES:
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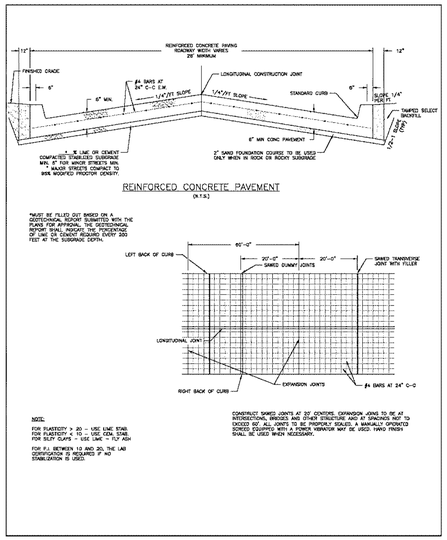
4. CURB AND GUTTER CONCRETE SHALL BE CLASS "A" (3000 PSI). CURB POURED WITH PAVEMENT SHALL MATCH PAVEMENT.
5. REINFORCING STEEL, AS SHOWN.
6. EXPANSION JOINTS AT A MAXIMUM LENGTH OF 80 FEET.
7. SAWED CONTRACTION JOINTS EVERY 20 FEET BETWEEN EXPANSION JOINTS.
8. ALL JOINTS ARE TO BE PROPERLY SEALED.

REVISIONS	CITY OF MONTGOMERY	PAVING
10-2013 REVISED NOTES	STANDARD CURB & GUTTER	P-4



REINFORCED CONCRETE PAVEMENT
(N.T.S.)

*MUST BE FILLED OUT BASED ON A GEOTECHNICAL REPORT SUBMITTED WITH THE PLANS FOR APPROVAL. THE GEOTECHNICAL REPORT SHALL INDICATE THE PERCENTAGE OF LIME OR CEMENT REQUIRED EVERY 200 FEET AT THE SUBGRADE DEPTH.

NOTE:
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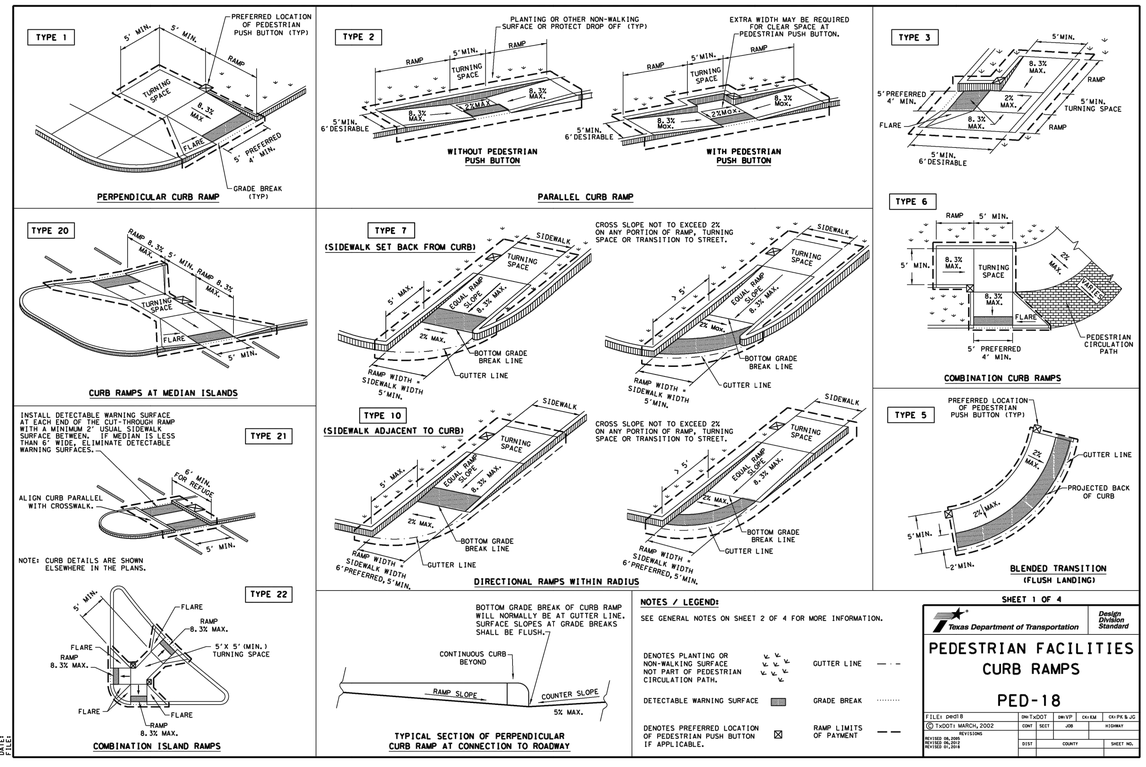
FOR PLASTICITY < 10 - USE CEM. STAB.
FOR SILTY CLAYS - USE LIME + FLY ASH

FOR P.I. BETWEEN 10 AND 20, THE LAB CERTIFICATION IS REQUIRED IF NO STABILIZATION IS USED.

CONSTRUCT SAWED JOINTS AT 20' CENTERS. EXPANSION JOINS TO BE AT INTERSECTIONS, BRIDGES AND OTHER STRUCTURE AND AT SPACINGS NOT TO EXCEED 80 FEET. WHERE CONCRETE IS PLACED IN EMPLOY SOLIDS, A MANUALLY OPERATED SCREED EQUIPPED WITH A FINISH VIBRATOR MAY BE USED. TWINO FINISH SHALL BE USED WHEN NECESSARY.

REVISIONS	CITY OF MONTGOMERY	PAVING
10-2013 REVISED NOTES	TYPICAL NON-RESIDENTIAL CONCRETE PAVING WITH STANDARD CURB	P-3



DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the compilation of this standard into a design plan or any liability that may arise from its use.

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: dn=TxDOT	dn=TxDOT	dn=VP	ck=KM	ck=PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED ON 2005				
REVISED ON 2010	DIST	COUNTY		SHEET NO.
REVISED ON 2014				

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HILLS OF TOWN CREEK
SECTION 5
PAVING DETAILS 3 OF 3

DRAWING ISSUE			
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1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS NOTED	SHEET	25

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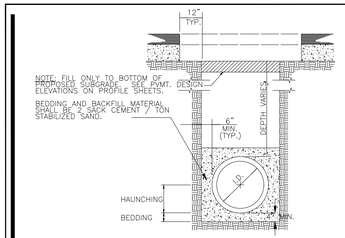
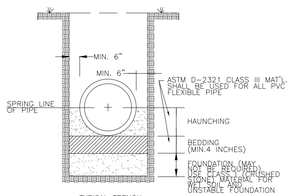


TYPICAL ROADWAY TRENCH BEDDING



TYPICAL TRENCH BEDDING

Foundation
A foundation is required when the trench bottom is unstable. Any foundation that will support a rigid pipe without causing loss of grade or flexural breaking will be more than adequate for PVC pipe.

Bedding
The bedding directly underneath the pipe is required only to bring the trench bottom up to grade. It should not be so thick or soft that the pipe will settle and lose grade. The purpose of the bedding is to provide a firm, stable and uniform support of the pipe. A layer of material sufficient to establish line, grade, and support should be placed. Bell holes should be excavated to insure uniform bearing.

Haunching
The haunching area is the most important in terms of limiting the deflection of a flexible pipe. This is the area that should be compacted to the required or specific density.

ASTM D 2321
Description of embedment materials

Class I
Angular, 1/4" to 1 1/2" graded stone, including a number of fill materials that have regional significance, such as coral, slag, cinders, crushed stone and crushed shells.

Class II
Coarse sands and gravels with maximum particle size of 1 1/2", including variously graded sands and gravels containing small percentages of fines, generally granular and noncohesive, either wet or dry. Soil Types GW, GP, SW, and SP are included in this class.

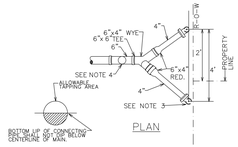
Class III
Fine sand and clayey gravels including fine sands, sand-clay mixtures, and gravel-clay mixtures. Soil Types GM, GC, SM, and SC are included in this class.

Class IV
Silt, silty clays, and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil Types MH, ML, CH and CL are included in this class.

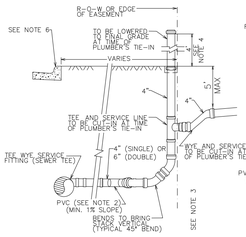
Class V
This class includes the organic soils OL, OH, and PT as well as soils containing frozen earth, debris, rocks larger than 1 1/2" in diameter, and other foreign materials. These materials are not recommended for bedding, haunching, or initial backfill.

NOTE: BACKFILL ABOVE THE BEDDING SHALL CONFORM TO "TYPICAL WATERLINE BACKFILL AND TRENCH REPAIR" STANDARD DRAWING W-5.

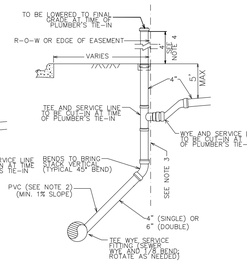
TYPICAL WATERLINE BEDDING AND TRENCH DETAIL
N.T.S



PLAN



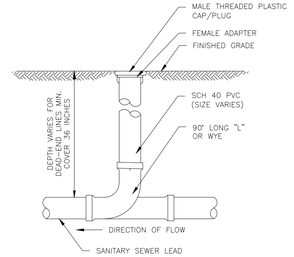
STANDARD CONNECTION PROFILE



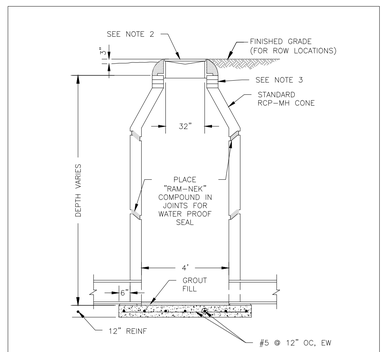
DEEP CONNECTION PROFILE

NOTE:
1. ALL MATERIAL SHALL BE ASTM D3034 SDR26 W/ GASKETS
2. ALL SERVICE CONNECTIONS & TESTING TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.
3. A CLEAN OUT IS REQUIRED AND WILL BE INSTALLED BY THE CONTRACTOR AT THE ROW FOR EACH SERVICE.
4. CLEANOUTS SHALL BE EXTENDED 4 FEET ABOVE NATURAL GROUND, AND BE PAINTED GREEN OR CONSTRUCTED WITH GREEN PVC. CLEANOUT CAP FITTING SHALL BE PLACED ON TOP.
5. ALL SINGLE SEVICE LEADS SHALL BE 4" UNLESS OTHERWISE NOTED ON THE PLANS. ALL DOUBLE SERVICE LEADS SHALL BE 6" UNLESS OTHERWISE NOTED ON THE PLANS.
6. AN "S" MUST BE MARKED BY BEING STAMPED ON THE FACE OF CURB AND GUTTER AT EACH TAP LOCATION IN ADDITION TO A 2" GREEN PVC MARKER BEING PLACED AT THE END OF THE SERVICE CONNECTION AND EXTENDING 4' ABOVE NG.

SANITARY SEWER SERVICE CONNECTION

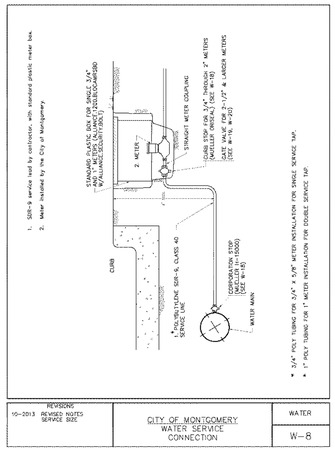


TYPICAL SANITARY SEWER CLEAN OUT DETAIL
NTS

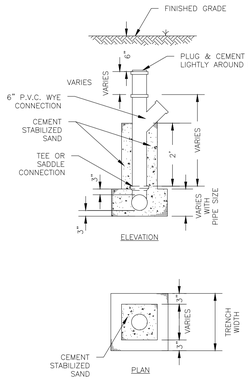


NOTES:
1. ALL RCP MANHOLES SHALL BE IN ACCORDANCE ASTM C-478
2. EAST JORDAN 32" FRAME AND COVER (OR EQUAL)
3. FOR ADJUSTMENT OF MANHOLE LID USE STANDARD CONCRETE RINGS. NO BRICK ADJUSTMENT ALLOWED.
4. PRECAST BOTTOM SECTION OF MANHOLE TO BE SECURELY ATTACHED TO REINFORCED CONCRETE SLAB WITH WATERPROOF SEALER
5. MANHOLE SECTIONS, CONES AND INVERT TOPS SHALL BE COATED WITH A SUITABLE, PROTECTIVE, 20 MILS THICK, COLD TAR EPOXY COATING

STANDARD SANITARY PRE-CAST MANHOLE
NTS



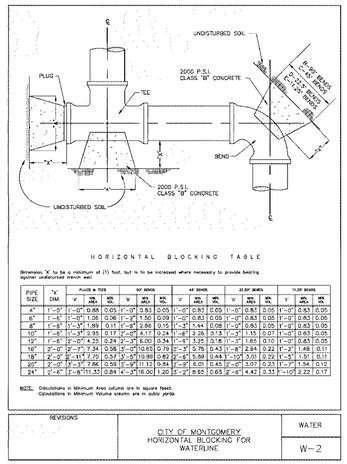
REVISIONS		
10-2013 REVISED NOTES SERVICE SIZE	CITY OF MONTGOMERY WATER SERVICE CONNECTION	WATER W-8



ELEVATION

PLAN

SANITARY SEWER STACK DETAIL
NTS



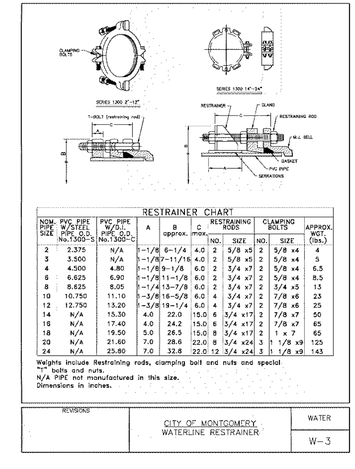
HORIZONTAL BLOCKING TABLE

PIPE SIZE	"X" DIM	PLUG & TEES V	PLUG & TEES WB SQ. FT.	PLUG & TEES WB SQ. YDS.	90° BENDS V	90° BENDS WB SQ. FT.	90° BENDS WB SQ. YDS.	45 DEGREE V	45 DEGREE WB SQ. FT.	45 DEGREE WB SQ. YDS.	22.50° BENDS V	22.50° BENDS WB SQ. FT.	22.50° BENDS WB SQ. YDS.	11.25° BENDS V	11.25° BENDS WB SQ. FT.	11.25° BENDS WB SQ. YDS.
4"	1'-0"	1'-0"	0.85	0.05	1'-0"	0.85	0.05	1'-0"	0.83	0.05	1'-0"	0.87	0.05	1'-0"	0.83	0.05
6"	1'-5"	1'-5"	1.06	0.06	1'-5"	1.50	0.09	1'-0"	0.83	0.05	1'-0"	0.83	0.05	1'-0"	0.83	0.05
8"	1'-8"	1'-5"	1.89	0.11	1'-8"	2.66	0.15	1'-5"	1.44	0.08	1'-0"	0.83	0.05	1'-0"	0.83	0.05
10"	1'-8"	1'-5"	2.95	0.17	1'-8"	4.17	0.24	1'-8"	2.26	0.13	1'-3"	1.15	0.07	1'-0"	0.83	0.05
12"	1'-8"	2'-0"	4.25	0.24	2'-3"	6.00	0.34	1'-5"	3.25	0.18	1'-3"	1.65	0.10	1'-0"	0.83	0.05
16"	2'-0"	2'-7"	7.34	0.58	3'-0"	10.65	0.79	2'-3"	5.76	0.43	1'-8"	2.94	0.22	1'-0"	1.48	0.11
18"	2'-0"	3'-0"	9.17	0.57	3'-5"	10.98	0.82	2'-8"	5.98	0.44	1'-10"	3.01	0.22	1'-0"	1.30	0.11
20"	2'-0"	3'-3"	7.86	0.98	3'-9"	11.13	0.84	2'-9"	6.01	0.45	2'-0"	3.07	0.23	1'-0"	1.54	0.12
24"	2'-0"	3'-6"	11.33	0.84	4'-3"	16.00	1.20	3'-2"	8.83	0.65	2'-6"	4.42	0.33	1'-10"	2.22	0.17

NOTE: Calculations in Minimum Area columns are in square feet. Calculations in Minimum Volume columns are in cubic yards.

Dimension "X" to be a minimum of (1) foot, but is to be increased where necessary to provide bearing against undisturbed trench wall

REVISIONS	CITY OF MONTGOMERY HORIZONTAL BLOCKING FOR WATERLINE	WATER W-2



RESTRAINER CHART

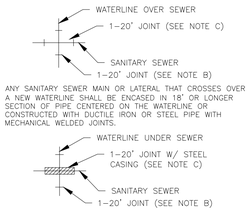
NOM. PVC PIPE PIPE W/STEEL SIZE PIPE O.D. No.1300-S	PVC PIPE W/D.I. PIPE O.D. No.1300-C	A	B approx.	C min.	RESTRAINING RODS NO.	RESTRAINING RODS SIZE	CLAMPING BOLTS NO.	CLAMPING BOLTS SIZE	APPROX. WGT. (lbs.)
2	2.375	N/A	1'-1/8	6-1/4	4.0	2	5/8 x5	2	5/8 x4	4
3	3.500	N/A	1'-1/8	7-11/16	4.0	2	5/8 x5	2	5/8 x4	5
4	4.500	4.80	1'-1/8	9-1/8	6.0	2	3/4 x7	2	5/8 x4	6.5
6	6.625	6.90	1'-1/8	11-1/8	6.0	2	3/4 x7	2	5/8 x4	8.5
8	8.625	8.05	1'-1/4	13-7/8	6.0	2	3/4 x7	2	3/4 x5	13
10	10.750	11.10	1'-3/8	16-5/8	6.0	4	3/4 x7	2	7/8 x6	23
12	12.750	13.20	1'-3/8	19-1/4	6.0	4	3/4 x7	2	7/8 x6	25
14	N/A	15.30	4.0	22.0	15.0	6	3/4 x17	2	7/8 x7	50
16	N/A	17.40	4.0	24.2	15.0	6	3/4 x17	2	7/8 x7	65
18	N/A	19.50	5.0	26.5	15.0	8	3/4 x17	2	1 x 7	65
20	N/A	21.60	7.0	28.6	22.0	8	3/4 x24	3	1 1/8 x9	125
24	N/A	25.80	7.0	32.8	22.0	12	3/4 x24	3	1 1/8 x9	143

Weights include Restraining rods, clamping bolt and nuts and special "T" bolts and nuts.
N/A PIPE not manufactured in this size.
Dimensions in inches.

REVISIONS	CITY OF MONTGOMERY WATERLINE RESTRAINER	WATER W-3

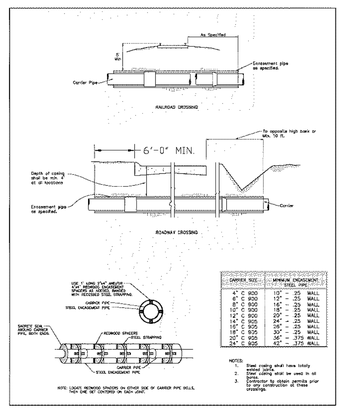
CONSTRUCT WATER LINE-SANITARY SEWER CROSSING PER THE FOLLOWING REQUIREMENTS:

1 A. PROVIDE MINIMUM 2' VERTICAL CLEARANCE
B. PLACE ONE FULL SECTION (MIN. 18 FT) OF WATERLINE CENTERED AT SANITARY SEWER CROSSING. PROVIDE RESTRAINED JOINTS ON WATERLINE, SPACED AT LEAST 9 FEET HORIZONTALLY FROM CENTERLINE SAND, AS PER TAC § 290.44.
C. WHERE A WATERLINE CROSSES A SEWER MAIN OR LATERAL WITHOUT 2' CLEARANCE, WATERLINE MUST BE 6" ABOVE SEWER MAIN OR LATERAL. SEWER MUST HAVE A PRESSURE RATED PIPE OF AT LEAST 150 PSI AND SHALL BE EMBEDDED IN CEMENT STABILIZED SAND FOR A TOTAL LENGTH OF ONE PIPE SEGMENT PLUS 12" BEYOND THE JOINT ON EACH END.
D. PLACE ONE FULL SECTION (MIN 18 FT) OF 150 PSI SANITARY SEWER CENTERED AT WATERLINE CROSSING, SPACED AT LEAST 9 FEET HORIZONTALLY FROM CENTERLINE OF WATERLINE, AND EMBED IN CEMENT STABILIZED SAND.
E. WATERLINES, INCLUDING SERVICE LEADS, SHALL ALWAYS CROSS OVER SANITARY SEWER LINES AND SERVICE LEADS UNLESS SPECIFICALLY LABELED AND APPROVED OTHERWISE.

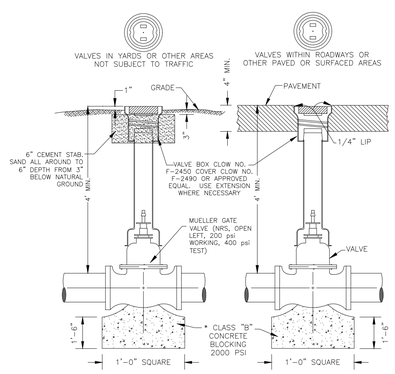


2 A. ANY SANITARY SEWER MAIN OR LATERAL THAT CROSSES OVER A NEW WATERLINE SHALL BE ENCASED IN 18' OR LONGER SECTION OF PIPE CENTERED ON THE WATERLINE OR CONSTRUCTED WITH DUCTILE IRON OR STEEL PIPE WITH MECHANICAL WELDED JOINTS.

WATER LINE AND SANITARY SEWER CROSSING NOTES AND DETAIL
NTS

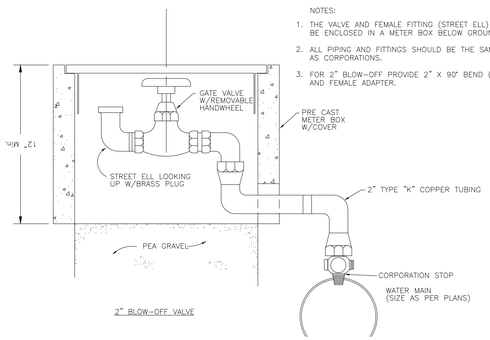


REVISIONS	CITY OF MONTGOMERY STANDARD BORED CROSSING FOR WATERLINE	WATER W-5



* BLOCK GATE VALVES WITH COMPRESSION JOINT FITTINGS ON 8" & LARGER LINES

GATE VALVE & BOX INSTALLATION
14" AND SMALLER WATERLINE
NTS



2" BLOW-OFF VALVE

2" BLOW-OFF VALVE FOR WATERLINE
NTS

L SQUARED ENGINEERING
MUNICIPAL COMMERCIAL RESIDENTIAL
WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 22335
(MAIN OFFICE)
3307 W. DAVIS STREET #100
CONROE, TEXAS 77304
OFFICE: 936-647-0420
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

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K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
WATER & SANITARY SEWER
DETAILS 1 OF 2

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS NOTED	SHEET	26

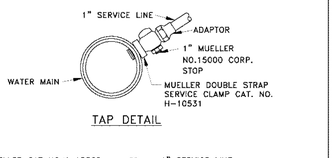
STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

CITY OF MONTGOMERY, CITY ENGINEER SIGNATURE VALID FOR ONE (1) YEAR

DATE

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\25 WATER AND SANITARY SEWER DETAILS.DWG Apr. 30, 2024-8:15 AM CAITLYN CURTIS

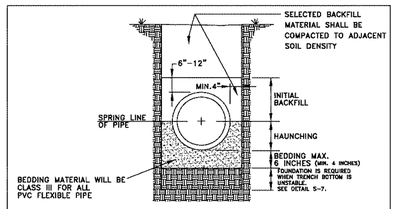


TAP DETAIL

DOUBLE SERVICE LINE CURB STOP DETAIL

SINGLE SERVICE LINE CURB STOP DETAIL

REVISIONS		
10-2013 REVISED SERVICE LINE SIZE	CITY OF MONTGOMERY CURB STOP & TAP FOR WATERLINE	WATER W-10



BEDDING DETAIL

NOTE: BACKFILL AND BEDDING MUST MEET ALL MINIMUM ASPECTS OF ASTM D-2321

Foundation
A foundation is required when the trench bottom is unstable. Any foundation that will support a rigid pipe without causing loss of grade or flexural breaking will be more than adequate for PVC pipes.

Bedding
The bedding directly underneath the pipe is required only to bring the trench bottom up to grade. It should not be so thick or soft that the pipe will settle and lose grade. The purpose of the bedding is to provide a firm, stable and uniform support of the pipe. A layer of material sufficient to establish line, grade, and support should be placed. Bell holes should be excavated to insure uniform bearing.

Haunching
The haunching area is the most important in terms of limiting the deflection of a flexible pipe. This is the area that should be compacted to the required or specified density.

ASTM D-2321
DESCRIPTION OF EMBEDMENT MATERIALS

Class I
Angular, 1/4" to 1-1/2" graded stone, including a number of fill materials that have regional significance, such as carrd, slag, cinders, crushed stone and crushed shells.

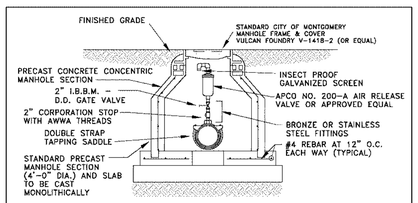
Class II
Coarse sands and gravels with maximum particle size of 1-1/2", including variously graded sands, and gravels containing small percentages of fines, generally granular and noncohesive, either wet or dry. Soil types GW, GP, SW, and SP are included in this class.

Class III
Fine sand and cloyey gravels, including fine sands and sand-clay mixtures, and gravel clay mixtures. Soil types GM, GC, SM and SC are included in this class.

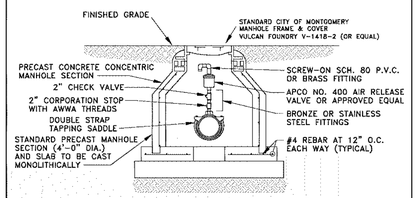
Class IV
Silt, silty clays, and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil types MH, ML, OH, and CL are included in this class.

Class V
This class includes the organic soils OL, OH, and PT as well as soils containing frozen earth, debris, rocks larger than 1-1/2" in diameter, and other foreign materials. These materials are not recommended for bedding, haunching, or initial backfill.

REVISIONS		
	CITY OF MONTGOMERY TYPICAL SANITARY SEWER BEDDING AND TRENCH DETAIL	SEWER S-1

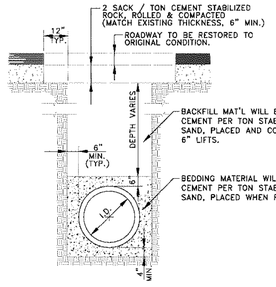


MANUAL AIR RELEASE VALVE



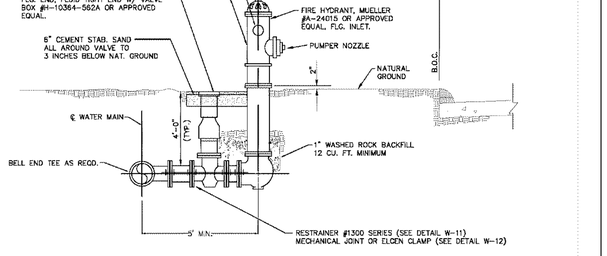
AUTOMATIC AIR RELEASE VALVE

REVISIONS		
	CITY OF MONTGOMERY AIR RELEASE VALVES	SEWER S-6



NOTE: BACKFILL AND BEDDING MUST MEET ALL MINIMUM ASPECTS OF ASTM D-2321

REVISIONS		
	CITY OF MONTGOMERY TYPICAL ROADWAY TRENCH BEDDING AND BACKFILL DETAIL	SEWER S-2



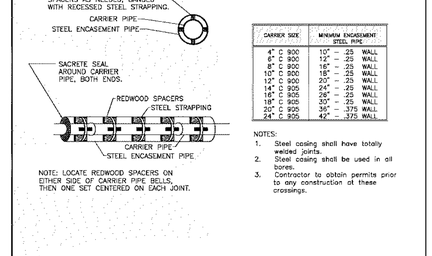
NOTES:

(1) Hydrants shall be shop coated with a suitable primer and finish painted to City of Montgomery specifications. Bonnet is to be painted white, caps blue, and the barrel red. Below ground line to and including the inlet shoe, the outside of the barrel and shoe shall be coated with a coal-tar enamel or asphalt base bituminous coating material not less than one (1) mil thickness.

(2) Fire hydrants in open ditch roadways shall be 3-ft. off R.O.W.

(3) Mechanical joints and/or elcen clamps are to be rodded together using 5/8" all thread (See W-12).

REVISIONS		
	CITY OF MONTGOMERY FIRE HYDRANT INSTALLATION	WATER W-15



CARRIER SIZE	MINIMUM ENCASEMENT STEEL PIPE
4" C 900	10" - .25 WALL
6" C 900	12" - .25 WALL
8" C 900	16" - .25 WALL
10" C 900	18" - .25 WALL
12" C 900	20" - .25 WALL
14" C 905	24" - .25 WALL
16" C 905	26" - .25 WALL
18" C 905	30" - .25 WALL
20" C 905	36" - .375 WALL
24" C 905	42" - .375 WALL

NOTES:
1. Steel casing shall have totally welded joints.
2. Steel casing shall be used in all bores.
3. Contractor to obtain permits prior to any construction at these crossings.

REVISIONS		
	CITY OF MONTGOMERY STANDARD BORED CROSSING WITH STEEL CASING FOR SEWER LINES (OR WATERLINES)	SEWER S-3

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

L SQUARED ENGINEERING
MUNICIPAL COMMERCIAL RESIDENTIAL
WWW.L2ENGINEERING.COM
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(MAIN OFFICE)
3307 W. DAVIS STREET #100
CONROE, TEXAS 77304
OFFICE: 936-647-0420
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

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13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK
SECTION 5
WATER & SANITARY SEWER DETAILS 2 OF 2

DRAWING ISSUE

#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION

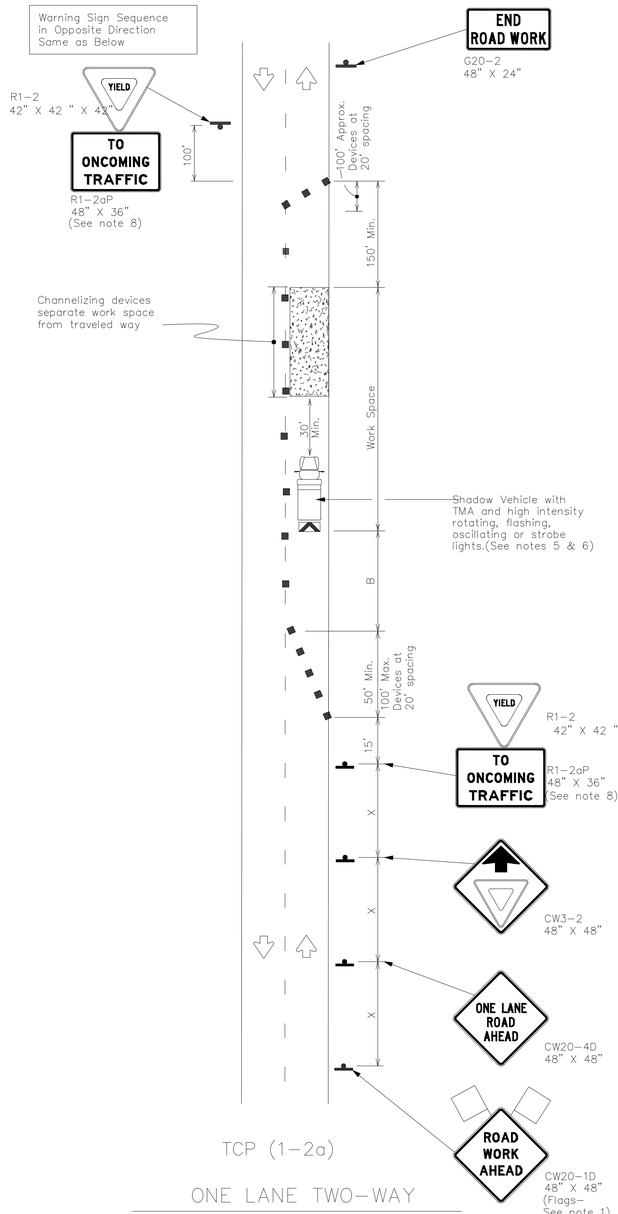
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS NOTED	SHEET	27

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

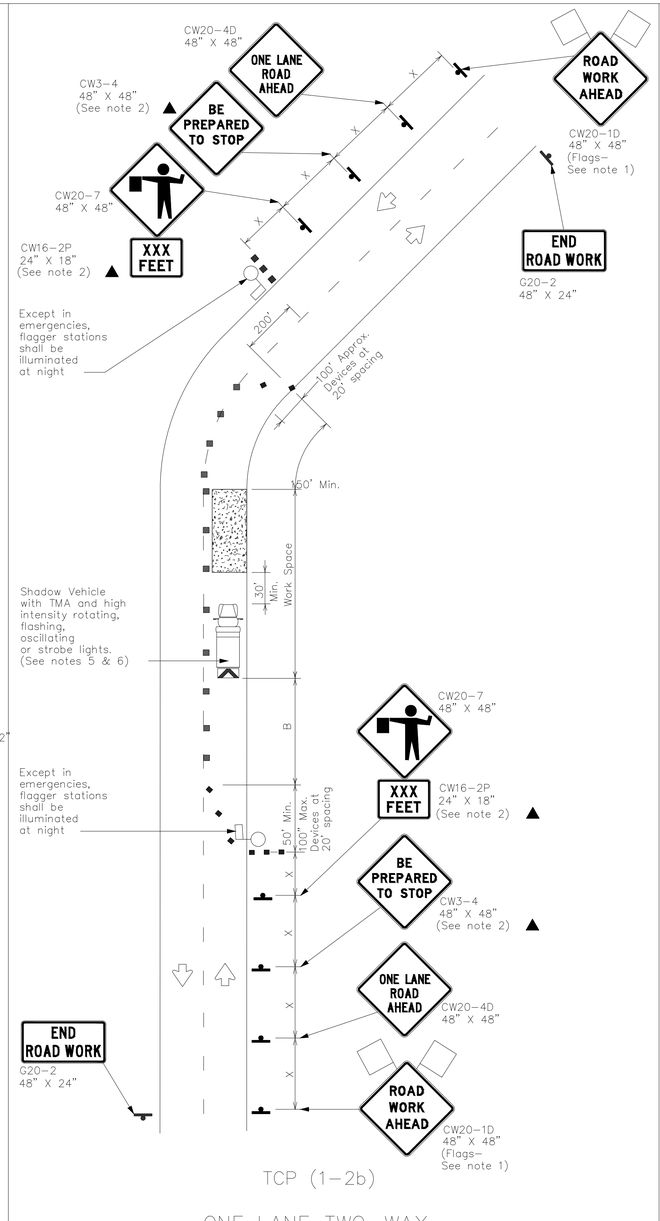
L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K HOV\03 CAD\DESIGN SET\26 WATER & SANITARY SEWER DETAILS.DWG Apr. 30, 2024 - 8:15 AM CAITLYN CURTIS

Warning Sign Sequence in Opposite Direction Same as Below



TCP (1-2a)

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths * * 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
8. R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(1-2)-18

FILE:	tcp1-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT	December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS					
4-90 4-98		DIST	COUNTY		SHEET NO.
2-94 2-12					
1-97 2-18					
152					

CITY OF MONTGOMERY, CITY ENGINEER
SIGNATURE VALID FOR ONE (1) YEAR

DATE

DATE:
FILE:

L SQUARED ENGINEERING
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WWW.L2ENGINEERING.COM
FIRM REGISTRATION NUMBER 22320
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3307 W. DAVIS STREET #100
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OFFICE: 936-647-0420
(BRANCH OFFICE)
21123 EVA STREET #200
MONTGOMERY, TEXAS 77356

CLIENT INFORMATION
K. HOVNANIAN HOUSTON DISTRICT, LLC
13111 NW FWY, SUITE 200
HOUSTON, TX 77040

PROJECT ADDRESS
EMMA'S WAY
MONTGOMERY, TX 77356

HILLS OF TOWN CREEK SECTION 5

TRAFFIC CONTROL PLAN

DRAWING ISSUE			
#	DATE	BY	* COMMENT
1	04/30/24	JTW	FOR PERMIT

DRAWING INFORMATION			
PROJECT	10976	TDLR	**
DRAWN	GLH	CHECKED	JTW
SCALE	AS NOTED	SHEET	28

STATE OF TEXAS
JONATHAN T. WHITE
127058
LICENSED
PROFESSIONAL ENGINEER
04/30/2024

*PLANS NOT RELEASED FOR CONSTRUCTION UNLESS INDICATED ABOVE

L:\SHARED\L2 ENGINEERING PROJECTS\ENGINEERING PROJECTS\10976 - HOTC5 - K. HOV\03 CAD\DESIGN SET\24 PAVING DETAILS.DWG Apr. 30, 2024-8:15 AM CAITLYN CURTIS