



PLANNING COMMISSION MEETING

LOCATION: TOWNSHIP ANNEX, 7527 HIGHLAND ROAD, WHITE LAKE, MI 48383
THURSDAY, SEPTEMBER 05, 2024 – 6:30 PM

White Lake Township | 7525 Highland Rd | White Lake, MI 48383 | Phone: (248) 698-3300 | www.whitelaketwp.com

AGENDA

1. CALL TO ORDER
2. ROLL CALL
3. PLEDGE OF ALLEGIANCE
4. APPROVAL OF AGENDA
5. APPROVAL OF MINUTES
 - A. [August 15, 2024](#)
6. CALL TO THE PUBLIC (FOR ITEMS NOT ON THE AGENDA)
7. PUBLIC HEARING
 - A. [Lasting Impressions Landscape](#)
[Property described as parcel number 12-01-127-002, located on the north side of White Lake Road, west of Old White Lake Road, consisting of approximately 2 acres.](#)
[Request: Preliminary site plan and special land use approvals](#)
[Applicant: Kieft Engineering](#)
 - B. [2025-2030 Capital Improvement Plan \(CIP\)](#)
8. CONTINUING BUSINESS
9. NEW BUSINESS
 - A. [Gateway Crossing](#)
[Property described as parcel numbers 12-20-426-003 \(6350 Highland Road\) and 12-20402-003 \(6340 Highland Road\),](#)
[located at the southwest corner of Bogie Lake Road and Highland Road, consisting of approximately 5.36 acres.](#)
[Request: Final site plan approval](#)
[Applicant: Najor Companies](#)
10. LIAISON'S REPORT
11. PLANNING CONSULTANT'S REPORT
12. DIRECTOR'S REPORT
13. OTHER BUSINESS
 - A. [Wheels Restaurant - conceptual presentation](#)
14. COMMUNICATIONS
15. NEXT MEETING DATE: October 3, 2024
16. ADJOURNMENT

Procedures for accommodations for persons with disabilities: The Township will follow its normal procedures for individuals with disabilities needing accommodations for effective participation in this meeting. **Please contact the Township Clerk's office at (248) 698-3300 X-164 at least two days in advance of the meeting.** An attempt will be made to make reasonable accommodations.

**WHITE LAKE TOWNSHIP
PLANNING COMMISSION
AUGUST 15, 2024**

CALL TO ORDER

Chairperson Seward called the meeting to order at 6:30 P.M. He then led the Pledge of Allegiance.

ROLL CALL

Present:

T. Joseph Seward, Chairperson
Debby Dehart
Scott Ruggles, Township Board Liaison
Merrie Carlock, Vice Chairperson
Mona Sevic
Robert Seeley
Pete Meagher
Matt Slicker
Steve Anderson

Others:

Sean O'Neil, Community Development Director
Andrew Littman, Staff Planner
Mike Leuffgen, DLZ
Hannah Kennedy-Galley, Recording Secretary

APPROVAL OF AGENDA

MOTION by Commissioner Seeley, seconded by Commissioner Carlock to approve the agenda as presented. The motion carried with a voice vote: (9 yes votes).

APPROVAL OF MINUTES

A. June 20, 2024

Chairperson Seward wanted "round a bout" on the last page of the minutes to read "round-a-bout."

MOTION by Commissioner Anderson, seconded by Commissioner Sevic to approve the minutes of June 20, 2024 as amended. The motion carried with a voice vote: (9 yes votes).

CALL TO THE PUBLIC (FOR ITEMS NOT ON THE AGENDA)

None.

PUBLIC HEARING

None.

CONTINUING BUSINESS

A. Lakepointe

Location: Located on the northeast corner of Union Lake Road and Carpathian, consisting of approximately 13.32 acres. The property is currently zoned PD (Planned Development). Identified as parcel numbers 12-36-177-008.

Request: i) **Final site plan re approval**

ii) **Revised Planned development agreement approval**

Applicant: Fairview Construction Company

Director O'Neil briefly went over the applicant's requests. Director O'Neil noted that the applicant's community benefit would be of a monetary nature due to the neighbor to the north of the site being unresponsive in regards to the previously proposed sidewalk extension.

Commissioner Carlock asked Director O'Neil if the pathway could be put in the right of way. Jason Emerine, Seiber Keast Lehner, said the right of way in front of Independence Village was not deeded and would require an easement from Independence Village. Independence Village was not amicable to an easement. There would be an additional \$7,500.00 donation to the Park fund from the applicant as well.

Commissioner Anderson asked staff if the money would be held for a future pathway in the area. Director O'Neil said no, the money allocation would go to make other connections, the funds would be used in a meaningful way.

Mr. Leuffgen briefly went over his engineering review. There were discrepancies regarding the estimated costs for the sidewalk donation.

Commissioner Anderson asked Mr. Emerine if a TIS was waived. Mr. Emerine stated that RCOC had requested a TIS, and it was done. The results from the study said that there was no impact to the traffic, and RCOC agreed with the findings from the study.

Commissioner Anderson asked staff if they felt all the outstanding items would be addressed prior to construction. Director O'Neil said all of the outstanding comments had to be addressed prior to a pre-construction meeting.

Commissioner Dehart said the proposed bypass lane was no longer shown on the plan. Mr. Emerine said the bypass lane was not warranted by the RCOC, so it was not included, and the previous FSP was approved without the plan.

Commissioner Meagher said all three developments (West Valley, Comfort Care, and Lakepointe) were dependent on West Valley for storm sewer. Mr. Emerine said Lakepointe had a detention basin, as did West Valley, and would outlet storm water by Cedar Island Road. Comfort Care had a retention basin, so stormwater would be absorbed by the ground. DPS Director Aaron Potter wanted each development to have their own easements with their own stormwater management agreements. Mr. Leuffgen added that West Valley had been issued a permit from EGLE for stormwater discharge.

Michael Furnari, developer, said he was excited to get the project going and agreed to a \$8,700.00 donation to the pathway fund in lieu of the previously proposed offsite sidewalk community benefit.

MOTION by Commissioner Meagher, seconded by Commissioner Sevic, to re-approve the final site plan for Lakepointe, parcel identified as 12-36-177-008, subject to the review letters included in the packet being addressed and subject to addressing the comments made by the Township Attorney. The motion carried with a voice vote: (8 yes votes | Seeley no).

MOTION by Commissioner Meagher, seconded by Commissioner Anderson, to recommend approval to the Township Board for Lakepointe’s revised planned development agreement, parcel identified as identified as 12-36-177-008 subject to addressing the remaining outstanding staff and consultant comments and subject to replacing the community benefit contribution off an offsite sidewalk with a monetary contribution for pathways in the amount of \$8,700.00, as agreed to by the developer this evening. The motion carried with a voice vote: (8 yes votes | Seeley no).

NEW BUSINESS

A. Review and discussion of the 2025-2030 draft Capital Improvement Plan (CIP)

Staff Planner Littman briefly went over the draft CIP. He summarized the increased cost estimates for each department’s projects.

Commissioner Carlock asked staff if there was a list of completed projects. Staff Planner Littman said the projects that were completed were Triangle Trail, the Bogie Lake Water Extension, and the Aspen Meadows Wellhouse. He added that he would include these in the final CIP.

Commissioner Ruggles asked staff where the request for the backhoe machine was requested from. Director O’Neil said it was a request from the DPS department.

Commissioner Anderson asked staff if rating or cost drove the priority of a project. Director O’Neil said there were variables, but highly rated projects indicated a high need for a project.

Staff Planner said a water supply project from last year’s CIP was removed from this year’s report. The project was no longer necessary due to the anticipated Township Hall construction.

Commissioner Sevic asked for clarification regarding the amounts listed on the CIP Components table. The numbers listed in parentheses was the number of sets requested, and a edit needed to be made to clarify the notation.

Commissioner Slicker stated that the backhoe machine project should have clarification regarding the cost sharing.

Commissioner Anderson said the overall funding statement was missing a figure that was referenced in the text. Staff said the text would be clarified.

Commissioner Slicker noted that the Sewer Fund projects were listed to be paid by the General Fund. Director O'Neil said that would need to be clarified as well.

Commissioner Seeley asked if there were any other emergency water connections in the Township. Mr. Leuffgen confirmed, and said the one included in the CIP would be on Williams Lake Road, near Hess-Hathaway Park. Commissioner Seeley spoke highly to emergency water connections.

LIAISON'S REPORT

Commissioner Dehart said the August ZBA meeting was canceled, but the ZBA did meet in July. There were five cases heard. Three were approved, one was denied, and one was tabled.

Commissioner Carlock stated that Parks and Rec met for the first time in a few months. The contractor for Stanley Park was delaying, and the Township was considering asking the State to use the next lowest bidder. Director O'Neil authorized Beckett & Raeder to reach out to the next lowest bidder. The Fisk Farm Festival would be held September 7 and 8, 2024, and Trunk or Treat was scheduled for October 19, 2024. She added that the Parks and Rec millage passed, and she thanked the voters.

Commissioner Ruggles said the Township Board met today at special Board meeting to discuss the budget and approve the 2025 millage rates. He congratulated Commissioner Anderson on his election win.

PLANNING CONSULTANT'S REPORT

None.

DIRECTOR'S REPORT

Director O'Neil said the Planning Commission would meet on September 5, 2024 for the CIP public hearing as well as a public hearing for the Lasting Impressions special land use. There was a potential of a couple other items being eligible for the agenda too.

OTHER BUSINESS

Commissioner Sevic said the Fisk Farm festival was looking for volunteers.

COMMUNICATIONS

None

NEXT MEETING DATE: September 5, 2024

ADJOURNMENT

MOTION by Commissioner Carlock, seconded by Commissioner Sevic, to adjourn at 7:44 P.M. The motion carried with a voice vote: (9 yes votes).

Director's Report

Project Name: Lasting Impressions Landscape
 Description: Preliminary site plan and special land use approvals
 Date on Agenda this packet pertains to: September 5, 2024

- Public Hearing
- Initial Submittal
- Revised Plans
- Preliminary Approval
- Final Approval
- Special Land Use
- Rezoning
- Other:

Contact	Consultants & Departments	Approval	Denial	Approved w/Conditions	Other	Comments
Sean O'Neil	CDD Director	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Subject to all staff and consultant review comments being addressed.
DLZ	Engineering Consultant	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See letters dated 08/04/2024.
Matteo Passalacqua	Carlisle Wortman Associates, Inc	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See letter dated 07/08/2024.
Jason Hanifen	WLT Fire Marshal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See letter dated 07/02/2024.



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
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July 8, 2024

Sean O' Neil, Director
Community Development Department
Charter Township of White Lake
7525 Highland Road
White Lake, Michigan 48383

RE: Lasting Impressions Outdoor Services - Preliminary Site Plan Review- 2nd Review

DLZ # 2445-7696-05

Dear Mr. O' Neil,

Our office has reviewed the above-mentioned revised plans prepared by Kieft Engineering, Inc. and dated June 21, 2024. These plans were reviewed for general engineering feasibility and conformance with the Township Engineering Design Standards. We offer the following comments for your consideration:

Site Improvement Information-

- A single story building for office and warehouse. Gross building area is specified as 6000 SF.
- Associated parking, including (1) one ADA space, and open area for landscaping equipment and landscape materials storage. Parking is proposed as asphalt surfacing and open area as gravel surfacing.
- One shared entrance off White Lake Road.
- One open detention basin with outlet.
- Site to be serviced by well for water and septic for sanitary.

We note that comments from our previous review dated May 9, 2024 are in *italics*. Responses to those comments are in **bold**. New comments are in standard font.

Preliminary Site Plan Comments-

General

1. *There is a Master Deed as part of the Prospectors Square overall plan. The requirements of this deed will need to be met. Our office will further review compliance with Master Deed requirements at the time of Final Site Plan/Final Engineering Plan submittal.* **Comment remains.**

2. *Provide verification that the Old White Lake Road easement that previously ran through this property has been abandoned. **Comment addressed. Design engineer has noted that upon Oakland County records search and also property title work search that there was no indication of this easement as still existing.***
3. *Sheet V1.01- List additional benchmark (BM 2) on this sheet. Please reference Sheet C1.01. **Comment addressed. BM2 has now been shown on this sheet.***
4. *Sheet C0.01- Utilities notes- Item 1- Revise minimum cover to the following: a) Water- 6.0' except at GV's which are 5.5'; b) Sanitary Sewers- 4.0'; All Others (Storm Sewer)- 3.5'-5.0' measured from rim to top of pipe. **Comment addressed. Minimum cover depths have been updated.***
5. *Sheet C.0.01- Utilities notes- Item 6- Provide sheet reference number if underdrain is proposed and provide a detail. **Comment remains. Design engineer states that sheet reference will be filled in on the final engineering plan set.***
6. *Please indicate what the existing monitoring well at the rear of the site (near proposed detention basin) is for. **Comment addressed. Engineer notes that likely this was a 201 environmental contamination site. Thus a monitoring well would have been needed; there is no indication that the well(s) have been monitored for several years now.***
7. *The plan proposes two (2) 500 gallon fuel storage tanks in the gravel area toward the rear of the site. We note that while this development is within White Lake Township, the site is within the Waterford Township 10 year wellhead protection area. As a courtesy, notification and plans shall be provided to Waterford Township DPW Engineer of the intent to provide the two fuel tanks. Waterford Township may require specific containment (other than those noted on plan) items be provided including the use of triple wall containment that will need to be incorporated into the plans. We also note that other Federal (EPA), State, and Local regulations may apply, and that the applicant or applicant's engineer will have to assure those requirements are met. **Comment remains. Design engineer states that plans have been sent to the Waterford Township DPW Engineer. In addition, the fuel storage tanks provide triple wall containment and appear to meet the State of Michigan Bureau of Fire Services requirements and standards. We defer to the Township Fire Department regarding acceptability of tank types and locations shown. We also recommend that correspondence be secured from Waterford Township that what is proposed would be acceptable to that Township.***

*We note that Article IX, Item k. of the Master Deed for Prospector's Square notes that compliance requirements of Michigan Water Resources Commission, for the storage of gasoline and diesel fuel on site, will be required to be met. We defer the portion of this comment that relates to Michigan Water Resources Commission to the Township, as to the defined business use as the State requirements are for industrial users. **Comment remains.***

Grading/Paving

1. *We note that this plan is dependent on the adjacent Oakland Harvesters construction going forward as the Oakland Harvesters plan shows full construction of the shared access drive which is the only point of access for Lasting Impressions. **Comment remains.***
2. *The plan proposes gravel as the surface material for the landscape materials and landscape equipment storage areas in lieu of pavement material such as concrete or asphalt. Per White Lake Township Zoning Ordinance 5.11 Q. xi., all parking areas are required to be paved unless a variance is obtained. Should a variance not be approved, and the applicant required to pave the areas in question, would result in an increased area and volume required for the detention basin. **Comment remains.***
3. *Sheet V1.01- It is not clear what the intent was for the existing grading easement on this property- whether it was intended as an area for grading relative to a potential future shared ingress/egress drive. If the easement is not needed, will it be vacated? **Comment remains. It is our understanding that the grading easement was for construction of the shared drive. Per the design engineer, the existing easement will be vacated, and a new easement and agreement will be executed that reflects the actual post-development location of the drive for the two projects. The easement agreement is to be provided at the time of FSP/FEP submittal.***
4. *Sheet V1.01- The existing recorded Mutual Ingress & Egress Easement Over Units 1 & 2 (which extends the full depth of both Units 1 & 2 of Prospector's Square) may need to be amended to not include the portion of the easement outside of the planned shared access driveway. The current plan proposes landscaping and parking to the north of the proposed shared driveway and within the existing access easement and may present an issue regarding shared maintenance responsibilities of anything within the existing easement. We defer to the Township Attorney regarding this item. **Comment remains. Per the design engineer, the existing easement will be shortened, and a new easement will be executed that reflects the actual post-development location of the drive for the two projects. The revised easement is to be provided at the time of FSP/FEP submittal.***
5. *Provide general proposed grading to demonstrate general drainage patterns for this level of review. **Comment addressed. A preliminary grading plan has now been provided.***
6. *Sheet C1.01- Per Township Zoning Ordinance 5.11.O.iii., at least one ADA parking space shall be van accessible with an 8' wide adjacent loading space. Currently a 5' wide loading space is shown adjacent to the ADA van accessible space. **Comment addressed. The ADA loading space is now shown as 8' wide.***
7. *Sheet C1.01- Provide dimensions for the four (4) parking spaces adjacent to the truck and enclosed trailer parking. **Comment addressed. Dimensions have been provided.***



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WLT- Lasting Impressions Outdoor Services- PSP Review.02

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8. *Sheet C1.01- Label the surfacing material for the northern storage area and excavator/ skid steer parking area as gravel on this plan sheet. **Comment addressed. Surfacing material has now been specified.***
9. *Sheet C1.01- Is curbing intended for the area to the west of the proposed loading space? Plan is not clear as to whether curbing is shown here. Curbing shall be required for this area. **Comment addressed. A call-out has been added to this sheet indicating curbing in the above referenced area.***

Sanitary Sewer

1. *Oakland County Health Department will need to approve and permit septic field for this property. We defer to the Health department regarding the requirement for an oil and grease separator upstream of the septic tank for building floor drains due to the nature of the proposed use. **Comment addressed and remains. An oil/water separator upstream of the septic tank has now been shown on the plan. We recommend placement of the oil/water separator outside of the parking area/vehicle traffic circulation aisle and closer to the building. Oil/water separator size (see required size per WLT Engineering Design Standards) and additional details shall be required at the time of FSP/FEP submittal.***

Watermain

1. *We defer to the Township Fire Department with regard to fire suppression and access requirements. **Comment remains.***
2. *A well is proposed as the source of water for this site. Per our files, there exists a Water Supply Agreement that states that wells are to be abandoned if water main becomes available for use. We defer to the Township as to whether this agreement was ever signed. Please note that our files indicate that this agreement was received by the Township on December 18, 2000. **Comment remains.***

Stormwater Management

1. *The detention basin discharges to the existing wetlands at the rear of the site. A delineation and determination shall be required. In addition, a permit from EGLE shall be required as per WLT Municipal Code Section 14-133. The submittal to EGLE shall also note the proximity of the proposed fuel tanks to the proposed detention basin and wetlands. **Comment addressed. The outlet for the detention basin has been moved further upland away from the edge of the water/pond such that***



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- basin will not discharge directly to the open water. Per a May 15, 2024 in person meeting at our office with the design engineer, the wetland delineation and permit would not be required.
2. *We note that the Final Engineering Plan shall show the Oakland Harvesters (Unit 1) detention basin outlet swale grading on this lot (Unit 2-within the existing 20' wide drainage easement at rear of Unit 2) as it is shown on the Oakland Harvesters final engineering plan. **Comment addressed. Swale grading per approved Oakland Harvesters Final Engineering Plan has now been shown at the rear of the Landscape Impressions property.***
 3. *Proposed detention basin slopes calculate to 1:3; the basin will be required to be fenced in along with an 8' wide access gate. **Comment addressed. Basin slopes are 1:6.***
 4. *Provide preliminary basin sizing calculations based on Oakland County Stormwater Engineering Design Standards. **Comment addressed. Basin sizing calculations have been provided.***
 5. *Specify how the two proposed catch basins in the proposed gravel area are to be maintained and kept free of filling of the catch basins with gravel as well as landscaping materials from the storage bays proposed in this area. The deposition of such materials will likely occur due to movement of equipment and materials in this area. In addition, these activities will likely impact the proposed stormwater pretreatment unit proposed in the catch basin adjacent to the heavy equipment parking, and thus result in the unit not functioning optimally. **Comment addressed and remains. These two catch basins shall have 3' sumps with ADS Envirohoods. A separate water quality structure (Contech CS-6) outside of gravel area shall also be provided. Language regarding Envirohoods and sump/CB cleanouts shall be included as part of the Stormwater Maintenance Agreement.***
 6. *Should the gravel surface at the rear of the property be approved by the ZBA, detention basin shall provide a sedimentation forebay (reference Oakland Harvesters plan) in order to provide pretreatment for runoff from this semi impervious area. **Comment addressed. A pretreatment structure (Contech CS-6) has been proposed prior to discharge of stormwater runoff to the detention basin. Our office finds this an acceptable means of pretreatment and water quality protection.***

Recommendation

The majority of our comments have been addressed and we are now recommending approval of the Preliminary Site Plan subject to required variances being approved and Township concurrence on the fuel storage and containment devices proposed. Comments marked as remaining can be addressed at the time of Final Site Plan/Final Engineering submittal.



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WLT- Lasting Impressions Outdoor Services- PSP Review.02

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Please contact our office should you have any questions.

Sincerely,

DLZ Michigan

Michael Leuffgen, P.E.
Department Manager

Victoria Loemker, P.E.
Senior Engineer

Cc: Nick Spencer, Building Department, *via email*
Andrew Littman, Community Development, *via email*
Hannah Kennedy- Galley, Community Development, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
Jason Hanifen, Fire Marshall, White Lake Township, *via email*

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Carlisle | Wortman
ASSOCIATES, INC.

117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

TO: Sean O’Neil, Community Development Director
FROM: Matteo Passalacqua, Associate Planner
DATE: July 8, 2024
RE: Lasting Impressions PSP / SLU Review

Mr. O’ Neil,

We have conducted a review of the memo titled “KE Response to PSP Review 20240621” as it relates to the Lasting Impressions revised development site plan dated June 21st,2024. Below are our comments pertaining to the most recent items requiring attention from the Applicant. Also included is our review of the application as it relates to Special Land Use standards set forth in Sections 4.37, 4.39 and 6.10 of the zoning ordinance.

REVIEW COMMENTS

Review comments are listed below.

1. Application and Agent

Edits have been made to the application materials regarding ownership entities as well as a resolution of the Board of Directors providing specific decision-making authority. Township legal should confirm the conformance of these documents meeting Township requirements.

2. Access

Parking and landscaping are proposed to be located in the existing reciprocal access easement. The easement agreement should be reviewed by the Township Attorney to determine if the aforementioned items are permissible in the easement. The Applicant has stated a new easement agreement will be put in place that better reflects the actual post development use of the sites. This easement will be provided for review during the FSP and FEP phase of the project.

*Benjamin R. Carlisle, President John L. Enos, Vice President Douglas J. Lewan, Principal
David Scurto, Principal Sally M. Elmiger, Principal R. Donald Wortman, Principal Craig Strong, Principal
Paul Montagno, Principal Megan Masson-Minock, Principal Laura Kreps, Principal
Richard K. Carlisle, Past President/Senior Principal*

3. Building Architecture and Design

Planning Commission will need to determine at preliminary site plan review whether color renderings are exclusively accepted in lieu of material boards.

We note the proposed concrete block storage area in the rear yard identifies a hoop roof over the area. No architectural or structural information regarding the structure is provided. To ensure compliance with accessory structure requirements as well as dimensional standards, elevations and structural specifications should be provided for the concrete block hoop roof structure.

4. Landscaping and Screening

An extensive landform buffer (six-foot berm landscaped in accordance with the ordinance) is required adjacent to the road right-of-way, but not proposed. The Applicant has requested a waiver in-lieu of a proposed berm style buffer. Per the Ordinance language stated in 5.19D.iii & v, the preliminary ROW buffering proposed, and the fact that surrounding zoning and uses are industrial in nature, the Applicant's waiver request is feasible. We do note that the proposed buffer does not run the length of the ROW and stops approx. 40 feet before the access drive. This appears to be for the purpose of allowing for monument signage. We would encourage the Applicant to propose a buffer that runs closer to the access drive to fulfill the intent of the buffer requirements.

We note only one area on Sheet C1.01 indicates "lot landscape" and no square footage for the area is provided. A note under the "REQUIRED PARKING LOT LANDSCAPING PER ZO SECTION 5.19G" states 363 square feet of parking lot landscaping is provided. The title for the area on the Sheet should be retitled "Parking Lot Landscape" to correlate between the map title and corresponding notes.

5. Snow Storage

Snow storage information has been added to Sheet C1.01. The front lot will store snow in the west side yard. Rear and side lot snow will be stored in the rear yard. It should be considered that storage of snow in the side yard has the potential to spill into neighboring properties either during freeze or thaw conditions. We propose consideration of retaining all snow storage to the rear yard location.

6. Parking

Gravel surfacing is proposed at the rear of the site. A variance is required from the Zoning Board of Appeals to allow for this surfacing. The Applicant has acknowledged the need to request this variance.

SPECIAL LAND USE

Section 6.10 provides for general standards applicable to all special land uses. The site is proposing to store trade materials, products and fleet vehicles/equipment. Fleet vehicles are proposed to be placed along an eight (8) foot privacy fence along the east property line, in the rear yard. Materials are proposed to be placed in the concrete block hoop roof structure along the western portion of the rear yard.

This requires the review of separate sets of standards under Section 4.37 and 4.39. Each special land use's specific requirements, as well as the general requirements for all special land uses, are reviewed below.

4.37 Outdoor Storage of Fleet Vehicles

- A. An outdoor lighting plan shall specify the type of fixtures to be used, light intensity, and method of shielding the fixtures so that light does not project onto adjoining properties or on any public or private street or right-of-way. Dropped fixtures shall not be allowed. The site plan shall include a photometric plan and catalog details for all proposed fixtures. Outdoor lights must meet the performance standards of Section 5.18.

CWA Comment: Lighting plans are not required until final site plan review. However, for consideration, the Applicant should provide the required information from Section 5.18 as a part of preliminary review in order for the Planning Commission to consider the special land use request.

- B. No vehicles shall be displayed within any required setback.

CWA Comment: We note that the proposed location of vehicle and equipment storage encroaches upon the twenty (20) foot setback for the Prospectors Square development. While the eight (8) foot privacy fence will shield a portion of the area from view, the size of the equipment listed may be visible from close proximity. We also note the proposed location encroaches a twenty-five (25) foot ingress/egress easement for the development. We recommend the location of the equipment/vehicles be moved east to remove the proposed placement from encroaching the side setback of twenty (20) feet.

- C. On all sides adjacent to a residential district, there shall be provided a screen wall of face brick or an obscuring fence, as approved by the Planning Commission.

CWA Comment: Not applicable

- D. Storage of semi-trucks and trailers are only permissible in the LM District.

CWA Comment: The site is zoned LM.

- E. All stored vehicles must be properly, registered, licensed, and operable.

CWA Comment: Proof of this requirement can be included in a conditional approval.

4.39 Outside storage of pallets, containers, materials, or products incidental to the principal permitted use.

- A. Open storage shall be screened by a screen wall not less than six feet (6') or more than eight feet (8') high. The required height of the wall shall be determined by the Planning Commission so as to properly screen all materials. The Planning Commission may require an extensive landform buffer to be installed in place of the wall if it is deemed necessary to properly screen all materials.

CWA Comment: Height dimensions for the concrete block hoop roof structure proposed to enclose operational materials have not been provided.

- B. Materials over eight feet (8') high must be properly screened but need not be completely screened above eight feet.

CWA Comment: Once dimensions of the concrete block hoop roof structure are provided, this criterion can be assessed.

- C. Materials must be completely screened if they are stored within twenty (20) feet of the screen wall or fence.

CWA Comment: Screen walls are not required between sites zoned LM. Once dimensions of the concrete block hoop roof structure are provided, the effectiveness of material screening can be assessed.

- D. All wastes must be completely obscured from view.

CWA Comment: We note the site plan contains a dumpster enclosure in the rear yard where waste shall be disposed of. For items that are to be discarded but cannot be accommodated by standard dumpster services, we note the Applicant will need to adhere to this requirement by keeping said items completely obscured from view.

- E. Open storage may not be permitted within a required from yard in any zoning district.

CWA Comment: We note the ordinance spelling error. "from" is intended to be "front". The site plan indicates no storage is proposed in the front yard of the development.

6.10 General standards for all special land uses

Items related to the general standards for all special land uses needing clarification are outlined below.

Additional Information Required

Part iii: Given the intended use for the site is that of landscaping operations and services, we note additional information should be provided as to the hours when loading and unloading of materials will be taking place and whether fertilizer materials will be stored onsite to assess potential noise and fume concerns.

Part iv: Once concrete block hoop roof structure dimensions are provided, this criterion can be assessed.

Part vii & x: Per the items relating to underground fuel storage, as well as any other concerns, we defer to Township Public Safety and Engineering to determine if proposed designs and service capacity support the proposed special land use.

ITEMS TO BE ADDRESSED

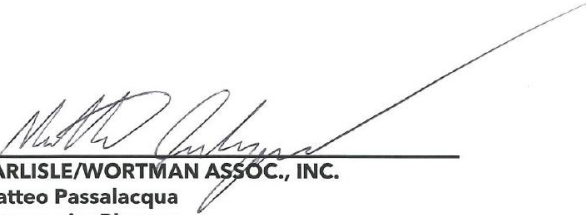
Based on the most current site plan revision dated June 21st, 2024, the additional information and/or modifications are required for Planning Commission preliminary site plan and special land use review.

1. The Applicant provide the required lighting information from Section 5.18 as a part of preliminary review in order for the Planning Commission to consider the special land use request.
2. The location of the equipment/vehicles be moved east to remove the proposed placement from encroaching the side setback of twenty (20) feet.
3. Elevations with dimensions and structural specifications should be provided for the concrete block hoop roof structure located in the rear yard.
4. Information should be provided as to the hours when loading and unloading of materials will be taking place and whether fertilizer materials will be stored onsite to assess potential noise or fume nuisances.
5. Any concerns noted by Public Safety are adequately addressed.
6. Any concerns noted by Engineering are adequately addressed.

RECOMMENDATION

Based on the revised application materials and site plan revision dated June 21st, 2024, we recommend the application be updated to include information addressing the items listed and resubmitted for staff review prior to being placed on a Planning Commission agenda.

Respectfully,



CARLISLE/WORTMAN ASSOC., INC.
Matteo Passalacqua
Community Planner



Fire Department
Charter Township of White Lake

7420 Highland Road
White Lake, MI 48383
Office (248) 698-3993
www.whitelaketwp.com/fire

Site / Construction Plan Review

To: Sean O'Neil, Planning Department Director

Date: 07/02/2024

Project: Lasting Impressions

Job #: 2023.104

Date on Plans: 06/21/2024

The Fire Department has the following comments with regards to the 2nd review of preliminary site plans for the project known as Lasting Impressions

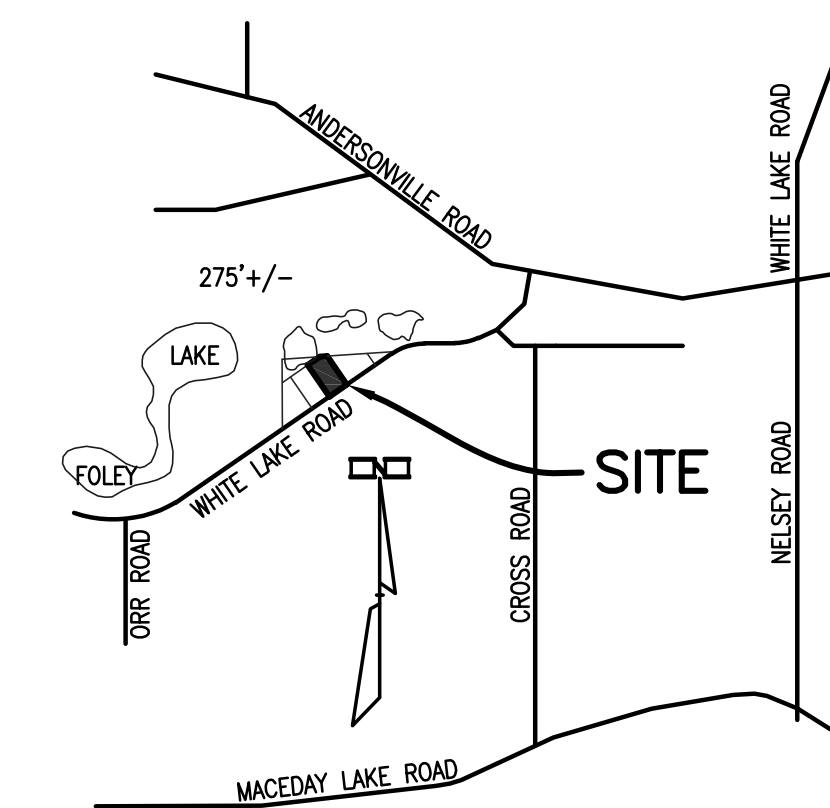
1. The Fire Department has no further comments at this time.

Jason Hanifen
Fire Marshal
Charter Township of White Lake
(248)698-3993
jhanifen@whitelaketwp.com

Plans are reviewed using the International Fire Code (IFC), 2015 Edition and Referenced NFPA Standards.

PRELIMINARY SITE PLAN LASTING IMPRESSIONS

PART OF SECTION 1, T3N, R8E,
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN



LOCATION MAP
SCALE: 1" = 2000'



SHEET INDEX

G0.01	COVER SHEET
V1.01	TOPOGRAPHIC & BOUNDARY SURVEY
C0.01	GENERAL NOTES & LEGENDS
C1.01	PRELIMINARY SITE PLAN
C1.02	FIRE SAFETY SITE PLAN
C1.21	PRELIMINARY GRADING PLAN
C1.31	PRELIMINARY UTILITY PLAN
C5.01	DETAILS - PAVING, SIGNS, & WALK
C5.02	DETAILS - DUMPSTER ENCLOSURE & FENCING
A2.0	NEW FIRST FLOOR PLAN
A3.0	NEW ELEVATIONS
A3.1	NEW ELEVATIONS
A4.0	WALL SECTION

WHITE LAKE TOWNSHIP STANDARD SITE CONSTRUCTION NOTES:

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF WHITE LAKE CHARTER TOWNSHIP.
- THE DEVELOPER SHALL CONTACT THE TOWNSHIP PLANNING DEPARTMENT, AT (248) 698-3300, TO SCHEDULE A PRE-CONSTRUCTION MEETING. THE DEVELOPER'S PRIME SITE CONTRACTOR SHALL ATTEND. A COPY OF ALL PERMITS MUST BE SUBMITTED TO THE PLANNING DEPARTMENT PRIOR TO SCHEDULING THE MEETING.
- THE CONTRACTOR SHALL CONTACT THE TOWNSHIP ENGINEER, AT (248) 681-7800, 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION. THE CONTRACTOR SHALL KEEP THE INSPECTOR APPRAISED OF THE NEED FOR INSPECTION ON A DAY BY DAY BASIS. LACKING SPECIFIC SCHEDULING WITH THE INSPECTOR, THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE TO THE TOWNSHIP ENGINEER PRIOR TO RE-COMMENCING WORK REQUIRING INSPECTION. FAILURE TO INFORM THE INSPECTOR OR THE TOWNSHIP ENGINEER OF A WORK CANCELLATION MAY RESULT IN A ONE HALF DAY INSPECTION CHARGE TO THE DEVELOPER. THE CONTRACTOR SHALL CALL (248) 844-5400 TO SCHEDULE SANITARY SEWER MAIN LINE INSPECTION.
- ALL WATER MAIN OR SANITARY SEWER WORK WILL REQUIRE FULL TIME INSPECTION. FULL TIME INSPECTION WILL GENERALLY BE REQUIRED FOR UNDERGROUND STORM SEWER CONSTRUCTION, CONCRETE CURBING, AND PAVING OPERATIONS. SITE GRADING AND DETENTION BASIN CONSTRUCTION WILL GENERALLY BE INSPECTED ON AN INTERMITTENT BASIS.
- THE CONTRACTOR SHALL CONTACT MISS DIG, AT (800) 482-7171, 72 HOURS IN ADVANCE OF CONSTRUCTION TO HAVE EXISTING UNDERGROUND FACILITIES LOCATED. CONTRACTOR SHALL CONTACT THE WHITE LAKE TOWNSHIP WATER DEPARTMENT, AT (248) 698-3300 EXT 165, SEPARATELY 72 HOURS IN ADVANCE OF CONSTRUCTION TO HAVE WATER UTILITIES LOCATED.
- ALL OFF-SITE IMPROVEMENTS WILL BECOME PUBLIC PROPERTY.

APPROVALS

AGENCY	DESCRIPTION	PERMIT NO.	DATE	EXPIRATION DATE
WHITE LAKE TOWNSHIP - PLANNING & ENGINEERING	PRE-APPLICATION MEETING	REVIEW ONLY	11/29/2023	
WHITE LAKE TOWNSHIP - PLANNING COMMISSION	PRELIMINARY SITE PLAN APPROVAL & SPECIAL LAND USE			
WHITE LAKE TOWNSHIP - TOWNSHIP BOARD	PRELIMINARY SITE PLAN APPROVAL			
WHITE LAKE TOWNSHIP - ZONING BOARD OF APPEALS	VARIANCE REQUESTS			
WHITE LAKE TOWNSHIP - PLANNING COMMISSION	FINAL SITE PLAN APPROVAL			
WHITE LAKE TOWNSHIP - DLZ	ENGINEERING APPROVAL			
WHITE LAKE TOWNSHIP - BUILDING DEPARTMENT	FENCE PERMIT			
WHITE LAKE TOWNSHIP - COMMUNITY DEVELOPMENT DIRECTOR	SIGN PERMIT			
OAKLAND COUNTY - WATER RESOURCE COMMISSIONER	PART 91 SESC PERMIT			
OAKLAND COUNTY - HEALTH DIVISION	ONSITE SEWAGE DISPOSAL SYSTEM (SEPTIC) PERMIT			
OAKLAND COUNTY - HEALTH DIVISION	TYPE III DRINKING WATER WELL PERMIT			
STATE OF MICHIGAN - EGLE	N.P.D.E.S. NOTICE TO COVER			
		NOT REQUIRED FOR DISTURBANCE < 5 ACRES		

PROPRIETOR

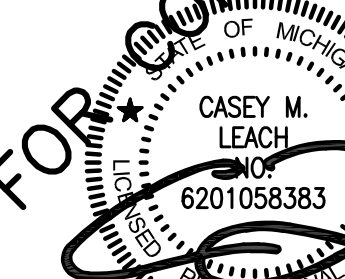
HOPSON HOLDINGS, LLC
 2255 PORTER ROAD
 WHITE LAKE, MI 48386
 PH: (248) 830-2828
 CONTACT: NICHOLAS HOPSON
 EMAIL: LASTINGIMPRESSIONSLANDSCAPE@YAHOO.COM

ARCHITECT

J&A ARCHITECTURAL ENGINEERING
 3250 W. BIG BEAVER RD., STE. 510
 TROY, MI 48084
 PH: (248) 282-6475
 CONTACT: JAY NOONAN, R.A.
 EMAIL: JNOONAN@JAARCHENG.COM

ENGINEER & SURVEYOR

KIEFT ENGINEERING, INC.
 5852 S. MAIN ST., STE. 1
 CLARKSTON, MI 48346
 PH:(248) 884-8224
 CONTACT: CASEY LEACH, P.E.
 EMAIL: CLEACH@KIEFTENG.COM



NOT FOR CONSTRUCTION

REVISION INDEX

REV.	DESCRIPTION	DATE	SHEET NUMBERS											
			G0.01	V1.01	C0.01	C1.01	C1.02	C1.21	C1.31	C5.01	C1.02			
0	SURVEY ISSUED	07/19/2023		X										
1	OWNER REVIEW	10/03/2023			X									
2	PRE-APP MEETING	11/13/2023			X									
3	FIRE SAFETY	11/29/2023			X									
4	PRELIMINARY SITE PLAN	04/19/2024	X	X	X	X	X	X	X	X	X			
5	PSP REV. 1	06/21/2024	X	X	X	X	X	X	X	X	X			

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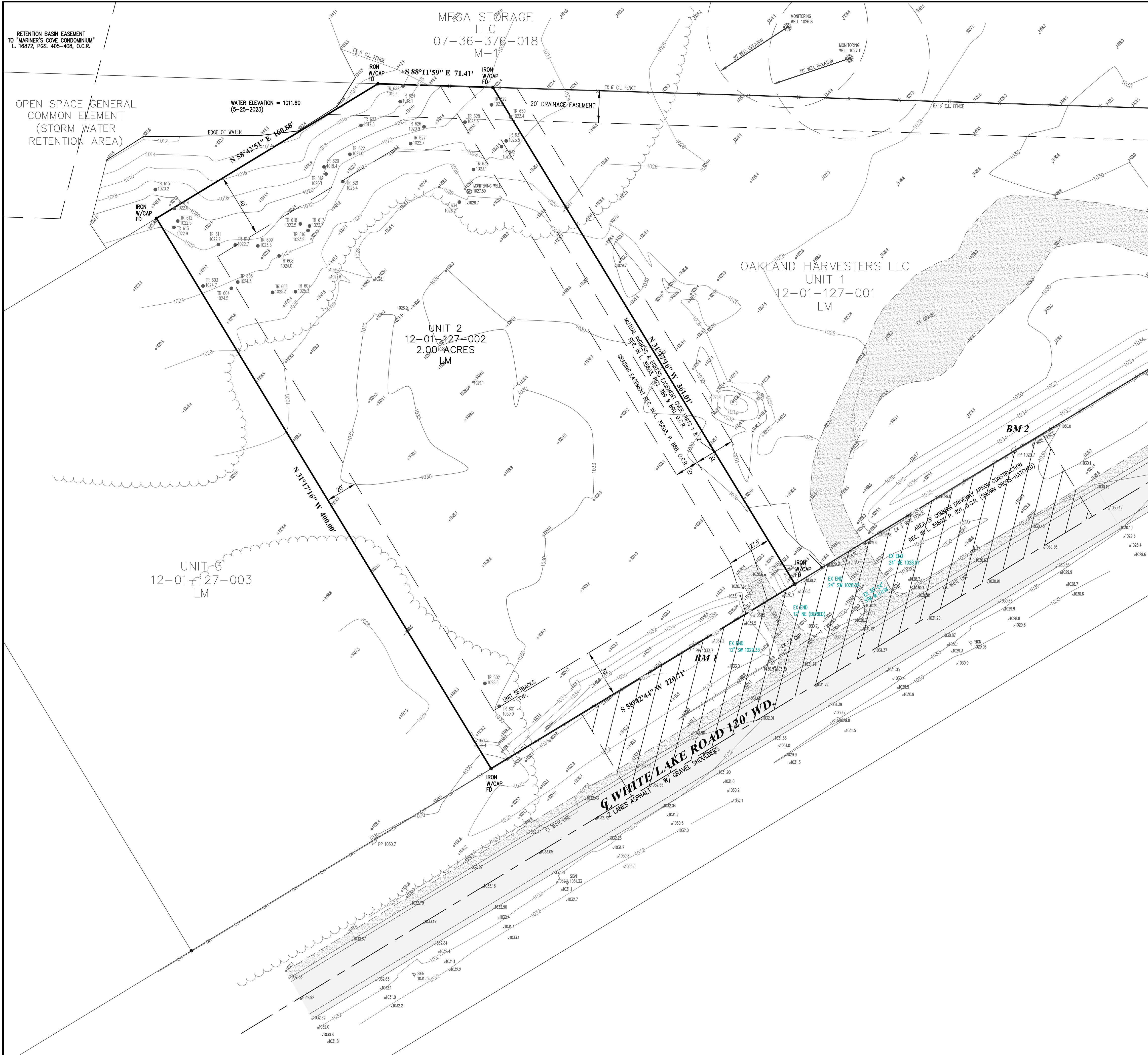
KIEFT ENGINEERING, INC.
 PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE: 04/01/24	CKD. BY: CL	DATE: 04/01/24
DRAWN: CL	CL	
DESIGN: CL		
SECTION: 1	T- 3 -N- R- 8 -E-	



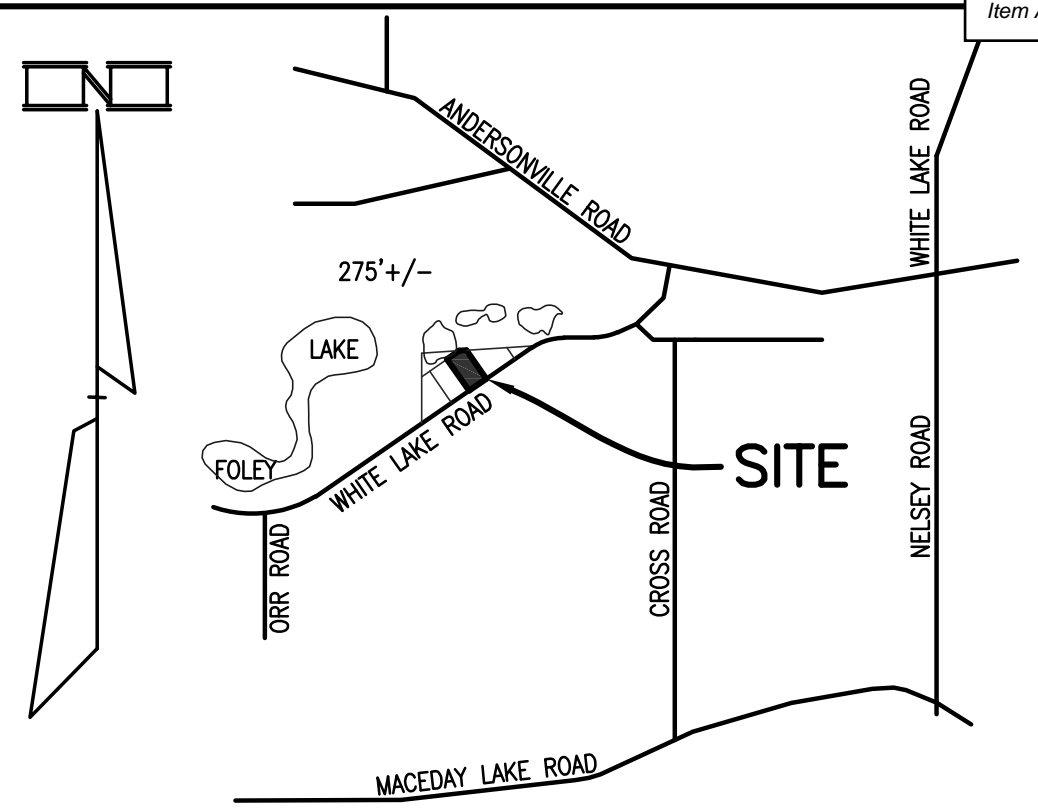
COVER SHEET
LASTING IMPRESSIONS
 PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E,
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE: AS SHOWN
 SHEET NO: G0.01
KE 2023.104



LEGEND

EXISTING	STORM SEWER
GAS	GAS MAIN
ELEC. TELE. CABLE	ELEC. TELE. CABLE
OVERHEAD WIRES	OVERHEAD WIRES
STORM MANHOLE	STORM MANHOLE
CATCH BASIN	CATCH BASIN
INLET	INLET
REARYARD CATCH BASIN	REARYARD CATCH BASIN
END SECTION	END SECTION
CONTOURS	CONTOURS
GRADE	GRADE



LOCATION MAP
SCALE: 1" = 2000'

TREE LIST:

601	20"	"	Elm
602	Tw 18"	"	Poplar
603	26"	"	Poplar
604	Tw 6"	"	Box Elder
605	6"	"	Box Elder
606	7"	"	Box Elder
607	8"	"	Box Elder
608	6"	"	Box Elder
609	8"	"	Tree of Heaven
610	26"	"	Poplar
611	6"	"	Tree of Heaven
612	22"	"	Poplar
613	30"	"	Poplar
614	Tw 30"	"	Poplar
615	36"	"	Tree of Heaven
616	36"	"	Poplar
617	36"	"	Poplar
618	Quad 14-30"	"	Poplar
619	36"	"	Poplar
620	12"	"	Poplar
621	Tw 20"	"	Box Elder
622	36"	"	Poplar
623	12"	"	Box Elder
624	12"	"	Box Elder
625	36"	"	Willow
626	30"	"	Poplar
627	12"	"	Tree of Heaven
628	24"	"	Poplar
629	Tw 8-12"	"	Box Elder
630	8"	"	Tree of Heaven
631	10"	"	Locust
632	10"	"	Locust
633	Tw 8"	"	Tree of Heaven
634	7"	"	Box Elder

SITE INFORMATION:
LOT GROSS AREA: 2.00 ACRES

ZONING INFORMATION:
ZONING DISTRICT: LM LIGHT MANUFACTURING
MINIMUM LOT SIZE: 43,560 SF (1.00 AC), CONFORMS
MINIMUM LOT WIDTH: 175 FT, CONFORMS
MAXIMUM BUILDING HEIGHT: 2 STORIES OR 40 FT

SETBACKS: PER "PROSPECTORS SQUARE" O.C.C.P. NO. 1315

FRONT	REAR	SIDES	PARKING
30 FT	40 FT	20 FT LEAST, 40 FT TOTAL	10 FT

MAXIMUM LOT COVERAGE: 30%

BENCHMARKS:
BM 1: MAG NAIL IN EAST FACE OF POWER POLE
EL. = 1034.67 NAVD 88

BM 2: BOLT SPIKE ON NORTH FACE PF POWER POLE
EL. = 1030.06 NAVD 88

GENERAL NOTES:

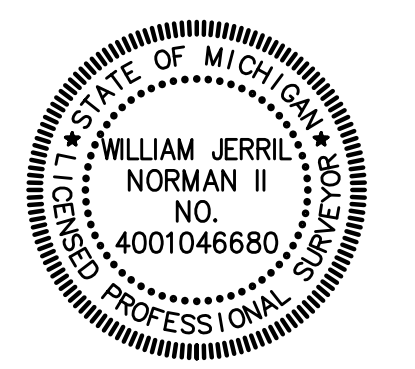
- EXISTING UTILITIES SHOWN HAVE BEEN TAKEN FROM VISUAL OBSERVATION & RECORD MAPPING. WHERE AVAILABLE, NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY & COMPLETENESS OF OVERHEAD & UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION ACTIVITIES.
- BUILDER/DEVELOPER IS RESPONSIBLE FOR CONFIRMING BUILDING SETBACKS.

WETLAND NOTE:
PART 303 WETLANDS, AS IDENTIFIED ON NW1 & MRS MAPS AS SHOWN ON THE EGLE WETLANDS MAP VIEWER APPEAR NEAR THE NORTH PROPERTY LINE OF THE PARCEL. THE EDGE OF WATER WAS FIELD LOCATED. A WETLAND DETERMINATION & DELINEATION HAS NOT BEEN PERFORMED.

FLOOD HAZARD NOTE:
THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT APPEAR TO LIE WITHIN A SPECIAL FLOOD HAZARD AREA AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) BASED ON FLOOD INSURANCE RATE MAP (FIRM) NO. 26125C0329P BARING AN EFFECTIVE DATE OF 9/28/2006.

THIS IS TO CERTIFY THAT I, William J. Norman II, A PROFESSIONAL LAND SURVEYOR, HAVE THIS DATE MADE A SURVEY OF A PARCEL OF LAND DESCRIBED AS FOLLOWS:

LEGAL DESCRIPTION:
UNIT 2, "PROSPECTORS SQUARE" O.C.C.P. NO. 1315, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN.
PARCEL#: 12-01-127-002
ADDRESS: NOT ASSIGNED



DATE	ISSUE
07/19/23	SURVEY ISSUED
06/21/24	PSP REV. 1

PROPRIETOR:
HOPSON HOLDINGS, LLC
2255 PORTER ROAD
WHITE LAKE, MICHIGAN 48383
(248) 830-2828

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KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE: 06/30/23	CKD. BY: WJN	DATE: 06/30/23
DRAWN: GF	DESIGN: CL	SECTION: 1



BOUNDARY & TOPOGRAPHIC SURVEY
LASTING IMPRESSIONS
PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E,
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE: 1" = 30'
SHEET NO: V1.01
KE 2023.104

PRINTING IMPRESSIONS

CIVIL GENERAL NOTES

- 1. PRIOR TO SUBMITTING PROPOSAL, VERIFY ALL CONDITIONS GOVERNING OR AFFECTING THE CIVIL WORK; OBTAIN & VERIFY ALL DIMENSIONS TO ENSURE THE PROPER FIT & LOCATION OF THE CIVIL WORK, TAKE ADDITIONAL DIMENSIONS AS REQUIRED; REPORT TO THE ENGINEER ANY & ALL CONDITIONS WHICH MAY INTERFERE WITH OR OTHERWISE AFFECT OR PREVENT THE PROPER EXECUTION & COMPLETION OF THE WORK; FAMILIARIZE YOURSELF WITH THE ACTUAL CONDITIONS OF THE CIVIL WORK, ACCESS TO THE SITE, AVAILABLE STORAGE SPACE, FACILITIES & OBSTRUCTIONS THAT MAY BE ENCOUNTERED DURING THE PROGRESS OF WORK.
2. CONTRACTOR TO FURNISH ALL NECESSARY LABOR, MATERIAL, EQUIPMENT & FACILITIES TO FURNISH, FABRICATE & PERFORM THE REQUIRED CIVIL WORK.
3. ANY EXISTING CONSTRUCTION TO BE MODIFIED AS A PART OF THIS CONTRACT SHALL BE REBUILT AS REQUIRED TO THE SATISFACTION OF THE OWNER/ENGINEER.
4. EXISTING CONSTRUCTION NOT UNDERGOING ALTERATION IS TO REMAIN UNDISTURBED. WHERE SUCH CONSTRUCTION IS DISTURBED AS A RESULT OF THE OPERATIONS OF THIS CONTRACT, THE EXISTING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AS REQUIRED & TO THE SATISFACTION OF THE OWNER/ENGINEER.
5. ALL WORK SHOWN ON THESE DRAWINGS MAY BE CHECKED BY AN INDEPENDENT TESTING AGENCY RETAINED BY OWNER TO ENSURE COMPLIANCE WITH THE REQUIREMENTS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ACCESS AS REQUIRED FOR TESTING PURPOSES.
6. CONTRACTOR SHALL MAKE ALL NECESSARY FIELD VISITS FOR INSPECTION, MEASUREMENTS & VERIFICATION OF EXISTING CONDITIONS.
7. THE GENERAL CIVIL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS & SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATION, &/OR THE GENERAL CIVIL NOTES, THE STRICTEST PROVISION AS DETERMINED BY THE ENGINEER SHALL GOVERN.
8. WORK THE CIVIL DRAWINGS IN CONJUNCTION WITH ANY ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, LANDSCAPING, & ELECTRICAL DRAWINGS.
9. ALL WORK SHALL CONFORM TO APPLICABLE STATE & LOCAL CODES.
11. THE CONTRACTOR SHALL COMPLY WITH THE CONSTRUCTION SAFETY STANDARDS & THE OCCUPATIONAL SAFETY STANDARDS (OSHA) AS ISSUED BY THE U.S. DEPARTMENT OF LABOR & THE MICHIGAN DEPARTMENT OF LABOR (MIOSHA).
12. MATERIALS & WORKMANSHIP SHALL COMPLY WITH APPLICABLE CODES, SPECIFICATIONS, LOCAL ORDINANCES, INDUSTRY STANDARDS, & UTILITY COMPANY REGULATIONS.
13. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL THE EXISTING CONDITIONS AT THE SITE INCLUDING UTILITIES, SERVICES, ETC. & SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGES THEY CAUSE TO BOTH EXISTING, NEW CONSTRUCTION, PROPERTY & ANY UNAUTHORIZED DISRUPTION TO ADJACENT OWNERS NORMAL USE OF UTILITIES, SERVICES, & THE SURROUNDING FACILITIES.
14. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION PRIOR TO MAKING CHANGES TO, OR INTERRUPTIONS OF UTILITIES & SHALL COMPLY WITH SPECIAL INSTRUCTIONS FROM THE OWNER TO MINIMIZE THE EFFECT ON THEIR OPERATIONS. PRIOR TO ANY EXCAVATION, EARTH MOVING WORK OR REMOVAL OF ANY PIPE FROM SERVICE, THE CONTRACTOR SHALL REVIEW WITH THE OWNER'S REPRESENTATIVE THE LOCATION OF THE UNDERGROUND UTILITIES, SERVICE & STRUCTURES IN THE AREA WHERE THE WORK IS BEING PERFORMED. PROVIDE FULL TIME SUPERVISION DURING ALL EXCAVATION & EARTH MOVING OPERATIONS & TAKE ALL RESPONSIBLE PRECAUTIONS TO PROTECT EXISTING UTILITIES, SERVICES & OPERATIONS FROM DAMAGE OR DISRUPTION.
15. PROVIDE BARRIER PROTECTION FOR VEHICULAR & PEDESTRIAN TRAFFIC AT EXCAVATIONS. TEMPORARY FENCING, BARRICADING & PEDESTRIAN ROUTING SHALL BE COORDINATED WITH & APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
16. FOR PROTECTION OF UNDERGROUND UTILITIES THE CONTRACTOR SHALL CALL "MISS DIG" AT 800-482-7171 OR 811, A MINIMUM OF THREE DAYS PRIOR TO EXCAVATION ON THE SITE. ALL "MISS DIG" PARTICIPATING MEMBERS WILL THIS ROUTINELY BE NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF NOTIFYING UTILITY OWNER'S WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.
17. DISPOSE OF ALL EXCAVATED SOILS & WASTE MATERIALS (NEW & EXISTING) OFF SITE IN A LEGAL MANNER.
18. PERFORM FINAL CLEANUP OF WORK AREAS TO THE SATISFACTION OF THE OWNER.

CONTROL

- 1. TOPOGRAPHIC INFORMATION: EXISTING INFORMATION IS BASED ON A TOPOGRAPHIC SURVEY BY KIEFT ENGINEERING, INC. DATED JULY 19, 2023, SUPPLEMENTED BY RECORD DRAWINGS & FIELD OBSERVATIONS.
2. VERTICAL CONTROL: ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM. THE BENCH MARKS USED ARE SHOWN ON THE TOPOGRAPHIC SURVEY.
3. LAYOUT: LOCATE NEW CONSTRUCTION BY MEASUREMENTS FROM CONNECTING AREAS OF EXISTING BUILDINGS, & ENGAGE THE SERVICES OF A PROFESSIONAL SURVEYOR TO ASSIST IN LAYOUT, & CONSTRUCTION STAKING. CONFIRM HORIZONTAL & VERTICAL CONTROL POINTS PRIOR TO CONSTRUCTION.

CLEARING, GRUBBING & EARTHWORK

- 1. AT THE START OF EARTHWORK OPERATIONS, ALL SURFACE VEGETATION SHALL BE CLEARED & THE EXISTING TOPSOIL & ANY OTHER ORGANIC SOILS SHALL BE REMOVED IN THEIR ENTIRETY FROM BELOW THE PROPOSED BUILDING & PAVEMENT AREAS. EXISTING RANDOM CONCRETE & OTHER DEBRIS SHALL BE REMOVED FROM WITHIN THE BUILDING AREA. REMOVE STUMPS TO 12 INCHES BELOW FINAL GRADE IN FUTURE LAWN AREAS, & REMOVE STUMPS ENTIRELY FROM FUTURE PAVED & BUILDING AREAS. DISPOSE OF VEGETATIVE MATTER & DEBRIS OFFSITE.
2. ALL COMPACTED SUBGRADE SHALL BE THOROUGHLY PROOF-ROLLED WITH A HEAVY RUBBER-TIRED VEHICLE SUCH AS A LOADED SCRAPER OR LOADED DUMP TRUCK. ANY AREAS THAT EXHIBIT EXCESSIVE PUMPING & YIELDING DURING PROOF-ROLLING SHALL BE STABILIZED BY AERATION, DRIVING & COMPACTION IF WEATHER CONDITIONS ARE FAVORABLE, OR REMOVAL & REPLACEMENT WITH ENGINEERED FILL. ALL COMPACTED SUBGRADE SHALL BE COMPACTED TO 95% OF ITS MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR METHODS (ASTM D-1557).
3. ALL EXCAVATIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE WHO SHALL BE CONSULTED WHEN POOR SOIL, WATER, OBSTRUCTIONS, PIPING, EXISTING FOOTINGS, EXCAVATIONS, ETC., ARE ENCOUNTERED.
4. CONTRACTOR SHALL FURNISH ALL REQUIRED DEWATERING EQUIPMENT TO MAINTAIN A DRY EXCAVATION UNTIL BACKFILL IS COMPLETE.
5. MATERIAL FOR BACKFILL OR ENGINEERED FILL REQUIRED TO ACHIEVE DESIGN GRADES SHOULD CONSIST OF NON-ORGANIC SOILS. THE ON-SITE SOILS THAT ARE FREE OF ORGANIC MATTER & DEBRIS MAY BE USED FOR ENGINEERED FILL WITH ENGINEER'S APPROVAL.
6. BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF ITS MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557, IN LIFTS NOT EXCEEDING 8-INCHES IN LOOSE THICKNESS.
7. FROZEN MATERIAL SHALL NOT BE USED AS FILL, NOR SHALL FILL BE PLACED ON FROZEN SUB-GRADE.

CLEARING, GRUBBING & EARTHWORK CONT.

- 8. DO NOT PLACE BACKFILL AGAINST FOUNDATION WALLS UNTIL FIRST FLOOR LEVEL SLABS ARE IN PLACE & HAVE REACHED 75% OF THEIR SPECIFIED DESIGN STRENGTH. SHORE & BRACE WALLS AS REQUIRED IF BACKFILLING OPERATIONS ARE TO BE CARRIED OUT PRIOR TO PLACEMENT OF FLOOR SLABS.
9. PLACE BACKFILL AGAINST BOTH SIDES OF GRADE BEAMS & FOUNDATIONS AT EQUAL ELEVATIONS OF FILL, EXCEPT AS SHOWN ON THE DRAWINGS.
10. CONSTRUCTION DRAINAGE: STORM WATER ACCUMULATED IN THE PROJECT SITE EXCAVATIONS IS TO DRAIN BY NATURAL PERCOLATION. PROVIDE PUMPING ONLY AS NECESSARY.
11. SLOPE SMOOTHLY BETWEEN INDICATED ELEVATIONS TO ACHIEVE POSITIVE DRAINAGE. SLOPE ALL EARTH BANKS 4:1 OR FLATTER.
12. NEW GRADES SHOWN ARE FINISHED GRADES & INCLUDES TOP OF TOPSOIL OR SURFACES SUCH AS PAVEMENTS & WALKS.
13. PROVIDE 6 INCHES OF TOPSOIL, SEED, & MULCH AT DISTURBED LAWN AREAS, EXCEPT AS NOTED OTHERWISE.
14. TREES: TREES NOT INDICATED TO BE REMOVED OR TRANSPLANTED SHALL BE FENCED OFF WITH 4' HIGH ORANGE CONSTRUCTION FENCE 10' FROM THE DRIP LINE OF THE TREE.
15. GREAT CARE SHALL BE TAKEN BY CONTRACTORS TO AVOID DAMAGE TO VEGETATION OUTSIDE THE LIMITS OF CONSTRUCTION & TO KEEP THE CONSTRUCTION AREAS TO A MINIMUM. DRIVING SHALL NOT BE PERMITTED OUTSIDE THE LIMITS OF CONSTRUCTION.
16. 17. TOPSOIL (REUSE EXISTING), SEED, FERTILIZE & MULCH LAWN AREAS DISTURBED BY NEW CONSTRUCTION. SEE LANDSCAPING PLANS FOR NEW LAWN SPECIES.

UTILITIES

1. MINIMUM COVER OF UNDERGROUND UTILITIES:

Table with 2 columns: Utility Type, Minimum Cover. Includes Water (6.0 FT), Natural Gas (2.5 FT), Sanitary Sewers (4.0 FT), Storm Sewer (3.5 FT).

- PRESSURE UTILITIES MAY BE LAID APPROXIMATELY PARALLEL TO FINISH GRADE WITH NO HIGH POINTS, EXCEPT AS INDICATED, WITH LOCAL DEEPENING TO AVOID OTHER UTILITIES OR OBSTRUCTIONS. MAINTAIN COVER BELOW DITCHES & SURFACE DEPRESSIONS. PROVIDE TEMPORARY PROTECTION AS REQUIRED UNTIL COVER IS COMPLETED. INFORM OWNER'S REPRESENTATIVE IF AVAILABLE COVER, AT INDICATED ELEVATIONS, IS LESS THAN MINIMUM. VERTICAL CLEARANCE FOR ALL PIPES SHALL BE 18" MINIMUM FROM THE OUTSIDE OF PIPE.
2. EXISTING UTILITIES: INFORMATION HAS BEEN OBTAINED FROM EXISTING AVAILABLE DRAWINGS & SURFACE FEATURES SHOWN ON THE TOPOGRAPHIC SURVEY. VERIFY THE INFORMATION BEFORE CONSTRUCTION. NOTIFY THE OWNER'S REPRESENTATIVE OF DISCREPANCIES OR INTERFERENCES.
3. EXISTING UNDERGROUND ELECTRICAL LINES: THE CONTRACTOR SHALL BE RESPONSIBLE TO TRACE, FLAG, & MARK ALL UNDERGROUND ELECTRICAL LINES IN THE VICINITY OF THE AREA OF WORK PRIOR TO BEGINNING ANY DEMOLITION, EARTH MOVING, OR EXCAVATION. ALL BUILDING & UNDERGROUND STRUCTURES, ELECTRICAL MANHOLES, HAND HOLES, LIGHTS, PARKING METERS, GATES, SIGNS, MONUMENTS, & ALL OTHER SITE ITEMS THAT CAN REASONABLY BE OBSERVED FROM THE SURFACE SHALL BE INVESTIGATED TO DETERMINE THE PRESENCE OF ELECTRICAL LINES. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE ANY ELECTRICAL LINES DAMAGED DUE TO CONTRACT OPERATIONS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
4. THE LOCATIONS & ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS & ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.
5. PRIOR TO CONSTRUCTION, EXISTING UTILITIES AT PROPOSED CONNECTIONS & CROSSINGS SHALL BE FIELD EXCAVATED TO VERIFY LOCATIONS, ELEVATION & SIZE. THE OWNER'S REPRESENTATIVE MAY CONFIRM, ADJUST OR REVERSE DESIGN ELEVATIONS OF THE PROPOSED UTILITIES.
6. UNDERDRAIN: PROVIDE TYPICAL UNDERDRAIN UNDER PAVEMENT AT NEW CATCH BASINS, INLETS & OUTLET CONTROL STRUCTURES RECEIVING SURFACE DRAINAGE. UNDERDRAIN SHALL HAVE A MINIMUM OF 2'-6" COVER & A MINIMUM SLOPE OF 0.5%. SEE DETAIL ON (____).

GENERAL PAVING & CURBING NOTES

- 1. ALL HOT MIX ASPHALT & CONCRETE PAVEMENT SHALL CONFORM TO THE 2020 MDOT SPECIFICATIONS FOR CONSTRUCTION.
2. SURFACE RESTORATION: RESTORE PAVEMENT & OTHER SURFACES DISTURBED BY CONTRACT OPERATIONS TO THEIR ORIGINAL CONDITION OR BETTER.
3. PAVEMENT STRIPING: PROVIDE 4 INCH WIDE WHITE PAINT STRIPING STANDARD PARKING STRIPING,, & 4 INCH WIDE HANDICAP BLUE FOR ALL ACCESSIBLE PARKING STRIPING. ALL PARKING SPACE STRIPING SHALL BE DOUBLE STRIPED, MEETING THE ZONING ORDINANCE OF WHITE LAKE TOWNSHIP. ALL PAVEMENT LANE MARKINGS SHALL MEET THE REQUIREMENTS. ALL PAINT SHALL BE APPLIED PER MANUFACTURERS RECOMMENDATIONS.
4. PROVIDE TEMPORARY INTERMITTENT MARKING FOR NEW PARKING AREA WHILE PAVEMENT CURES & SEALING COATING IS APPLIED.
5. EXISTING PAVEMENT TO BE REMOVED SHALL BE SAW CUT, FULL DEPTH, & RECTANGULAR.
6. WHEN PLACING NEW PAVEMENTS, MAINTAIN SLOPE OF EXISTING SURROUNDING SURFACES.
7. ALL NEW CURB SHALL BE PLACED ON 4" MIN. THICK BASE OF 21AA LIMESTONE COMPACTED TO 95% MAX. DENSITY PER ASTM D1557. BASE SHALL EXTEND 12" BEYOND BACK OF CURB. SUBGRADE SHALL BE PROOF-ROLLED/COMPACTED TO 95% MAX. DENSITY PER ASTM D-1557.

ASPHALT

- 1. AFTER FINAL ROLLING, PROTECT PAVEMENT FROM VEHICULAR TRAFFIC UNTIL THE SURFACE HAS COOLED SUFFICIENTLY TO ELIMINATE SURFACE ABRASION.
2. PAVEMENT SEALER - PROVIDE FOR ALL NEW ASPHALT PAVEMENT
A. PAVEMENT SEALER SHALL BE TARCONITE BY NEYRA INDUSTRIES, INC., OR APPROVED SUBSTITUTE. SEALER SHALL MEET FS R-P-355e PITCH, COAL TAR EMULSION (COATING FOR BITUMINOUS PAVEMENTS).

ALTERNATE NO. 1: PAVEMENT SEALER SHALL BE JENNITE BY NEYRA INDUSTRIES INC. OR APPROVED SUBSTITUTE SEALER SHALL BE MIXED WITH 6 POUNDS OF SAND PER GALLON OF SEALER. SURFACE CLEANING, PRIMING & NUMBER OF APPLICATIONS SHALL BE AS SPECIFIED FOR BASE BID. SEALER SHALL EXCEED FS R-P-355e.

ASPHALT CONT.

- A. PRIMER SHALL BE POLYPRIME PENETRATING PRIMER BY NEYRA INDUSTRIES, INC. OR APPROVED SUBSTITUTE.
B. CLEAN EXISTING SURFACES FREE FROM ALL LOOSE OR FOREIGN MATTER. COAT OIL SPOTS WITH ACRYLIC OIL SPOT PRIMER.
C. APPLY PRIMER AT MINIMUM RATE OF .015 GAL. OF CONCENTRATED POLYPRIMER PER SQUARE YARD. ALLOW PRIMER TO CURE FOR A MINIMUM OF ONE HOUR PRIOR TO APPLICATION OF TARCONITE.
D. SEALER SHALL BE FIELD MIXED WITH 5 POUNDS OF SAND PER 1 GALLON OF TARCONITE TO FORM HOMOGENEOUS SLURRY. SAND SHALL BE WASHED DRY SILICA SAND.
E. APPLICATION SYSTEM FOR MODERATE TRAFFIC: ONE COAT OF POLYPRIME PENETRATING PRIMER & TWO SAND-SLURRY COATS OF TARCONITE. APPLICATION SPECIFICATION JV-S2.
F. NEW PAVEMENTS SHALL BE ALLOWED TO CURE AT LEAST 30 DAYS PRIOR TO APPLICATION.
G. APPLICATION OF PAVEMENT SEALER SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
H. BARRICADE COATED AREAS UNTIL COATING IS DRIED SUFFICIENTLY FOR TRAFFIC.

CAST-IN-PLACE CONCRETE & CONCRETE PAVING

- 1. ALL CAST IN PLACE CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301-LATEST REVISION, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING", EXCEPT AS NOTED ON THE DRAWINGS.
2. ALL CONCRETE PAVEMENT WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 330- LATEST REVISION, "GUIDE FOR THE DESIGN AND CONSTRUCTION OF CONCRETE PARKING LOTS", EXCEPT AS NOTED ON THE DRAWINGS.
3. ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 psi.
4. ALL EXTERIOR CONCRETE INCLUDING WALLS SHALL BE AIR ENTRAINED 5% +/- 1%.
5. ALL EXTERIOR CONCRETE EXPOSED TO WEATHER SHALL HAVE A MAXIMUM WATER TO CEMENTITIOUS RATIO OF 0.45.
6. UNLESS NOTED OTHERWISE, MINIMUM CONCRETE COVER SHALL BE: CONCRETE CAST AGAINST EARTH 3 IN, CONCRETE EXPOSED TO EARTH OR WEATHER 2 IN, CONCRETE NOT EXPOSED TO EARTH OR WEATHER (SLABS, JOISTS, WALLS) 3/4 IN, CONCRETE NOT EXPOSED TO EARTH OR WEATHER (BEAMS, COLUMNS, PEDESTALS) 1 1/2 IN
7. THE CONTRACTOR SHALL FOLLOW THE JOINTING LAYOUT ON THE DRAWINGS, AND SHALL CONFORM TO ACI 330 GUIDE FOR DESIGN & CONSTRUCTION OF CONCRETE PARKING LOTS, LATEST EDITION AS WELL AS WHITE LAKE TOWNSHIP STANDARDS. ALL JOINTS SHALL BE SEALED W/ NON-SAG SILICONE JOINT SEALANT. SEE PAVING DETAILS FOR JOINT AND SEALANT DETAILS.
8. THE CONTRACTOR SHALL SUBMIT THE CONCRETE MIX DESIGN(S) TO THE ENGINEER FOR REVIEW. PROPORTION MIX DESIGNS AS DEFINED IN ACI 301 SECTION 4. THE SUBMITTAL SHALL INCLUDE AS A MINIMUM CEMENT TYPE & SOURCE, CEMENT CUBE STRENGTH, AGGREGATE GRADATIONS, WATER TESTS, AD-MIXTURE CATALOG INFORMATION & CYLINDER STRENGTH TEST RESULTS FOR THE CONCRETE.
9. ALL REINFORCEMENT TO BE DETAILED, FABRICATED & ERECTED ACCORDING TO THE ACI STANDARDS: "DETAILS & DETAILING OF CONCRETE REINFORCEMENT", ACI 315 - LATEST REVISION & "MANUAL OF ENGINEERING & PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES", ACI 315R - LATEST REVISION.
10. LAPS, ANCHORAGES & SPLICES SHALL COMPLY WITH THE REQUIREMENTS OF ACI 318-LATEST REVISION, SECTIONS 12.2 & 12.15. LOCATIONS & SPLICES SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION JOINT LOCATIONS, DETAILS & AS SHOWN ON THE REINFORCING STEEL SHOP DRAWINGS.
11. ALL CONSTRUCTION JOINTS SHALL BE FURNISHED WITH KEYWAY CENTERED ON MEMBERS. WHERE THE SIZE OF KEY IS NOT SHOWN ON THE DRAWINGS, THE KEY DEPTH SHALL BE 10% OF THE CROSS SECTION DIMENSION OF THE MEMBER - MINIMUM 3/4".
12. PROVIDE 3/4" CHAMFER STRIP AT ALL EXPOSED CORNERS OF CONCRETE WALLS, INCLUDING EXPOSED CORNERS OF CONCRETE PIERS.
13. LOCATE ALL SLEEVES, OPENINGS, EMBEDDED ITEMS, ETC., AS INDICATED ON THE DRAWINGS. THE CONCRETE CONTRACTOR SHALL CHECK WITH ALL OTHER TRADES TO MAKE SURE THE SLEEVES, OPENINGS & EMBEDDED ITEMS THAT ARE TO BE PROVIDED & SET BY THEM ARE IN PLACE PRIOR TO PLACING OF CONCRETE IN THE AREA INVOLVED.
14. ALL INTERIOR SLABS ON GRADE SHALL BE PLACED ON A VAPOR BARRIER WITH A MINIMUM OF 4-INCHES MDOT CLASS II GRANULAR MATERIAL (SAND). MINIMUM REINFORCEMENT SHALL BE IN ACCORDANCE WITH CRSI ENGINEERING DATA REPORT NUMBER 37, OR AS DETAILED. ALL EXTERIOR SLABS ON GRADE SHALL BE PLACED ON A MINIMUM OF 4-INCHES CLEAN SAND. MINIMUM REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 318 SECTION 7.12 - SHRINKAGE & TEMPERATURE REINFORCEMENT, OR AS DETAILED.
15. CONTRACTORS SHALL OBTAIN APPROVAL FROM THE ENGINEER, PRIOR TO PLACING OPENINGS OR SLEEVES, NOT SHOWN ON THE DRAWINGS, THROUGH ANY STRUCTURAL MEMBERS, ROOF, WALLS OR FOUNDATIONS. REVIEW ARCHITECTURAL, MECHANICAL & ELECTRICAL DRAWINGS FOR BASES, OPENINGS, SLEEVES, ANCHORS, INSERTS, CONDUITS, RECESSES & OTHER DEVICES IN CONCRETE WORK BEFORE CASTING CONCRETE.
16. PROVIDE POCKETS OR RECESSES IN CONCRETE WORK FOR STEEL COLUMNS & BEAMS AS REQUIRED &/OR AS CALLED FOR IN THE SPECIFICATIONS EVEN IF NOT SHOWN ON THE DRAWINGS. PROVIDE CONCRETE FILL AFTER STEEL ERECTION TO SEAL OPENINGS.
17. REFER TO ARCHITECTURAL DRAWINGS FOR SLAB RECESSES &/OR FLOOR FINISH MATERIALS.
18. WELDING OF REINFORCING STEEL IS PROHIBITED UNLESS SPECIFICALLY DETAILED. WELDING SHALL CONFORM TO AWS D1.4 SPECIFICATION.
19. CONCRETE SHALL BE THOROUGHLY COMPACTED BY VIBRATION SUPPLEMENTED BY SPADING, PUDDLING OR AGITATION, TO PREVENT HONEYCOMBING & TO INSURE THE ELIMINATION OF VOIDS. VIBRATION MUST BE DIRECT ACTION IN THE CONCRETE & NOT AGAINST FORMS OR REINFORCEMENT. HONEYCOMBING, VOIDS & LARGE AIR POCKETS WILL NOT BE ACCEPTABLE.

SOIL EROSION & SEDIMENTATION CONTROL

- 1. COMPLY WITH THE REQUIREMENTS OF THE OAKLAND COUNTY WATER RESOURCE COMMISSIONER EROSION & SEDIMENTATION CONTROL PERMIT ALONG WITH ALL APPLICABLE FEDERAL, STATE, COUNTY, & CITY LAWS, CODES, & REGULATIONS PERTAINING TO THE IMPLEMENTATION, MAINTENANCE, & DOCUMENTATION OF SEDIMENTATION & EROSION CONTROL PRACTICES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, & DOCUMENTATION OF SEDIMENTATION & EROSION CONTROL & STORM WATER QUALITY ISSUES RELATED TO THE PROJECT, AS REQUIRED & AS NECESSARY TO COMPLY WITH APPLICABLE LAWS, CODES, & REGULATIONS.
3. INSPECTIONS SHALL BE MADE WEEKLY & AFTER RAIN EVENTS TO DETERMINE THE EFFECTIVENESS OF EROSION & SEDIMENT CONTROL MEASURES. ANY NECESSARY IMPROVEMENTS OR REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
4. SEDIMENT & EROSION FROM ALL WORK AREAS SHALL BE CONTAINED ON THE SITE, AWAY FROM WETLANDS, OUTFALLS, WATERWAYS, & ENVIRONMENTALLY SENSITIVE AREAS. WATERWAYS INCLUDE BOTH NATURAL & MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, & PONDS.
5. MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE & LAWN AREAS ARE FULLY DEVELOPED.
6. PROVIDE JUTE MATTING OR NETTED MULCH ON TEMPORARY SLOPES 2:1 OR STEEPER. SEED & MULCH OTHER SLOPES TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS.
7. REMOVE SEDIMENTATION & EROSION CONTROL MEASURES UPON COMPLETION OF PROJECT.
SEQUENCE OF EROSION & SEDIMENTATION CONTROL OPERATIONS:
1. A PERIMETER DEFENSE WILL BE INSTALLED PRIOR TO CONSTRUCTION TO CONTAIN RUNOFF FROM ALL PROPOSED DISTURBED AREAS. SEDIMENT CONTROL WILL BE INITIATED WHICH WILL CONSIST OF MAINTAINING ALL EXISTING VEGETATION & DIRECTING ALL RUNOFF ON SITE.
2. DURING CONSTRUCTION THE ENDS OF ALL OPEN PIPES WILL BE PROTECTED BY FILTER FABRIC, STONE FILTERS OR OTHER APPROVED MEANS.
3. ANY REMAINING DENUDE AREA SHALL BE SEEDED & MULCHED DAILY, UPON COMPLETION OF FINAL GRADING.
4. AT THE COMPLETION OF THE CONSTRUCTION, TEMPORARY CONTROL MEASURES WILL BE REMOVED & CONVERTED TO PERMANENT CONTROLS. FINAL GRADING WILL BE COMPLETED & THE GROUND WILL BE PERMANENTLY STABILIZED. FILTER FABRIC FENCES SHALL BE REMOVED & ANY BARE SPOTS WILL BE SEEDED. CATCH BASINS & DRAIN INLETS WILL BE CAREFULLY UNCOVERED & ANY SEDIMENT OR DEBRIS WILL BE REMOVED.
5. CONTRACTOR IS TO SEED CRITICAL AREAS IDENTIFIED BY OWNER OR OWNER'S REPRESENTATIVE DAILY, WHEN THOSE AREAS ARE SUBJECT TO EARTH CHANGES. CONTRACTOR IS ALSO RESPONSIBLE FOR REGULAR MAINTENANCE OF PLANT COVER IN THESE AREAS. COVER SHALL BE MAINTAINED SO AS TO CONTROL SOIL EROSION.
6. AT THE CONCLUSION OF CONSTRUCTION, THE OWNER WILL ASSUME THE RESPONSIBILITY FOR PERMANENT MAINTENANCE OF THE EROSION & SEDIMENTATION CONTROL MEASURES.
7. PROVIDE DUST CONTROL WITH AN ON-SITE WATER WAGON. WATER SHALL BE IMPLEMENTED AS NEEDED & AT THE DIRECTION OF THE CITY AGENT.

LEGEND OF ABBREVIATIONS

Table with 2 columns: Symbol/Abbreviation, Meaning. Includes symbols for AT, APPROXIMATELY, ASPHALT, BACK TO BACK, BOTTOM OF RAMP, BOTTOM OF WALL, BACK OF CURB, BOTTOM OF PIPE, CATCH BASIN, CENTERLINE, CLASS, CORRUGATED METAL PIPE, CLEAN OUT, CONCRETE, CENTER POINT, CORRUGATED PERFORATED PLASTIC PIPE, DEMOLITION OR DEMOLISH, EAST, ELEVATION, ELECTRICAL, EQUAL, END SECTION, EACH WAY, EXISTING, EXISTING, HYDRANT FLANGE BREAK ELEVATION, FINISHED FLOOR, FACE TO FACE, FINISHED GRADE ELEVATION, FACE OF CURB, GUTTER OR GRAVEL ELEVATION, GATE VALVE & WELL, HIGH POINT, HYDRANT, INLET, INVERT ELEVATION, LOCATION(S), LOW POINT, MATCH EXIST. ELEVATION, MAXIMUM, MANHOLE, MINIMUM, NORTH, ON CENTER, POINT OF CURVATURE, POINT TANGENT, PROPOSED, REINFORCED CONCRETE PIPE, RADIUS OR RIM ELEVATION, RIGHT OF WAY, RAIL ROAD, SOUTH, ARC LENGTH, SANITARY SEWER, SUMP DISCHARGE, SOIL EROSION & SEDIMENTATION CONTROL, SPACED, ROAD STATION, STORM SEWER, TOP OF WALL, TOP OF CURB, TOP OF PAVEMENT, TOP OF RAMP, TOP OF SIDEWALK, TRENCH DRAIN, TOP OF PIPE, TYPICAL, UTILITY POLE, UNDERGROUND, UNLESS NOTED OTHERWISE, WEST, WITH, WATER MAIN, WATER SERVICE, DIAMETER.

PIPE SIZE DESIGNATION

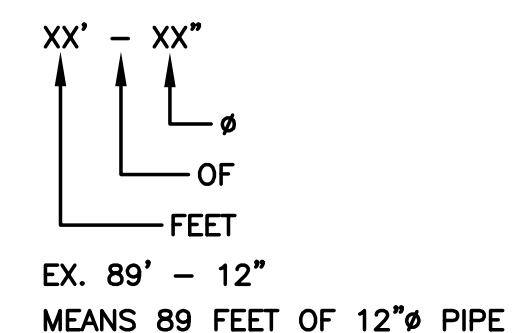


Table with 2 columns: DATE, ISSUE. Includes dates 04/19/24 and 06/27/24, and issue PRELIMINARY SITE PLAN P5P REV. 1.

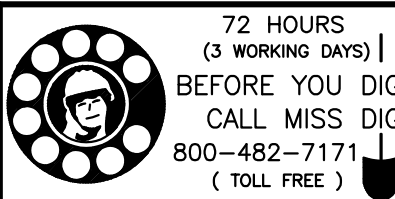
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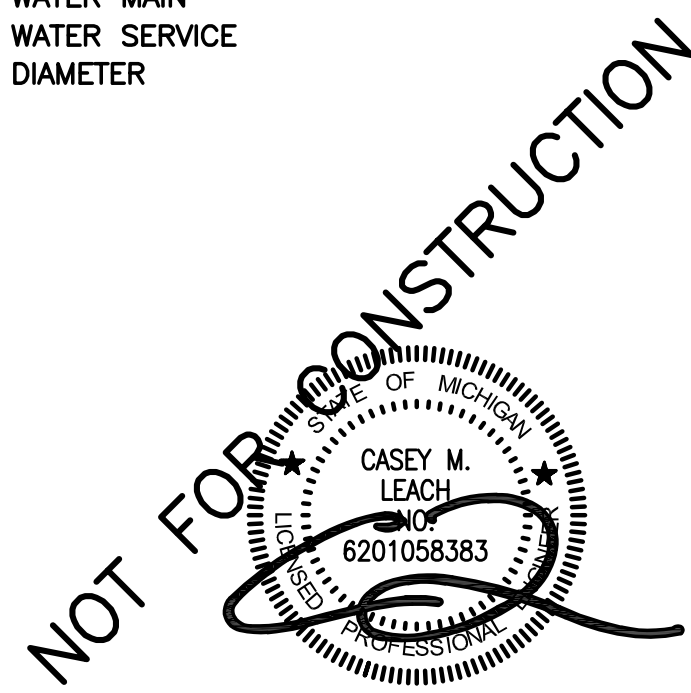
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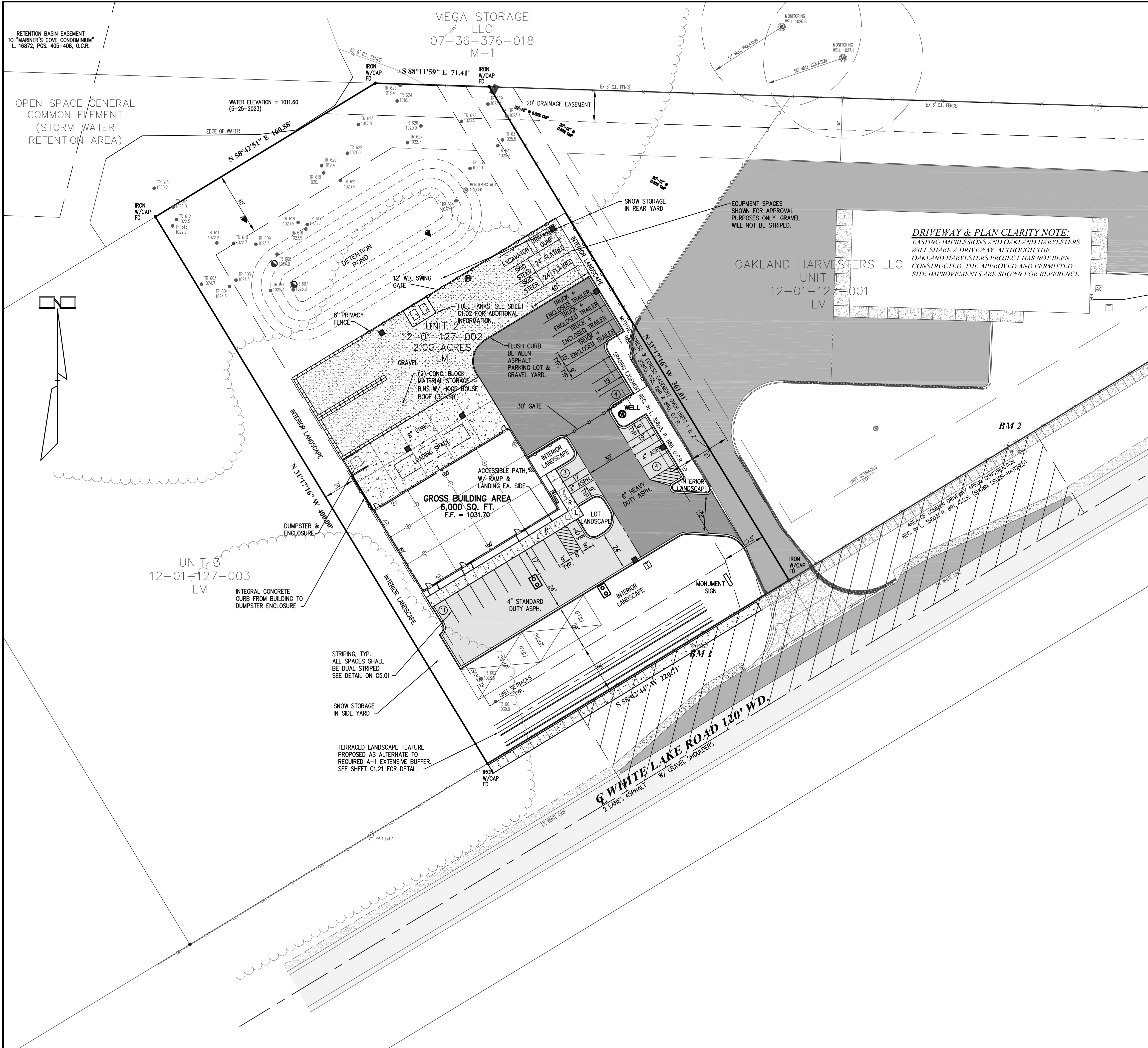


72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)
GENERAL NOTES & LEGENDS LASTING IMPRESSIONS, PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

Table with 2 columns: SCALE, SHEET NO. Includes SCALE: NONE and SHEET NO: C0.01.

KE 2023.104





SITE INFORMATION:

LOT GROSS AREA: 2.00 ACRES

BUILDING INFORMATION:

BUILDING SHALL BE PRE-ENGINEERED METAL BUILDING
GROSS AREA = 6,000 SF
BUILDING HEIGHT < 40 FT

ZONING INFORMATION:

ZONING DISTRICT: LM LIGHT MANUFACTURING
MINIMUM LOT SIZE: 43,560 SF (1.00 AC), CONFORMS
MINIMUM LOT WIDTH: 175 FT, CONFORMS
MAXIMUM BUILDING HEIGHT: 2 STORIES OR 40 FT, CONFORMS

SETBACKS: PER "PROSPECTORS SQUARE" O.C.C.P. NO. 1315

FRONT	REAR	SIDES	PARKING
30 FT	40 FT	20 FT LEAST, 40 FT TOTAL	10 FT

MAXIMUM LOT COVERAGE: 30%

PARKING SPACE SIZE: 90° 9 FT X 18 FT W/ 24 FT LANE
0° 20 FT X 8 FT W/ 12 FT LANE

REQUIRED PARKING SPACES: 1 SPACE/800 SF USABLE FLOOR AREA + 1 SPACE/2EMPLOYEES

USABLE FLOOR AREA = 6,000 SF (80%) = 4,800 SF
EMPLOYEES SHOWING UP TO THE SITE DAILY = 18 EMPLOYEES
4,800 SF / (SPACE/800 SF) + 18 EMPLOYEES / (1 SPACE/2EMPLOYEES) = 15 SPACES REQUIRED
22 TOTAL PARKING SPACES PROVIDED
PER DOJ: 1-24 SPACES REQUIRES 1 ACCESSIBLE SPACE
1 VAN ACCESSIBLE SPACE PROVIDED

REQUIRED LOADING ZONE: 1 SPACE REQUIRED FOR 2,000 - 20,000 SF OF GROSS FLOOR AREA
5,000 SF REQUIRES (1) 10 FT X 30 FT LOADING SPACE, 1 SPACE PROVIDED AT CONCRETE APRON AT REAR OF BUILDING.

SPECIAL LAND USE REQUESTED FOR ZONING ORDINANCE SECTION 4.37 OUTDOOR STORAGE OF FLEET VEHICLES & SECTION 4.39 OUTDOOR STORAGE OF PALLETS, CONTAINERS, MATERIALS OF PRODUCTS INCIDENTAL TO THE PRINCIPAL PERMITTED USE.

VARIANCE REQUESTED FOR GRAVEL SURFACING AT MATERIAL & EQUIPMENT STORAGE AREA.

REQUIRED MINIMUM SCREENING PER ZO SECTION 5.19D:

A-1 EXTENSIVE LANDFORM BUFFER REQUIRED BETWEEN LM & ROAD ROW
PURSUANT TO ZO SECTION 5.19D.iii & v, SITE PLAN REQUESTS THE PLANNING COMMISSION TO PERMIT AN ALTERNATE SCREENING METHOD THAT WILL CONSIST OF TERRACED LANDSCAPE WALLS WITH PLANTINGS. THIS ALTERNATIVE LANDSCAPING WILL BE 6 FEET HIGH, AND INCLUDE THE REQUIRED MINIMUM NUMBER OF PLANTINGS.

REQUIRED INTERIOR LANDSCAPING PER ZO SECTION 5.19E:

REQUIREMENT: 13% OF TOTAL LOT AREA SHALL BE INTERNALLY LANDSCAPED, & 1 TREE + 5 SHRUBS SHALL BE PROVIDED FOR EVERY 300 SF OF REQUIRED INTERIOR LANDSCAPING.
(2.00 ACRES) / (43,560 SF/ACRE) (13%) = 13,068 SF INTERIOR LANDSCAPING REQUIRED
43.56 TREES & 217.8 SHRUBS REQUIRED
LANDSCAPING ALONG BUILDING & W SIDE OF GATE = 810 SF
LANDSCAPING AT E SIDE OF GATE & BETWEEN SHARED DRIVE & PARKING = 2,092 SF
LANDSCAPING ALONG WEST PROPERTY LINE & BETWEEN BASIN AND GRAVEL LOT = 10,196 SF
LANDSCAPING BETWEEN ROW BUFFER AND FRONT PARKING LOT = 4,360 SF
810 SF + 2,092 SF + 10,196 SF + 4,360 SF = 17,458 SF (20%) PROVIDED > 13,068 SF (15%) REQUIRED

REQUIRED PARKING LOT LANDSCAPING PER ZO SECTION 5.19G:

REQUIREMENT: INDUSTRIAL 10 SF/ PARKING SPACE
REQUIREMENT: 1 TREE & 3 SHRUBS PER 100 SF OF REQUIRED PARKING LOT LANDSCAPING
(22 SPACES) / (10 SF/SPACE) = 220 SF PARKING LOT LANDSCAPING REQUIRED
2.2 TREES & 6.6 SHRUBS REQUIRED
363 SF PROVIDED AT SIDEWALK CORNER ISLAND (BETWEEN SPACES)

LANDSCAPING TOTALS

	REQUIRED	PROVIDED
INTERIOR	13,068 SF	17,458 SF
PARKING LOT	220 SF	363 SF
TOTAL	13,288 SF	17,821 SF (34% MORE THAN REQUIRED, NOT COUNTING NORTH WOODY AREA)

IRRIGATION NOTES:

- PROVIDE AUTOMATIC IRRIGATION TO ALL LAWN AND LANDSCAPED AREAS.
 - ALL IRRIGATION COMPONENTS SHALL BE LOCATED COMPLETELY WITHIN THE PROPERTY BOUNDARY.
 - IRRIGATION COVERAGE SHALL EXTEND TO COVER LAWN WITHIN THE RIGHT-OF-WAY.
- IRRIGATION SYSTEM SHALL INCLUDE A RAIN SENSOR OR SIMILAR MEASURE TO ENSURE THAT IRRIGATION DOES NOT OCCUR DURING OR SHORTLY AFTER PRECIPITATION EVENTS.

FENCING NOTES:

- REAR AND SIDE FENCING SHALL BE 8' TALL, DOG-EAR, PRIVACY FENCE PER DETAIL ON SHEET C5.02.
- FRONT FENCING AND GATE ACROSS DRIVEWAY SHALL BE 8 FT TALL, VINYL (COLOR TBD), PRIVACY FENCE PER DETAIL ON SHEET C5.02.

BENCHMARKS:

- BM 1: MAG NAIL IN EAST FACE OF POWER POLE
EL. = 1034.67 NAVD 88
- BM 2: BOLT SPIKE ON NORTH FACE PF POWER POLE
EL. = 1030.06 NAVD 88

GENERAL NOTES:

- EXISTING UTILITIES SHOWN HAVE BEEN TAKEN FROM VISUAL OBSERVATION & RECORD MAPPING, WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY & COMPLETENESS OF OVERHEAD & UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION ACTIVITIES.
- SEE SHEET C0.01 FOR GENERAL NOTES & LEGENDS.

SIGN NOTE:

A FREESTANDING MONUMENT SIGN IS PROPOSED. SIGN WILL BE LIMESTONE BLOCK W/ METAL CUTOUT LOGO/LETTERING, AND BACKLIT. SIGN SHALL CONFORM TO THE ZONING ORDINANCE OF WHITE LAKE TOWNSHIP, AND SHALL BE PERMITTED THROUGH THE COMMUNITY DEVELOPMENT DEPARTMENT. SIGN DETAILS WILL BE PROVIDED AT A LATER TIME.

SITE LIGHTING NOTE:

SITE LIGHTING SHALL MEET THE ZONING CODE OF WHITE LAKE TOWNSHIP.

DATE	OWNER REVIEW	ISSUE
10/04/23	OWNER REVIEW	
11/13/23	PRE-APPLICATION MEETING	
11/29/23	FIRE SAFETY CONCEPTUAL REVIEW	
04/19/24	PRELIMINARY SITE PLAN	
06/21/24	PSP REV. 1	

PROPRIETOR:
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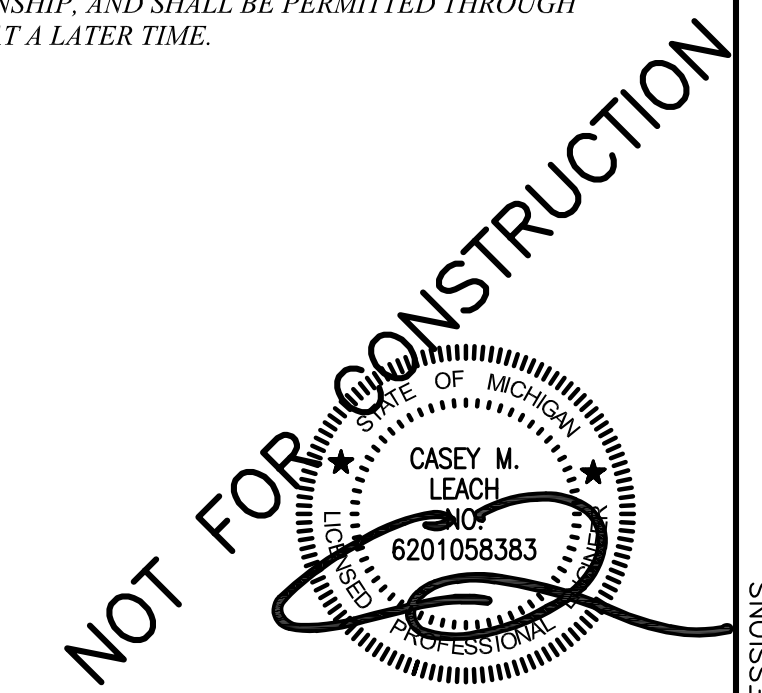
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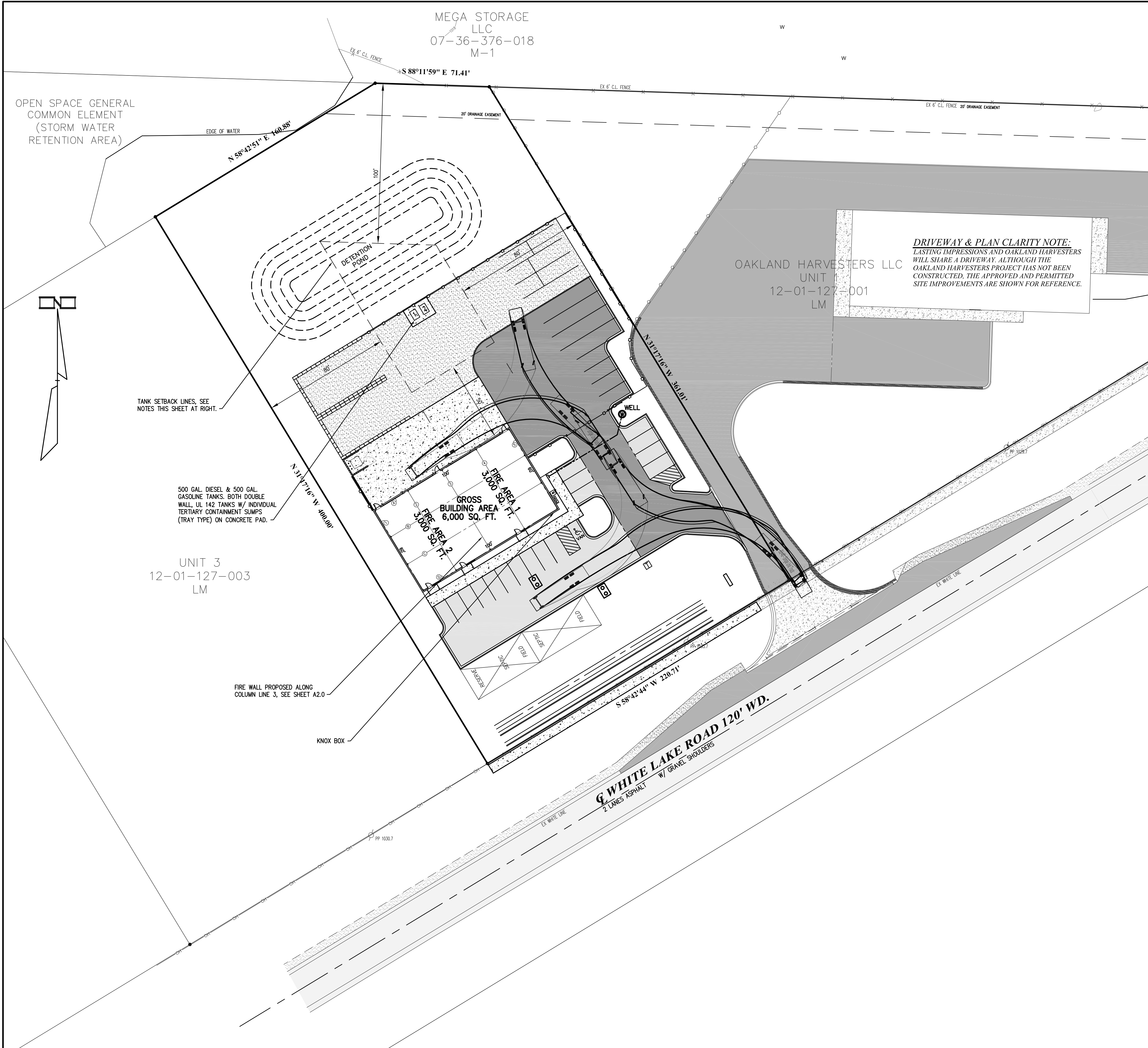


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PRELIMINARY SITE PLAN
LASTING IMPRESSIONS
PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE:	1" = 30'
SHEET NO:	C1.01
KE	2023.104





DRIVEWAY & PLAN CLARITY NOTE:
 LASTING IMPRESSIONS AND OAKLAND HARVESTERS WILL SHARE A DRIVEWAY. ALTHOUGH THE OAKLAND HARVESTERS PROJECT HAS NOT BEEN CONSTRUCTED, THE APPROVED AND PERMITTED SITE IMPROVEMENTS ARE SHOWN FOR REFERENCE.

TANK SETBACK LINES, SEE NOTES THIS SHEET AT RIGHT.

500 GAL. DIESEL & 500 GAL. GASOLINE TANKS, BOTH DOUBLE WALL, UL 142 TANKS W/ INDIVIDUAL TERTIARY CONTAINMENT SUMPS (TRAY TYPE) ON CONCRETE PAD.

UNIT 3
 12-01-127-003
 LM

FIRE WALL PROPOSED ALONG COLUMN LINE 3, SEE SHEET A2.0

KNOX BOX

SITE INFORMATION:
 LOT GROSS AREA: 2.00 ACRES

BUILDING INFORMATION:
 BUILDING SHALL BE PRE-ENGINEERED METAL BUILDING, NON-SPRINKLED
 GROSS AREA = 6,000 SF
 A FIRE WALL WILL BE CONSTRUCTED ALONG COLUMN LINE 3 SEPARATING THE GROSS AREA IN HALF
 LARGEST FIRE AREA = 3,000 SF
 BUILDING HEIGHT = 40 FT

FUEL TANK NOTES:
 FUEL TANK 1 - GASOLINE - 500 GALLON HORIZONTAL, UL-142
 FUEL TANK 2 - DIESEL - 500 GALLON HORIZONTAL, UL-142

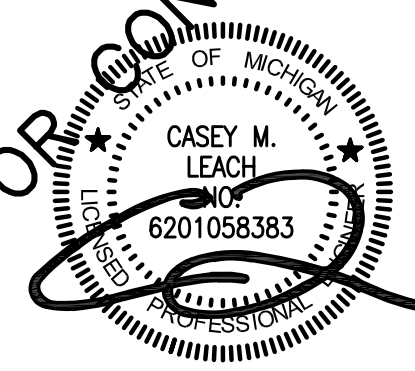
ISOLATION DISTANCES FOR UL-142 FUEL TANKS PER NFPA 30 & 30A:
 STRUCTURE/BUILDING: 50 FT
 PROPERTY LINE THAT CAN BE BUILT UPON: 100 FT
 NOTE: PROPERTY LINE SETBACK SHOWN AS 80 FT DUE TO 20 FT SETBACK ON ADJACENT PARCEL.

UL-142 TANKS ARE DUAL WALL PROVIDING SECONDARY CONTAINMENT. ADDITIONAL SUMPS ARE PROPOSED THAT WILL PROVIDE TERTIARY CONTAINMENT.

FIRE SAFETY NOTES:
 1. FIRE TRUCK TURNING BASED ON AASHTO SU-40 SINGLE UNIT TRUCK.
 2. A KNOX BOX SHALL BE PLACED ON THE FRONT OF THE BUILDING. FINAL LOCATION TO BE DETERMINED AND APPROVED BY FIRE INSPECTOR AT A LATER TIME.

REAR GATE ACCESS NOTES:
 1. ACCESS FOR EMPLOYEES SHALL BE REMOTE (E.G. GARAGE DOOR CLICKER) OR PHONE APP WHICH SHALL NOT REQUIRE THE USE OF THE KEYPAD OR KEY FOB STATION.
 2. ACCESS SHALL BE PROVIDED TO THE FIRE DEPARTMENT VIA ALL OF THE FOLLOWING.
 2.1. KEYPAD USING UNIVERSAL FIRE DEPARTMENT CODE.
 2.2. KEY FIB (SAME AS BUILDING FIB) LOCATED IN KNOX BOX AT FRONT DOOR.
 2.3. SOS (SIREN) SENSOR.
 3. IN THE CASE OF A POWER OUTAGE THE GATE CAN BE OPENED IN THE FOLLOWING WAYS:
 3.1. BATTERY BACKUP OPERATION ALLOWS 20 CYCLES AND HAS A STANDBY TIME OF 105 DAYS
 3.2. THE LOCKABLE GATE OPERATOR SHALL HAVE A KEY LOCATED IN THE KNOX BOX. A LEVER DISCONNECT CAN BE PULLED TO DISENGAGE THE DRIVE.

NOT FOR CONSTRUCTION



DATE	ISSUE
04/19/24	PRELIMINARY SITE PLAN
06/21/24	PSP REV. 1

PROPRIETOR:
 HOPSON HOLDINGS, LLC
 2255 PORTER ROAD
 WHITE LAKE, MICHIGAN 48383
 (248) 830-2828

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 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

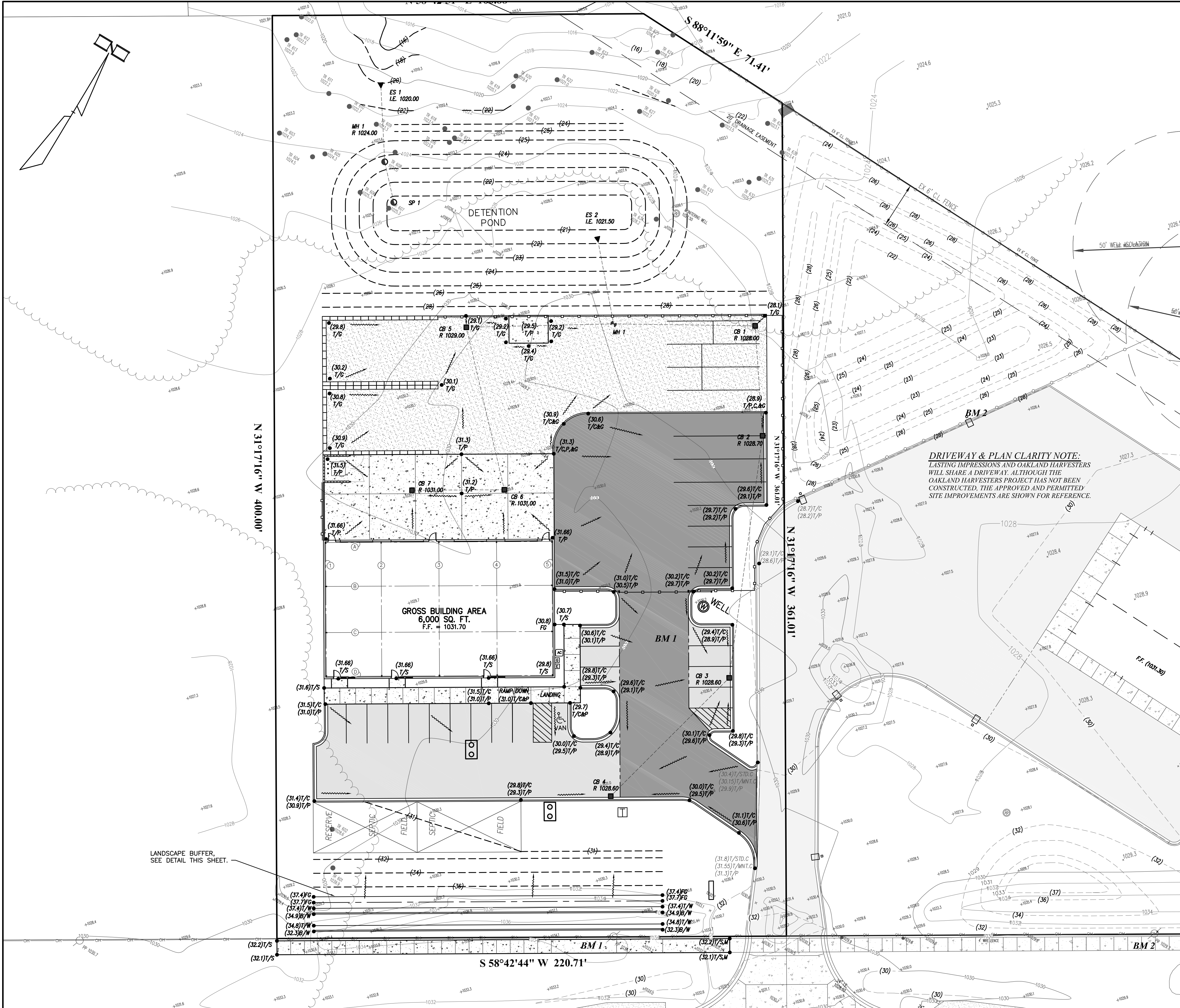
DATE: 04/01/24	CKD. BY: CL	DATE: 04/19/24
DRAWN: CL	DESIGN: CL	SECTION: 1



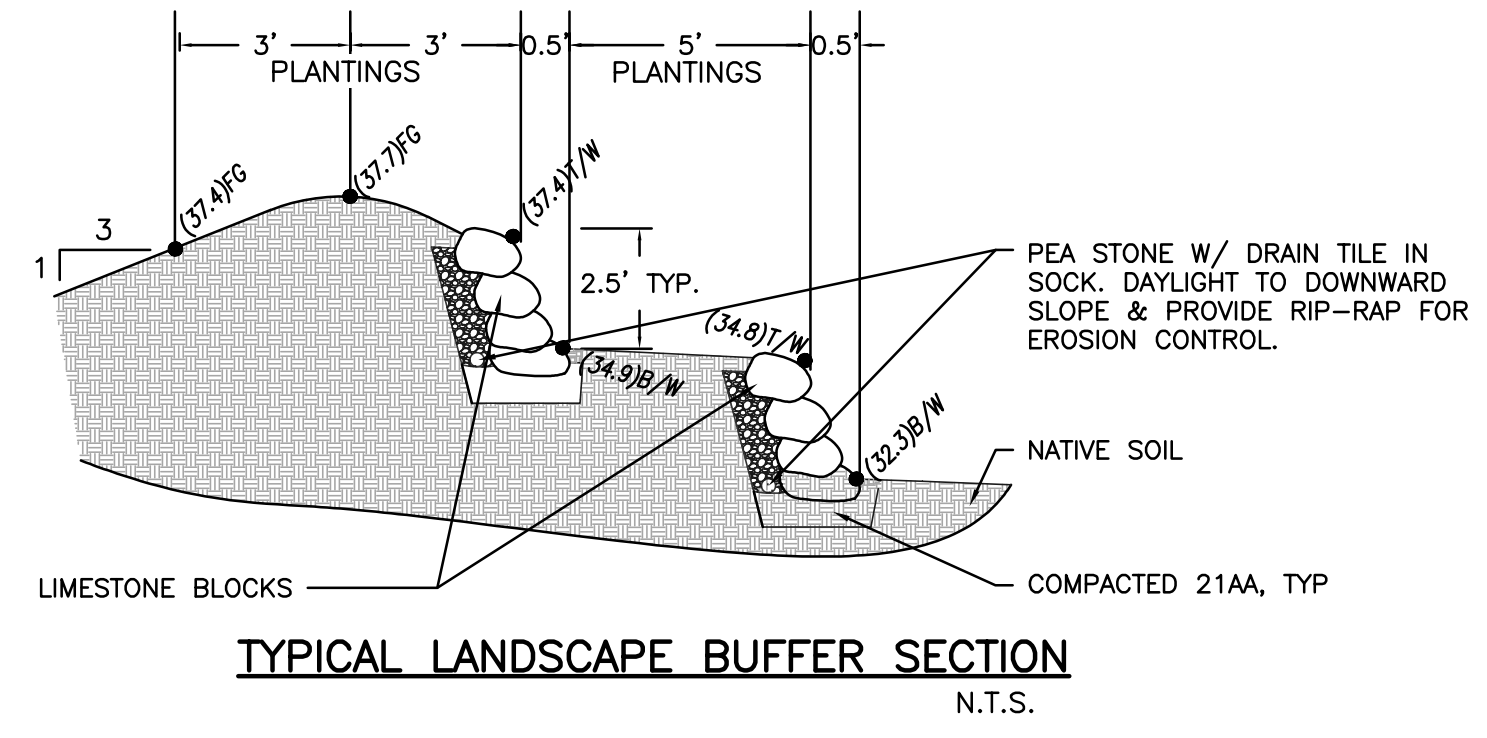
72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

FIRE SAFETY SITE PLAN
LASTING IMPRESSIONS
 PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E,
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE: 1" = 30'
SHEET NO: C1.02
KE 2023.104



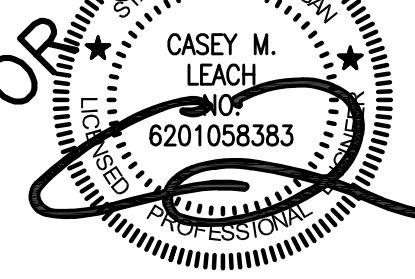
DRIVEWAY & PLAN CLARITY NOTE:
 LASTING IMPRESSIONS AND OAKLAND HARVESTERS WILL SHARE A DRIVEWAY. ALTHOUGH THE OAKLAND HARVESTERS PROJECT HAS NOT BEEN CONSTRUCTED, THE APPROVED AND PERMITTED SITE IMPROVEMENTS ARE SHOWN FOR REFERENCE.



BENCHMARKS:
 BM 1: MAG NAIL IN EAST FACE OF POWER POLE
 EL. = 1034.67 NAVD 88
 BM 2: BOLT SPIKE ON NORTH FACE PF POWER POLE
 EL. = 1030.06 NAVD 88

GENERAL NOTES:
 1. EXISTING UTILITIES SHOWN HAVE BEEN TAKEN FROM VISUAL OBSERVATION & RECORD MAPPING, WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY & COMPLETENESS OF OVERHEAD & UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION ACTIVITIES.
 2. SEE SHEET C0.01 FOR GENERAL NOTES & LEGENDS.

NOT FOR CONSTRUCTION



DATE	ISSUE
06/21/24	PSP REV. 1

PROPRIETOR:
 HOPSON HOLDINGS, LLC
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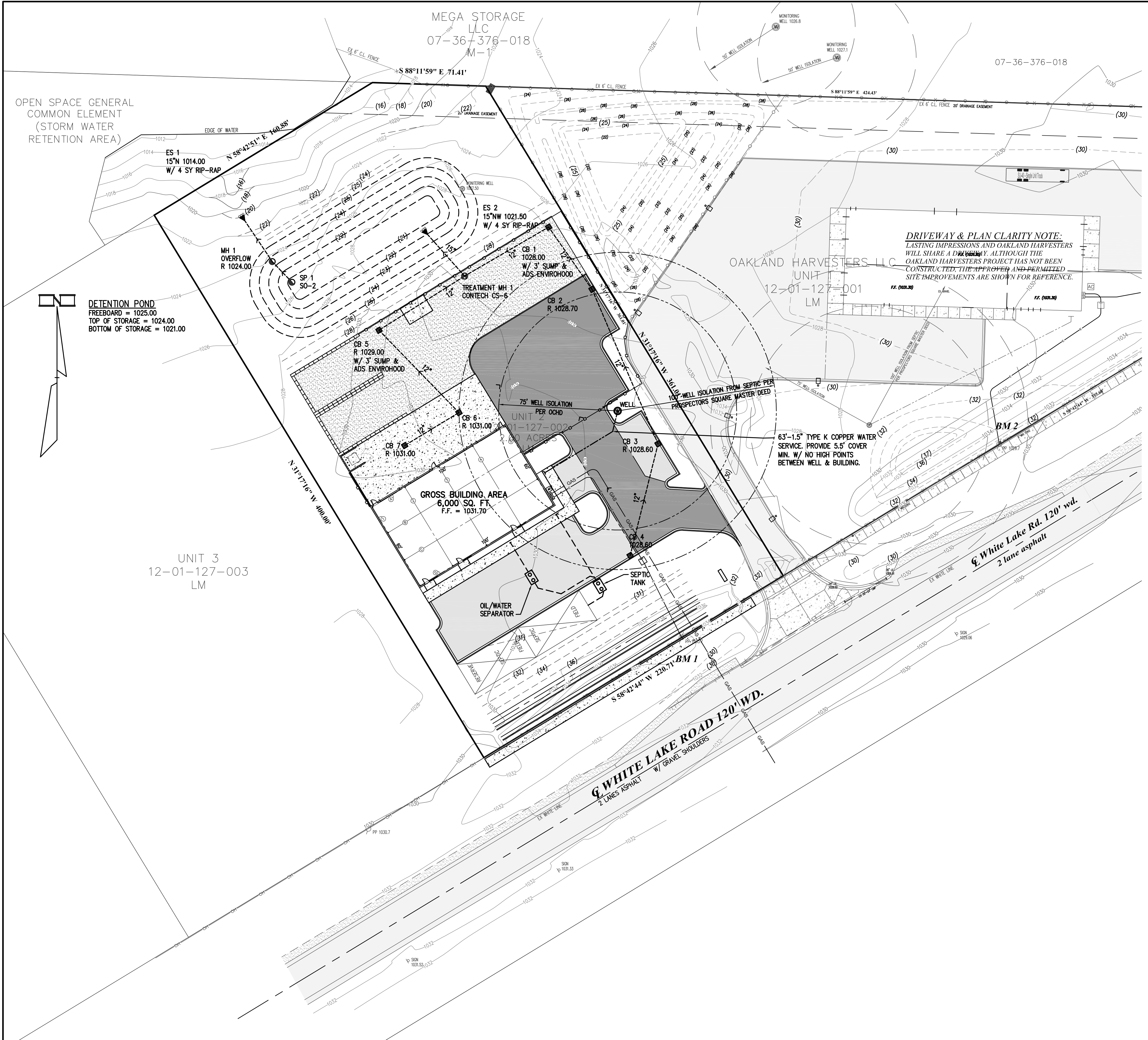
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 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	CKD. BY	DATE
06/19/24	CL	06/20/24

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 OR 811

PRELIMINARY GRADING PLAN
LASTING IMPRESSIONS
 PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E,
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE: 1" = 20'
SHEET NO: C1.21
KE 2023.104



100 YEAR DETENTION BASIN CALCULATION (I.E. WITH OUTLET)

ONSITE CONTRIBUTING AREA	=	2.00
OFFSITE CONTRIBUTING AREA	=	0.00
TOTAL CONTRIBUTING AREA	A	2.00

RUNOFF AREAS

PAVEMENT @	0.95	19,995 SF	=	0.46 AC
BUILDING @	0.95	6,000 SF	=	0.14 AC
GRAVEL @	0.6	9,317 SF	=	0.21 AC
LAWN @	0.25	44,217 SF	=	1.02 AC
POND @	1.0	7,591 SF	=	0.17 AC
TOTAL		87,120 SF	=	2.00 AC

WEIGHTED C = 0.50

T_c = 15 MINUTES

MECHANICAL SEPARATOR

I_s = 97 = 2.16 IN/HR
(T_c + 30)

Q_{WQ} = C₁A = 2.14 CFS USE CONTECH CASCADE CS-6

Q_A = 0.20 CFS/ACRE * 2.00 ACRES = 0.40 CFS

Q_O = Q_A / (A/C) = 0.40 / 2.00 = 0.20 CFS

100-YEAR DETENTION BASIN

T₁₀₀ = -25 + √(10,312.5) = 135.16 MINUTES

V_{S100} = 16,500 T - 40 Q_OT = 11751 CF

V_{T100} REQ'D = V_SCA = 11,692 CF REQ'D

EL (FT)	AREA (SF)	VOLUME (CF)	ΣVOLUME (CF)
1024	6,845	5,826	12,081
1023	4,864	3,954	6,255
1022	3,109	2,301	2,301
1021.0	1,579		

TOTAL VOLUME PROVIDED = 12,081 CF OK

SITE INFORMATION:
LOT GROSS AREA: 2.00 ACRES

WATER SUPPLY:
TYPE III WELL PROPOSED MEETING 201 SPECIFICATION DUE TO 201 SITE TO NORTH & ISOLATION DISTANCES FROM STORM SEWER. WELL SHALL INCLUDE STEEL CASING, NEAT CEMENT FILL, & TYPE K COPPER SERVICE.

ONSITE WASTEWATER TREATMENT SYSTEM (SEPTIC):
PER OCHD SANITARY CODE, ARTICLE III - STANDARD SYSTEM (NOT ENGINEERED)
BED APPLICATION RATE FOR (ASSUMED) LOAM, SANDY CLAY LOAM: 0.3 GAL/SF/D
DEMAND FOR USE BASED ON 2018 UNIT FACTORS

OFFICE, ASSUME 30%:
(6,000 SF)(30%)(0.4 REU/1,000 SF)(270 GPD/REU) = 194.4 GPD FOR OFFICE

WAREHOUSE, ASSUME 70%:
(6,000)(70%)(0.1 REU/1,000 SF)(270 GPD/REU)(110%) = 124.7 GPD
NOTE: WAREHOUSE AREA WAS INCREASED 10% OVER THE 2017 VALUE DUE TO THE NEW UNIT FACTOR CHART HAS WAREHOUSE ON A FIXTURE UNIT BASIS, WHICH DOES NOT LEND ITSELF TO SEPTIC DESIGN.

194.4 + 124.7 = 319.1 GPD REQUIRED

APPLICATION BED SIZE: 319.1 GPD/0.3G/SF/D = 1,063.7 SF BED REQUIRED
45 FT X 24 FT = 1,080 SF BED PROPOSED

TANK SIZE: 1,500 GALLON DUAL COMPARTMENT

ISOLATION DISTANCES PER SANITARY CODE ARTICLE III:
WELL: 75 FT PROPERTY LINE: 10 FT
WATER LINE: 10 FT OPEN WATER: 50 FT (100 FT PER TWP. 20)
BUILDING: 10 FT DETENTION POND: 50 FT
STORM SEWER: 50 FT

BENCHMARKS:
BM 1: MAG NAIL IN EAST FACE OF POWER POLE
EL. = 1034.67 NAVD 88
BM 2: BOLT SPIKE ON NORTH FACE PF POWER POLE
EL. = 1030.06 NAVD 88

GENERAL NOTES:
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2. SEE SHEET C0-01 FOR GENERAL NOTES & LEGENDS.

DATE	ISSUE
04/19/24	PRELIMINARY SITE PLAN

PROPRIETOR:
HOPSON HOLDINGS, LLC
2255 PORTER ROAD
WHITE LAKE, MICHIGAN 48383
(248) 830-2828

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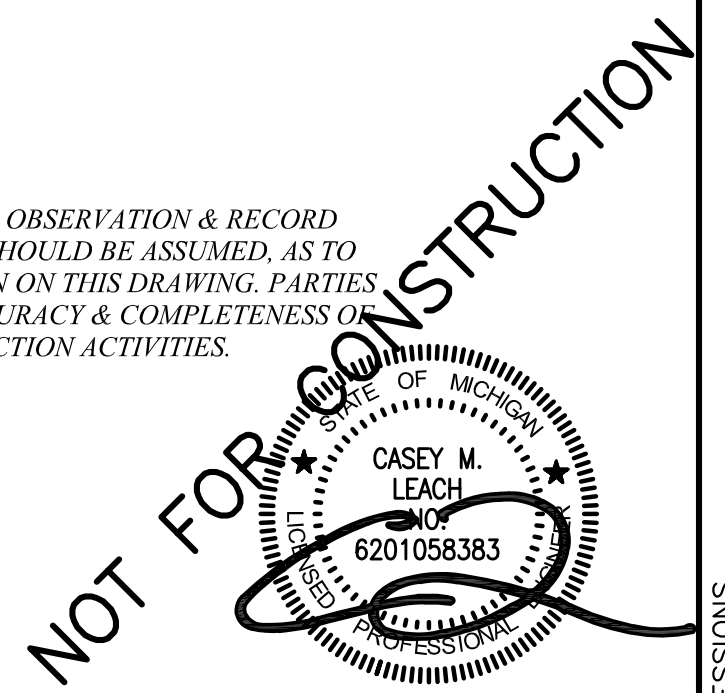
KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE: 04/01/24	CKD. BY: CL	DATE: 04/19/24
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DESIGN: CL		
SECTION: 1	T-3-N-R-8-E	

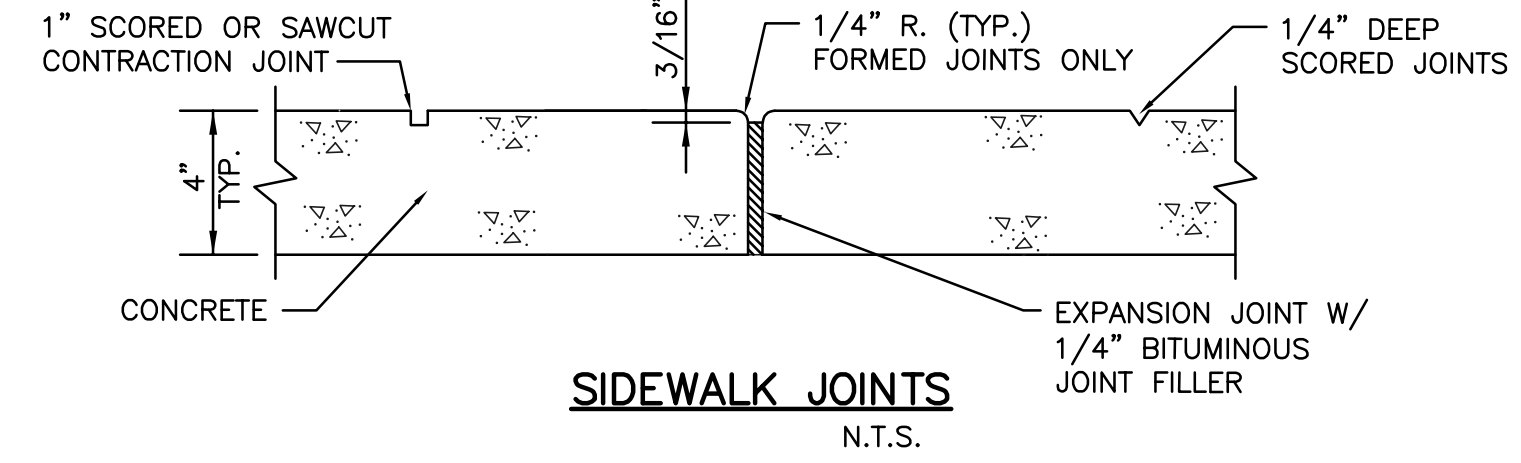


PRELIMINARY UTILITY PLAN
LASTING IMPRESSIONS
PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E,
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE: 1" = 30'
SHEET NO: C1.31
KE 2023.104

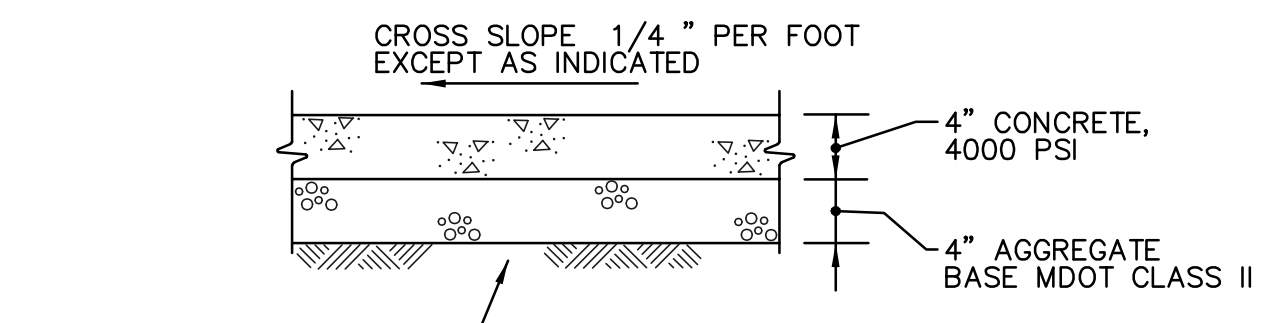


- NOTES:**
- EXPANSION JOINTS SHALL BE LOCATED WHERE SIDEWALK ABUTS CONCRETE DRIVEWAYS, CURB, OR OTHER ADJACENT STRUCTURES.
 - 1/2" BITUMINOUS JOINT FILLER SHALL BE INSTALLED AT EXPANSION JOINT LOCATIONS & SHALL EXTEND THE FULL DEPTH OF THE CONCRETE.
 - 1" DEEP CONTRACTION JOINTS SHALL BE PLACED AT INTERVALS OF APPROXIMATELY 15', OR AT A SPACING THAT MATCHES THE ADJACENT CURB.
 - FORMED CONTRACTION JOINTS SHALL BE FINISHED WITH A TOOL HAVING A 1/4" RADIUS.
 - SCORED JOINTS SHALL BE 1/4" DEEP & PLACED AT THE SPACING INDICATED FOR THE WIDTH OF SIDEWALK, OR MATCH SCORED JOINTS OF ADJACENT CURB.
 - CONCRETE SHALL BE FINISHED BY MEANS OF A FLOAT, STEEL TROWELLED AND BROOMED WITH A FINE BRUSH IN THE TRANSVERSE DIRECTION.
 - 1/4" DEEP SCORED JOINTS SHALL BE SPACED AT 6', EQUAL TO SIDEWALK WIDTH, OR PER PLAN.



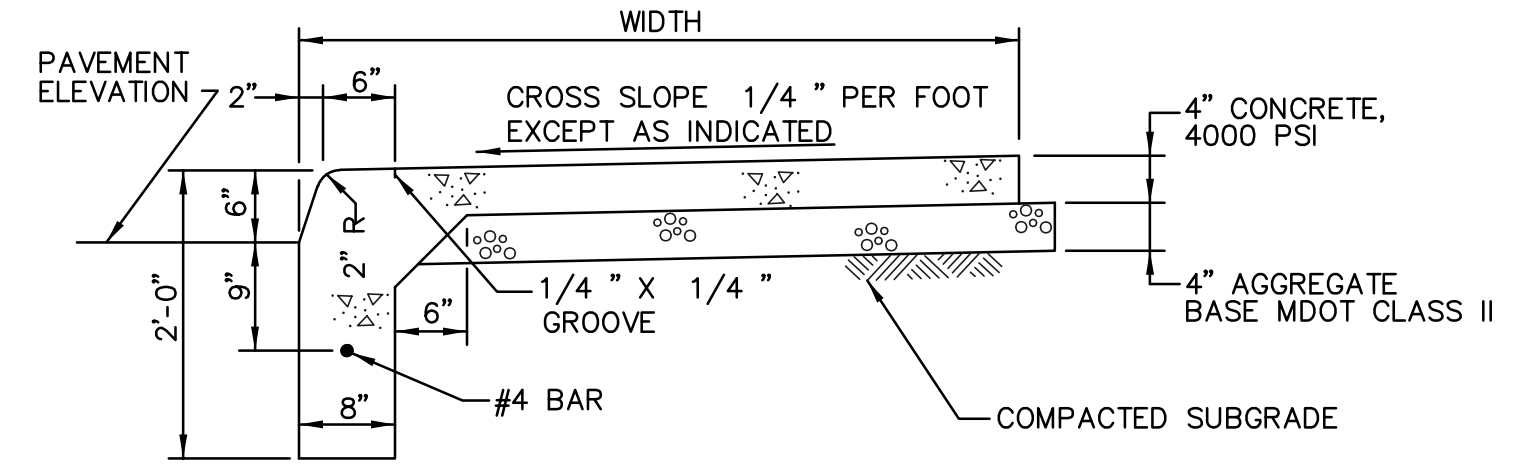
SIDEWALK JOINTS
N.T.S.

- NOTES:**
- EXPANSION JOINTS: 1/2" WIDE BITUMINOUS JOINT FILLER, FULL DEPTH:
 - AT 50 FOOT INTERVALS TRANSVERSELY.
 - AROUND EMBEDDED ITEMS SUCH AS LIGHT BASES.
 - AT ABUTTING STRUCTURES SUCH AS BUILDINGS OR CURBS.
 - CONTRACTION JOINTS: FORMED 1/4" WIDE, 1" DEEP GROOVE W/ TOOL. ARRANGE TO FORM SQUARE PANELS, 6' MAXIMUM IN ANY DIRECTION. PLACE 1" DEEP JOINTS AT 15' INTERVALS OR AT SPACING THAT MATCHES CURB.
 - TACTILE WARNING TEXTURE: PROVIDE ON RAMPS AND NEAR TOP OF STAIRS.
 - FINISH CONCRETE BY MEANS OF A FLOAT, STEEL TROWEL, & BROOM FINISH W/ FINE BRUSH IN A TRANSVERSE DIRECTION.



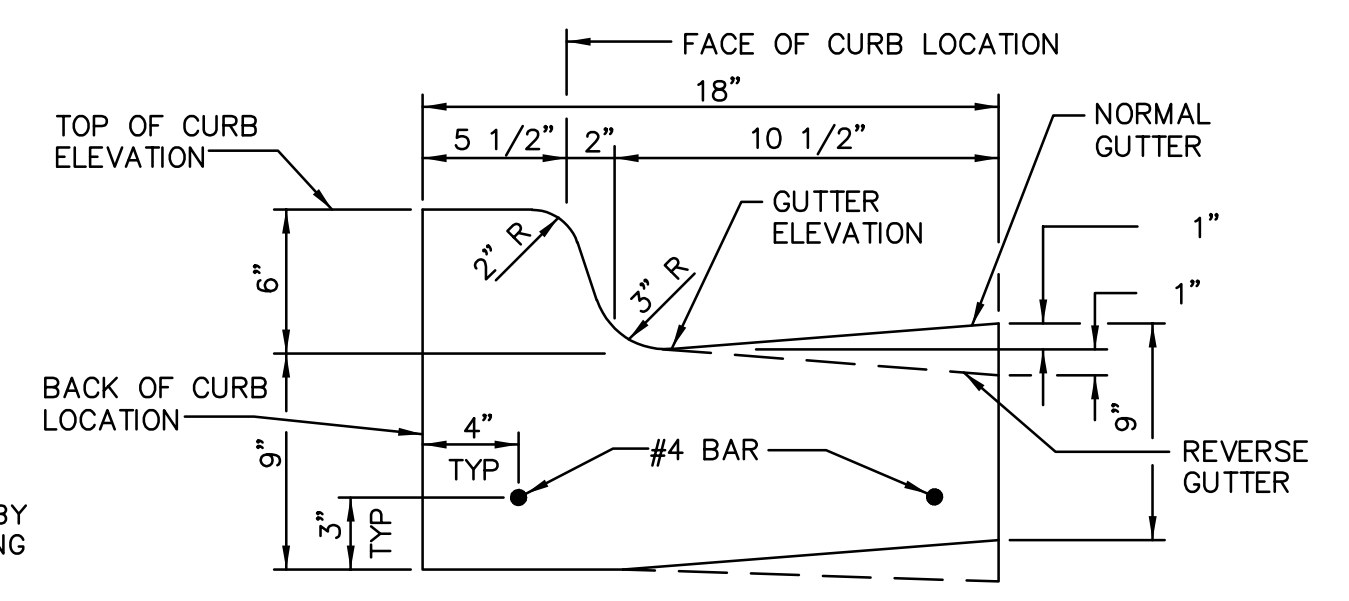
CONCRETE WALK
N.T.S.

- NOTES:**
- EXPANSION JOINTS: 1/2" WIDE BITUMINOUS JOINT FILLER, FULL DEPTH:
 - AT 50 FOOT INTERVALS TRANSVERSELY.
 - AROUND EMBEDDED ITEMS SUCH AS LIGHT BASES.
 - AT ABUTTING STRUCTURES SUCH AS BUILDINGS OR CURBS.
 - CONTRACTION JOINTS: FORMED 1/4" WIDE, 1" DEEP GROOVE W/ TOOL. ARRANGE TO FORM SQUARE PANELS, 6' MAXIMUM IN ANY DIRECTION. PLACE 1" DEEP JOINTS AT 15' INTERVALS OR AT SPACING THAT MATCHES CURB.
 - TACTILE WARNING TEXTURE: PROVIDE ON RAMPS AND NEAR TOP OF STAIRS.
 - FINISH CONCRETE BY MEANS OF A FLOAT, STEEL TROWEL, & BROOM FINISH W/ FINE BRUSH IN A TRANSVERSE DIRECTION.



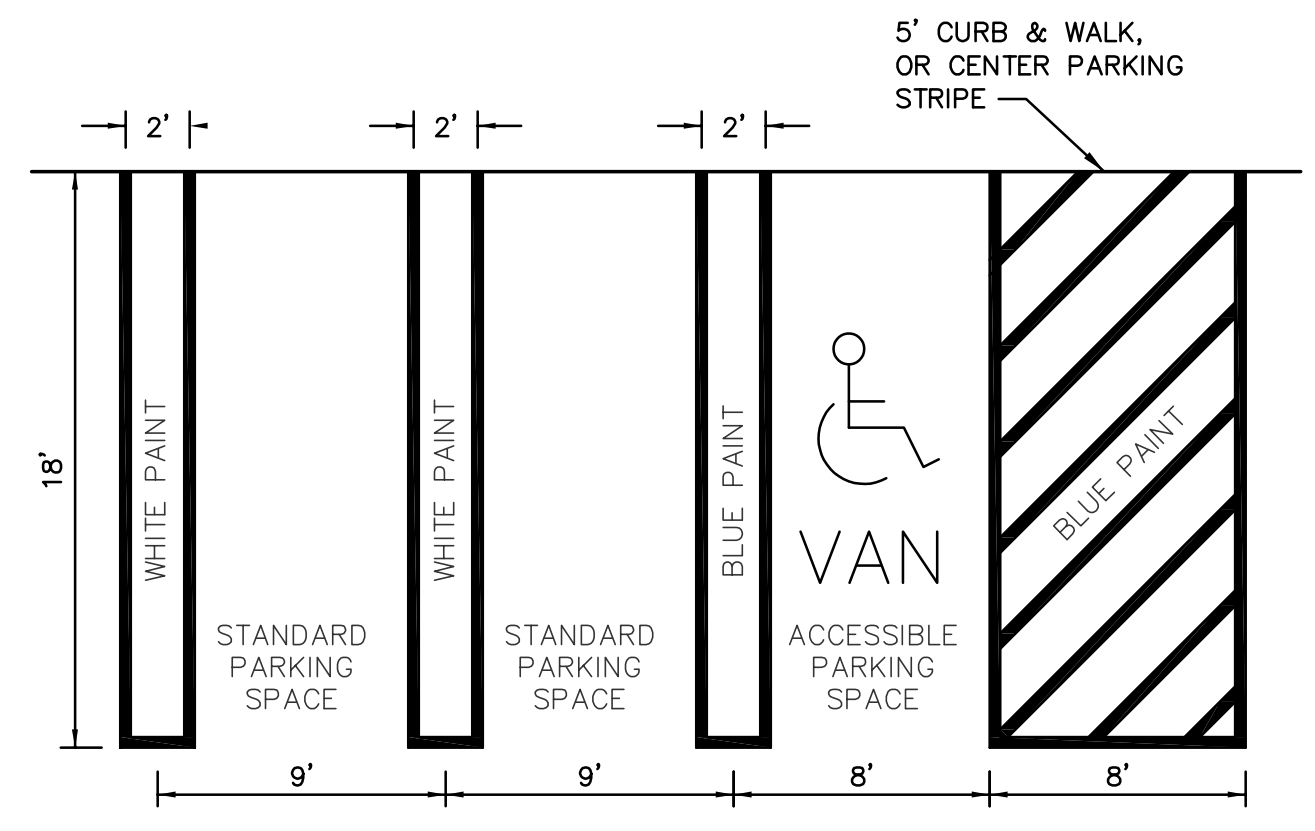
INTEGRAL CURB & WALK
N.T.S.

- NOTES:**
- USE NORMAL OR REVERSE GUTTER TO EXTEND THE SLOPE OF THE ADJACENT PAVEMENT EXCEPT AS INDICATED.
 - CONCRETE: 4000 PSI
 - PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. & AT ALL RADIUS RETURNS.
 - PROVIDE EXPANSIVE JOINTS EVERY 30'.

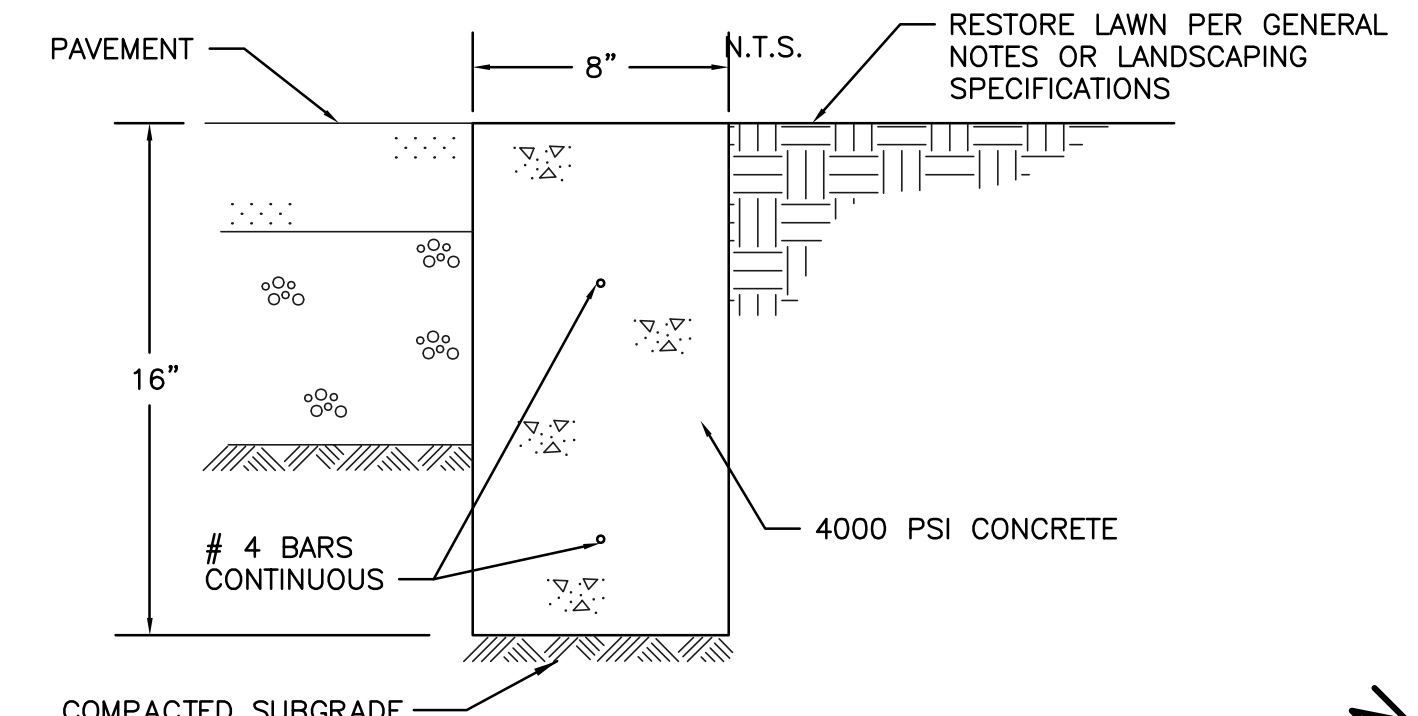


18"X6" STANDARD DUTY CURB & GUTTER
N.T.S.

- NOTES:**
- PARKING STRIPING FOR STANDARD PARKING SPACES SHALL BE DELINEATED BY FOUR INCH WIDE DUAL STRIPES, TWO FEET APART, CENTERED ON THE DIVIDING LINES, & PAINTED WHITE.
 - ACCESSIBLE SPACES SHALL BE DELINEATED WITH FOUR INCH WIDE LINES, PAINTED HANDICAP BLUE.

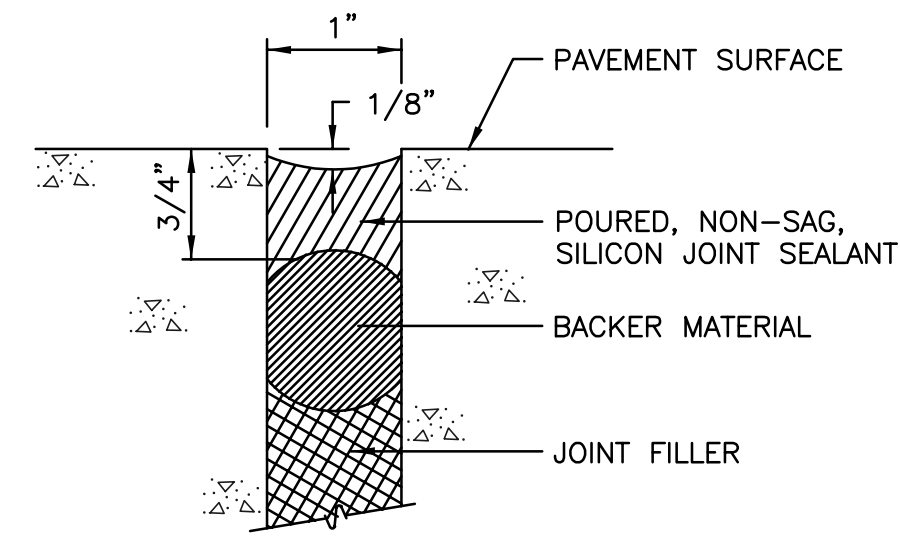


WHITE LAKE TWP. PARKING STRIPING
(ALONG CENTER STRIPE OR 5' WALK) SCALE: 1"=6'

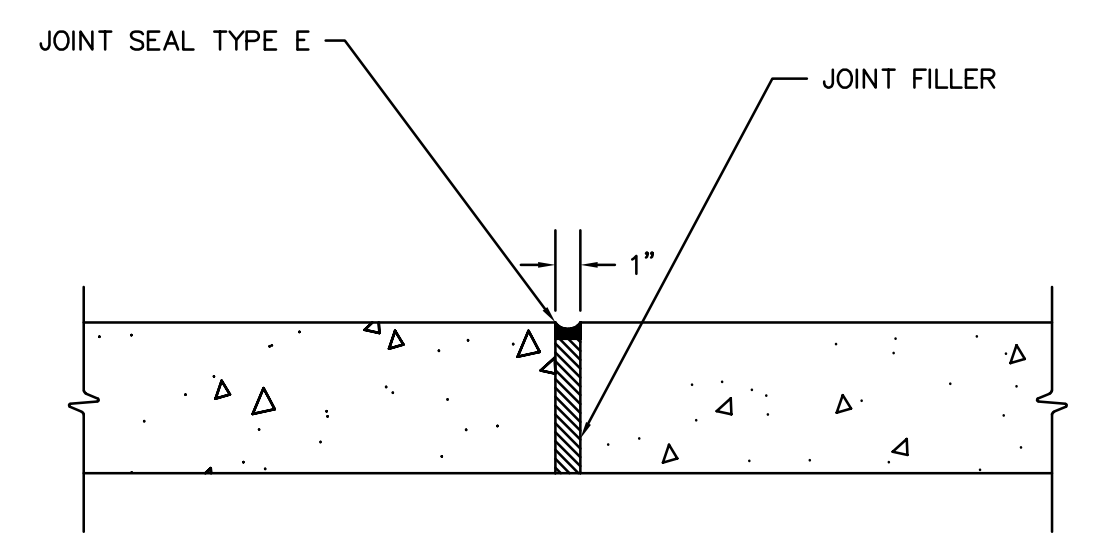


FLUSH CURB
N.T.S.

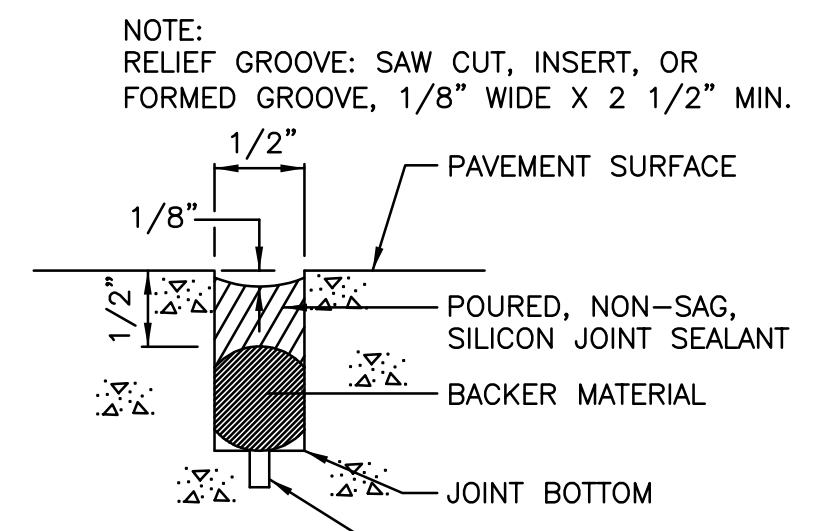
- NOTE:**
RELIEF GROOVE: SAW CUT, INSERT, OR FORMED GROOVE, 1/8" MAX X 2 1/2" MIN. SAW CUT 1/2" MIN INTO JOINT FILLER.



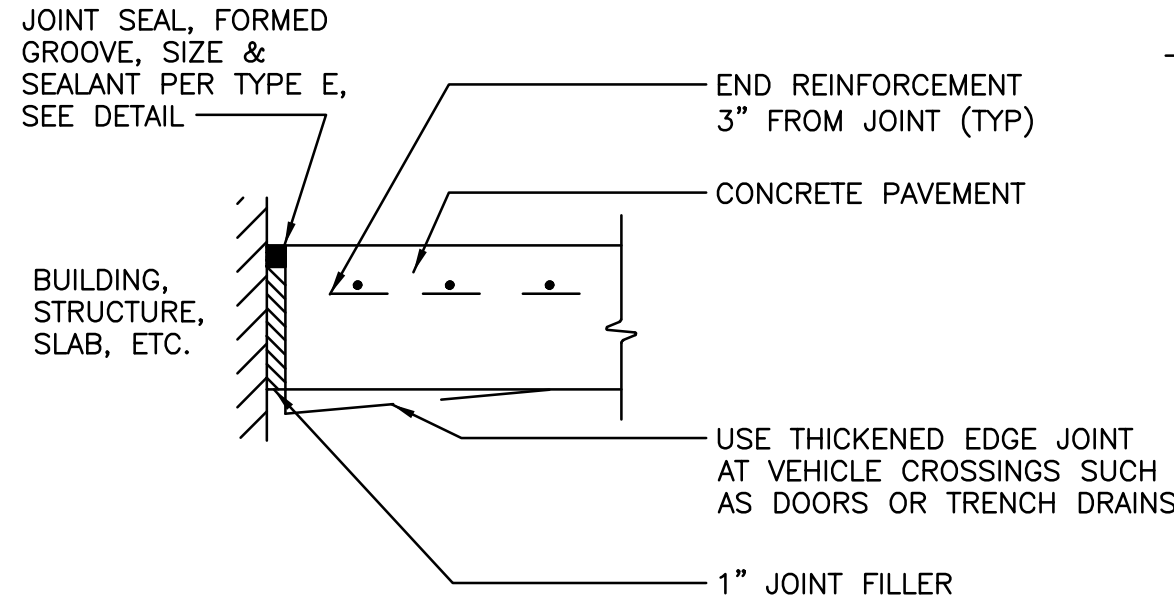
TYPE E JOINT SEAL
N.T.S.



ISOLATION JOINT
N.T.S.

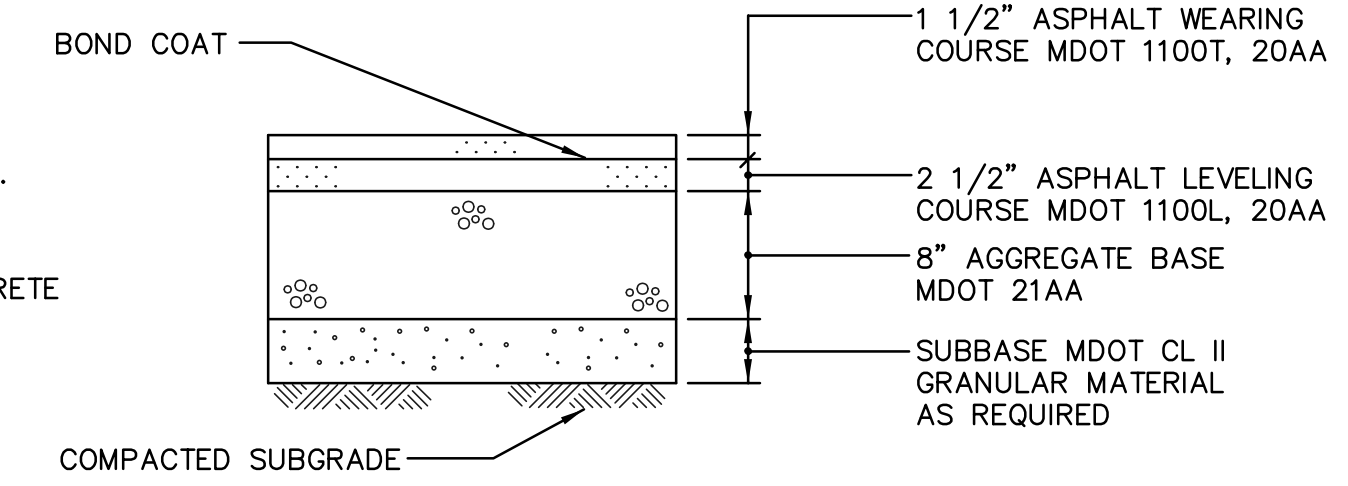


TYPE C JOINT SEAL
N.T.S.



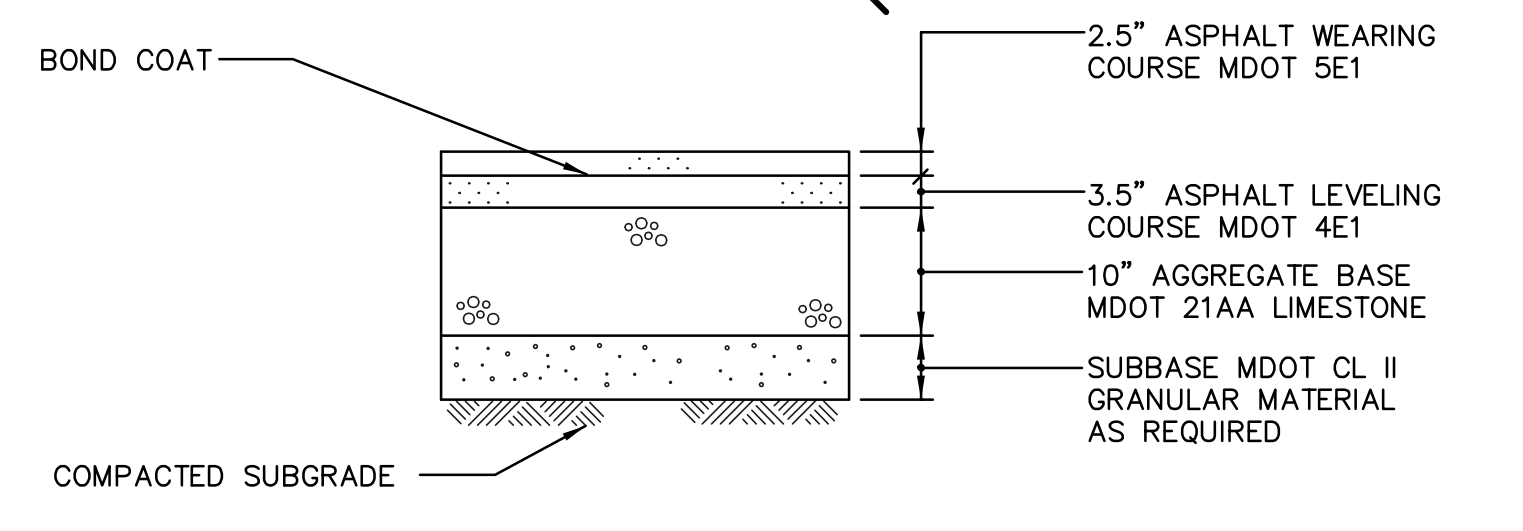
EDGE EXPANSION JOINT
N.T.S.

- NOTE:**
PROVIDE 2" EXTRA THICKNESS OF ASPHALT AT MANHOLES, CATCH BASINS, ETC. TAPER TO NORMAL THICKNESS IN 3'-0".

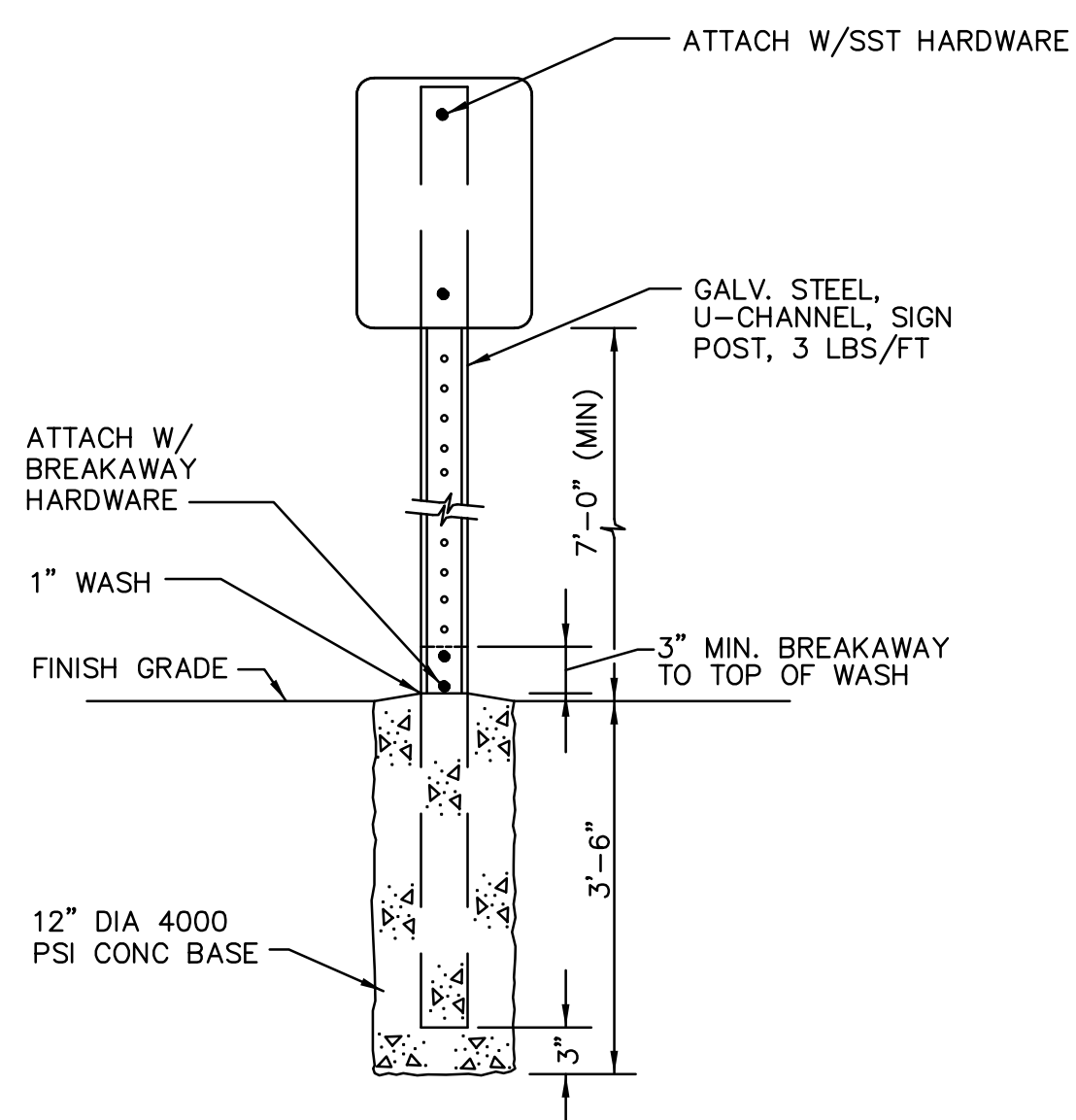


STANDARD DUTY ASPHALT PAVEMENT
N.T.S.

- NOTE:**
PROVIDE 2" EXTRA THICKNESS OF ASPHALT AT MANHOLES, CATCH BASINS, ETC. TAPER TO NORMAL THICKNESS IN 3'-0".

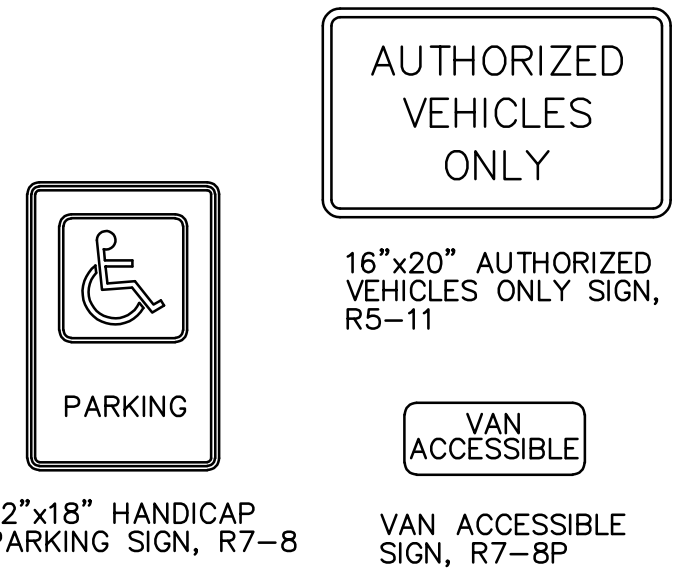


HEAVY DUTY ASPHALT PAVEMENT
N.T.S.

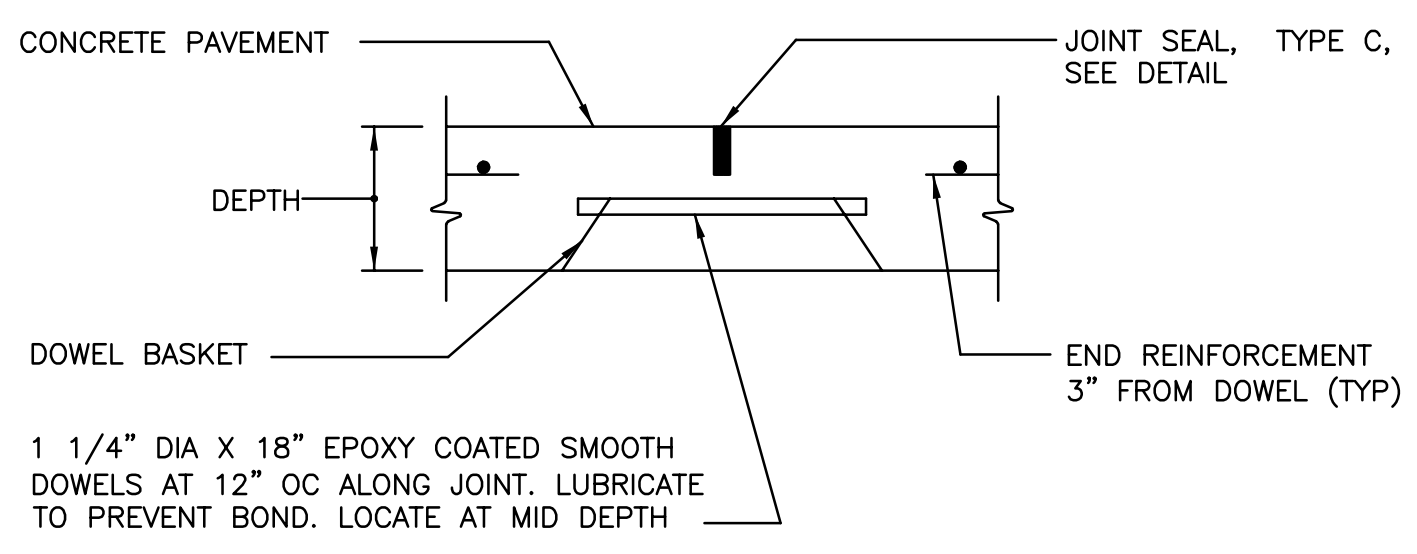


TYPICAL SIGN MOUNTING
N.T.S.

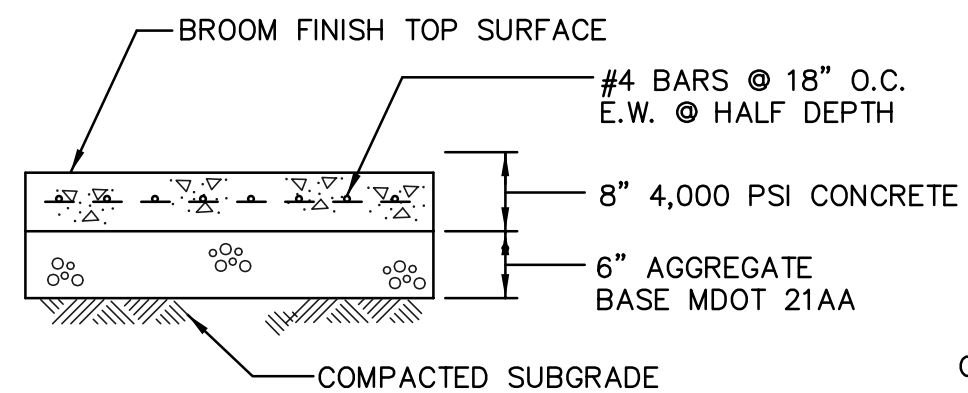
- SIGNAGE NOTES:**
- ALL SIGNS SHALL CONFORM TO THE CURRENT EDITION OF THE MUTCD.
 - MOUNT SIGNS TO BUILDING USING STAINLESS STEEL HARDWARE OR PER SIGN MOUNTING DETAIL THIS SHEET. MIN. HGT. 72" ABOVE FINISHED GRADE.



SIGNS
N.T.S.



CONTRACTION JOINT
N.T.S.



CONCRETE PAVEMENT
N.T.S.

DATE	ISSUE
04/19/24	PRELIMINARY SITE PLAN

PROPRIETOR:
LASTING IMPRESSIONS
2255 PORTER ROAD
WHITE LAKE, MICHIGAN 48348
(248) 830-2828

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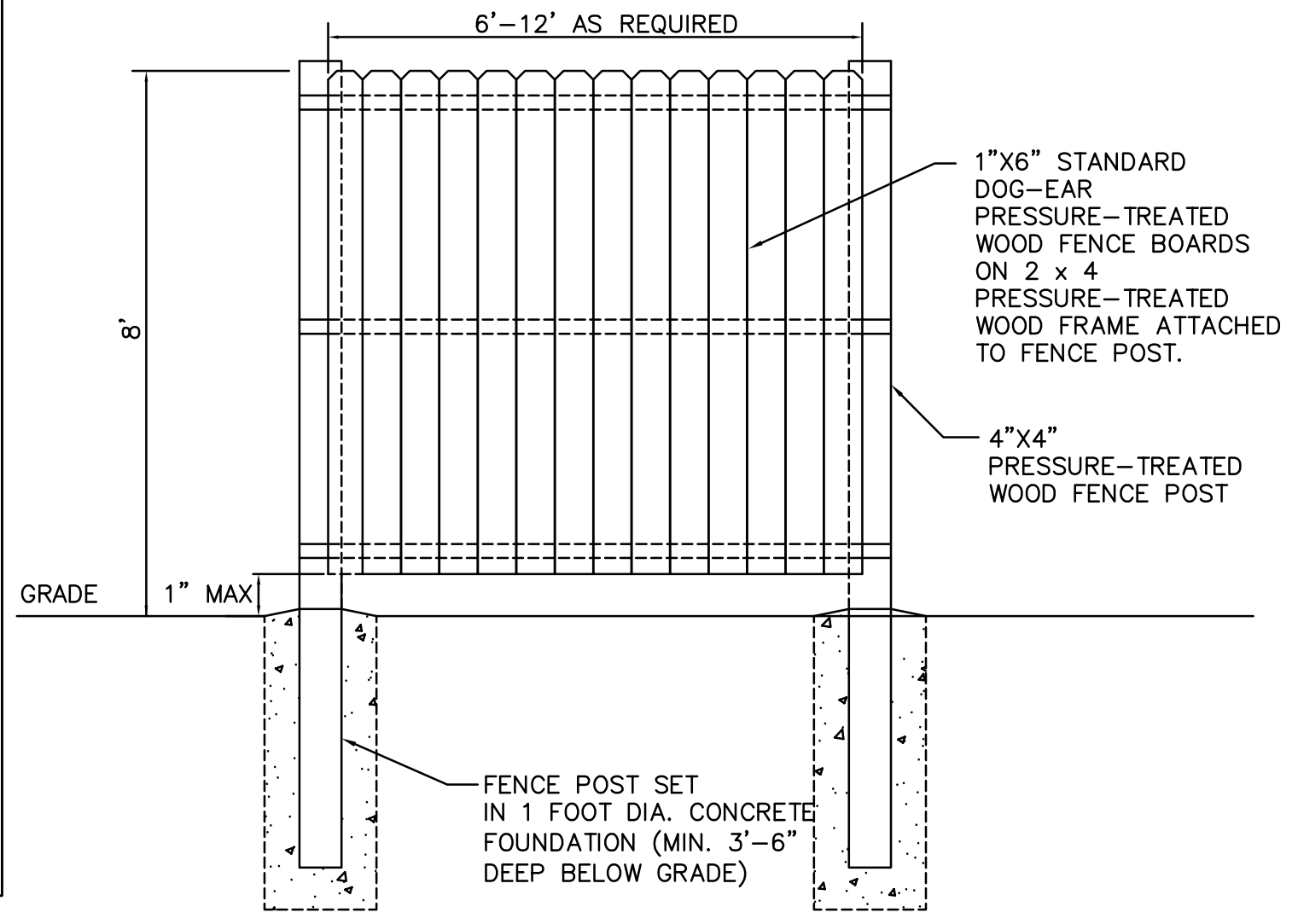
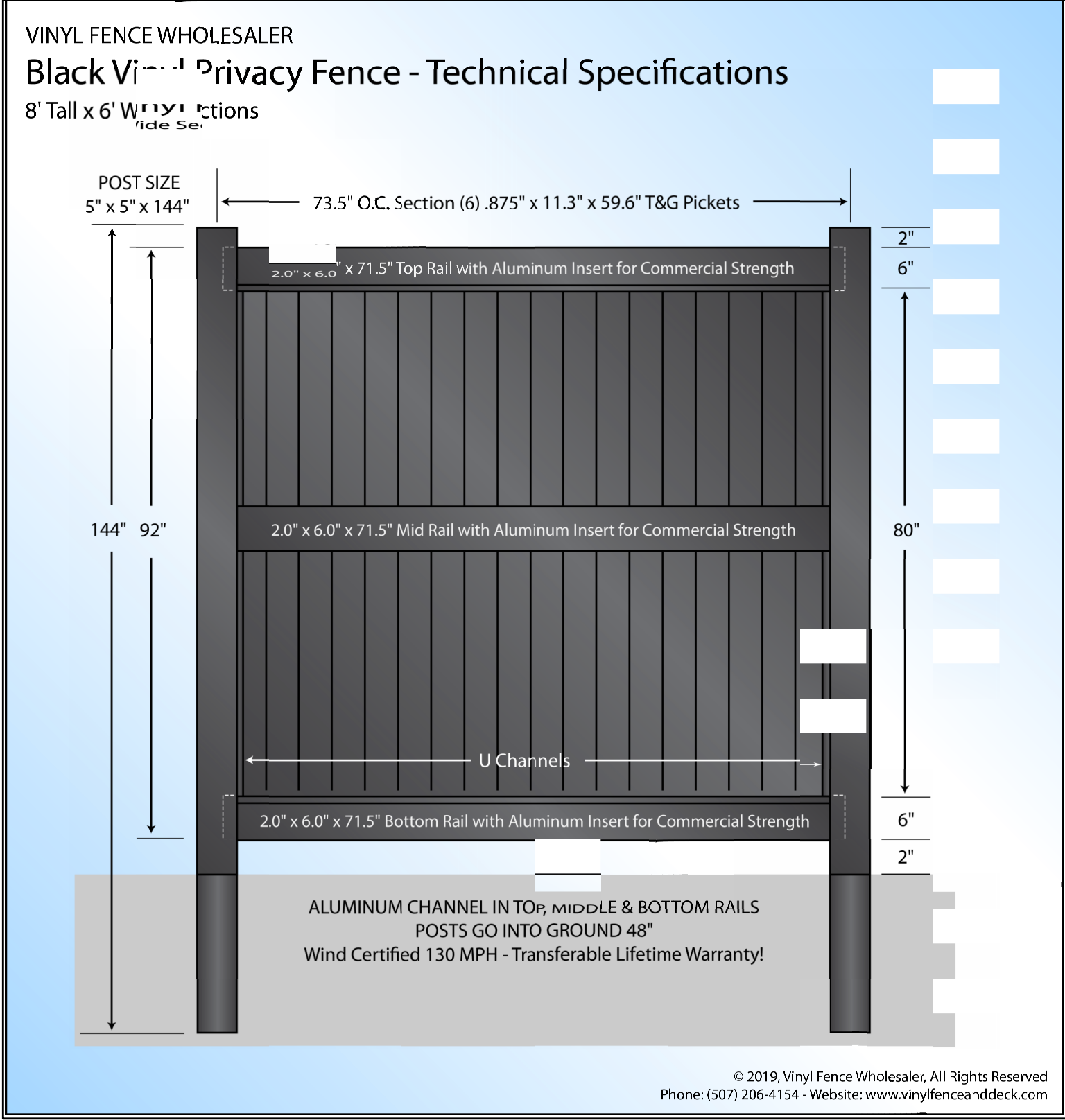
KIEFT ENGINEERING, INC.
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5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	CKD. BY	DATE
04/18/24	CL	04/19/24



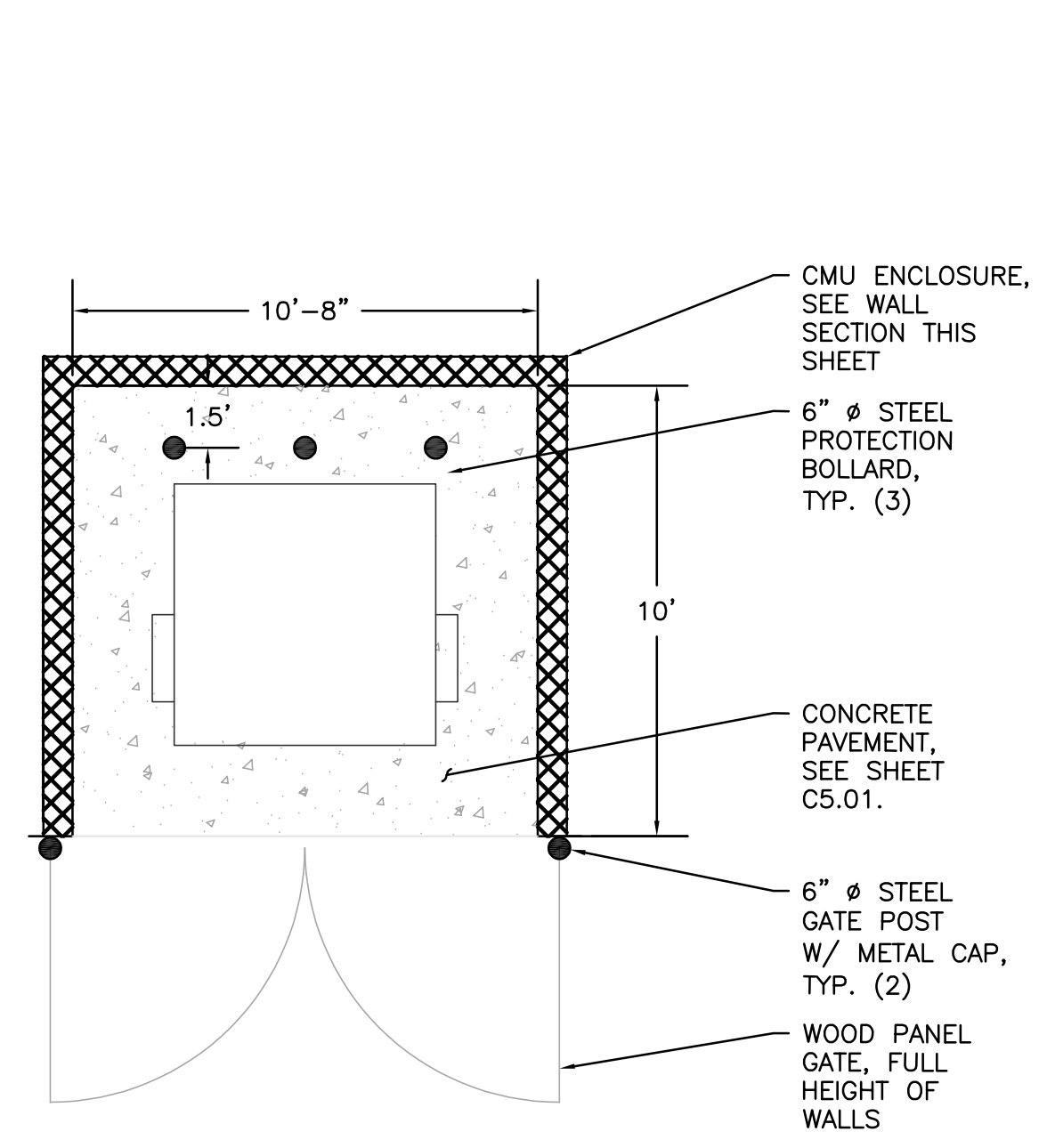
DETAILS - PAVING, SIGNS, & WALK
LASTING IMPRESSIONS
PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E,
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE: AS SHOWN
SHEET NO: C5.01
KE 2023.104

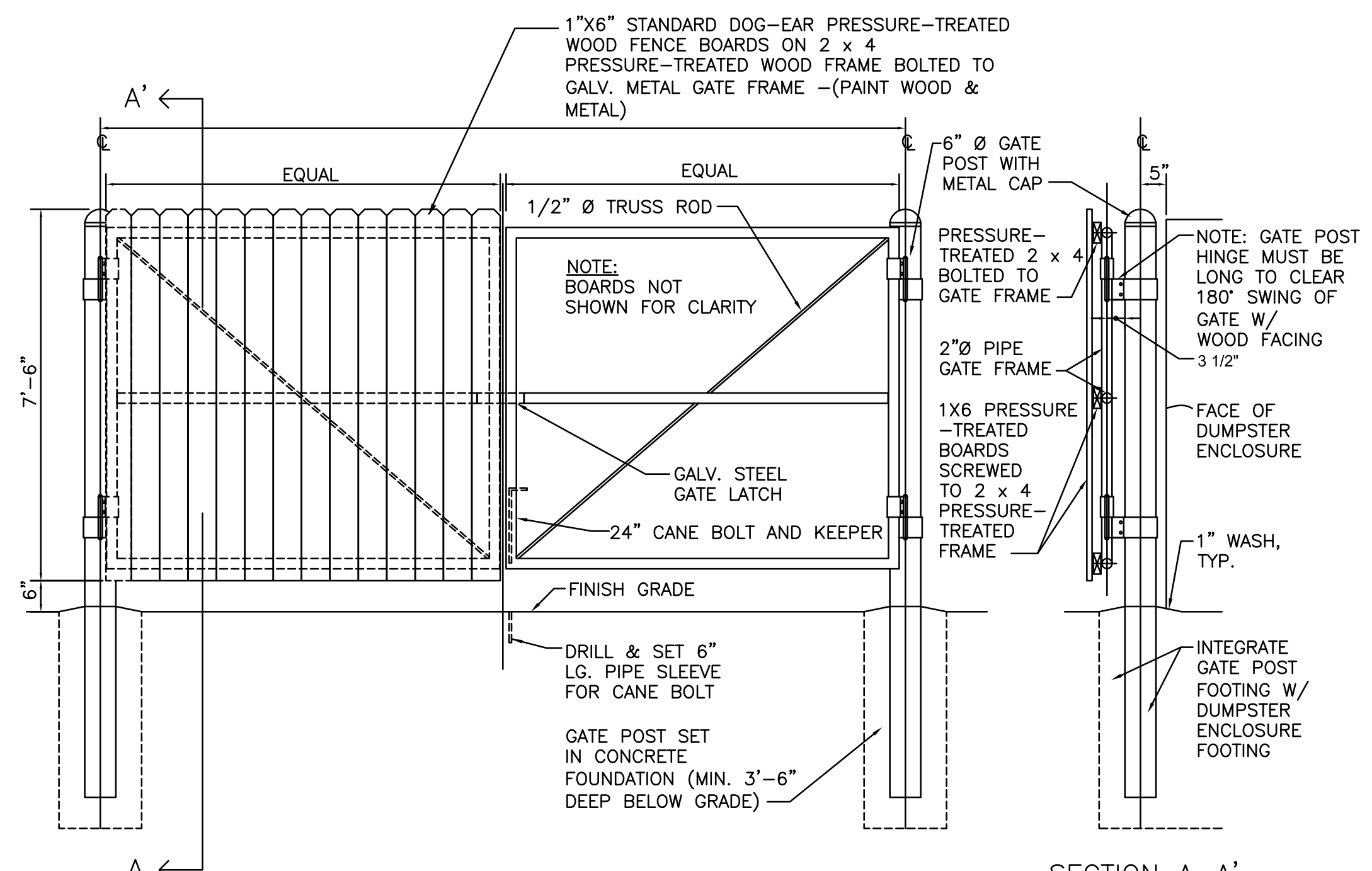


VINYL FENCE N.T.S.

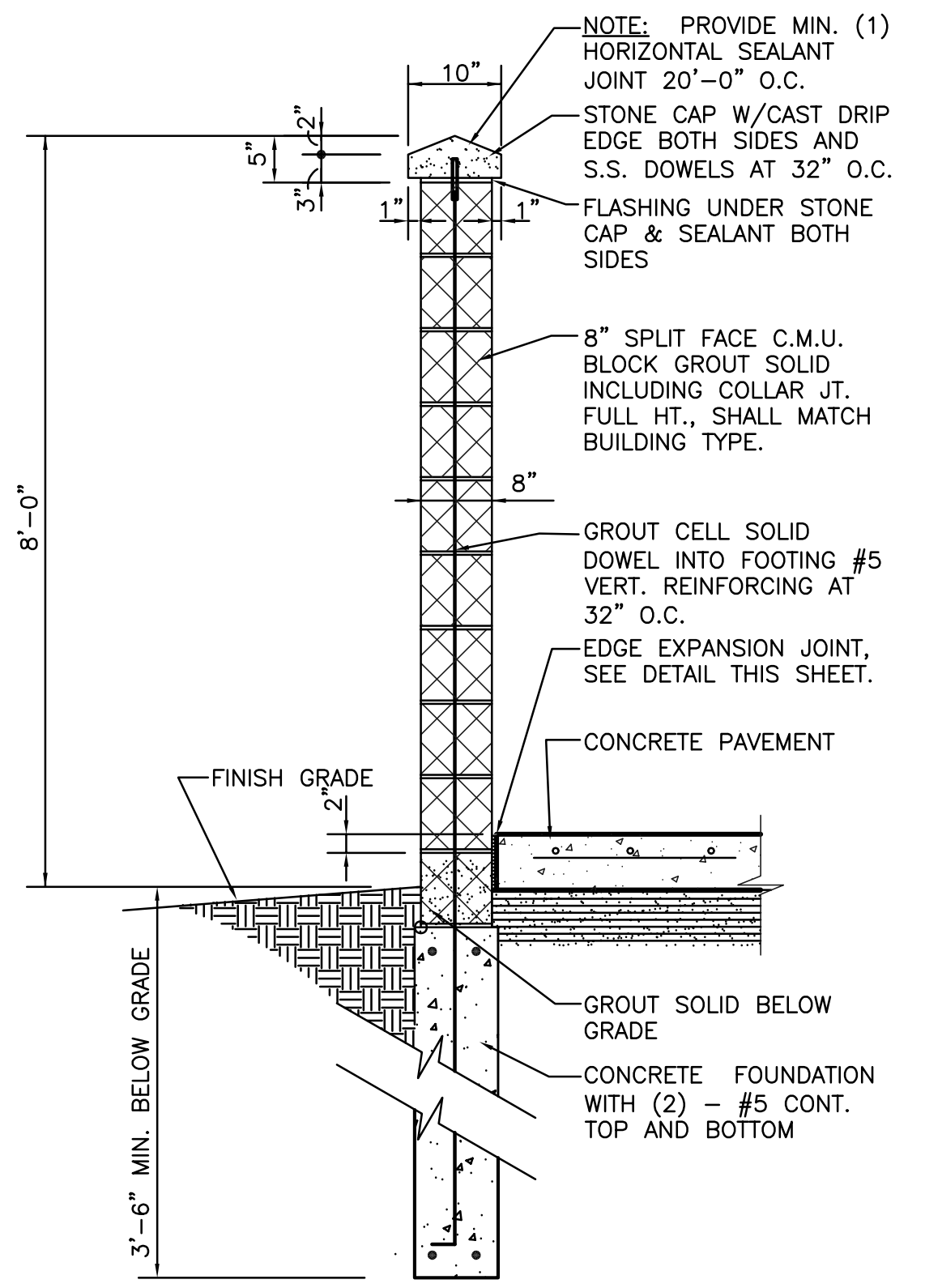
DOG-EAR FENCE N.T.S.



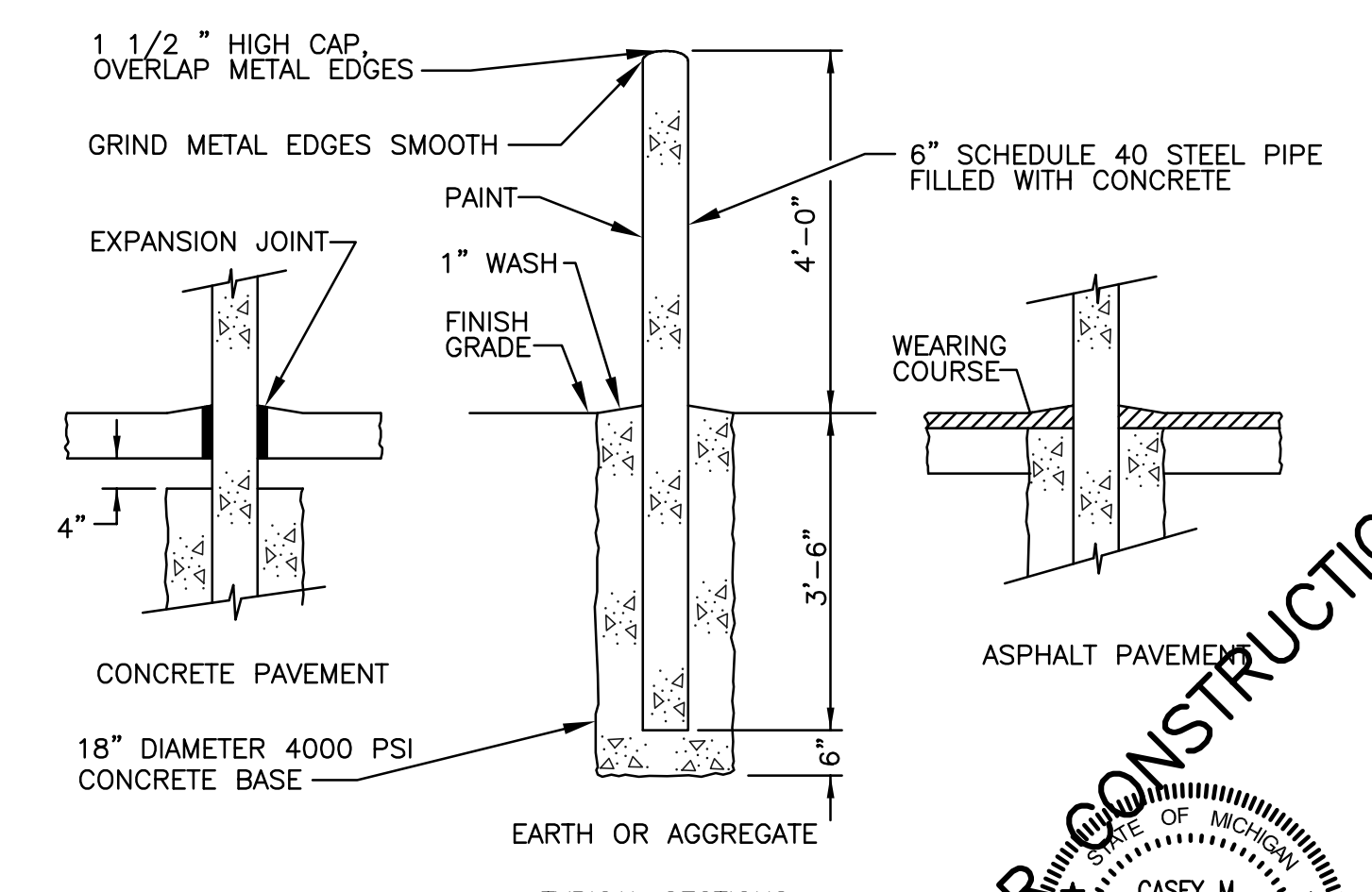
DUMPSTER ENCLOSURE PLAN N.T.S.



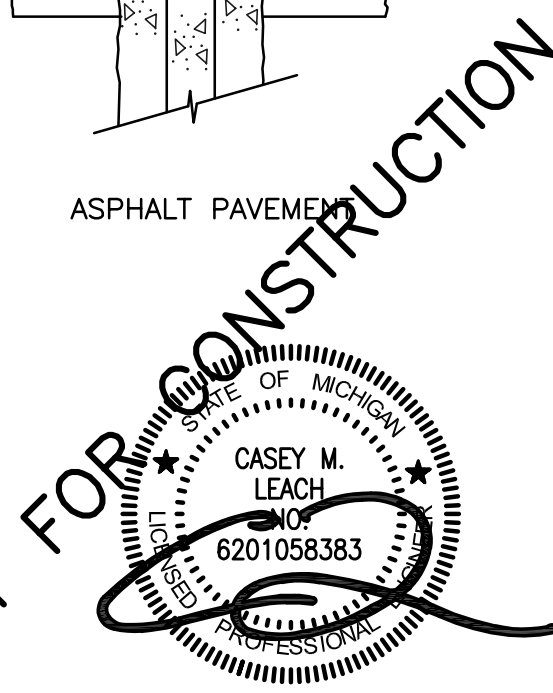
ELEVATION AT DUMPSTER ENCLOSURE GATES N.T.S.



DUMPSTER ENCLOSURE WALL SECTION N.T.S.



PROTECTION BOLLARD N.T.S.



DATE	ISSUE
04/19/24	PRELIMINARY SITE PLAN

PROPRIETOR:
 LASTING IMPRESSIONS
 2255 PORTER ROAD
 WHITE LAKE, MICHIGAN 48383
 (248) 830-2828

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DATE	CKD. BY	DATE
04/18/24	CL	04/19/24
DESIGN: CL		
SECTION: 1	T- 3 -N- R- 8 -E-	



DETAILS - DUMPSTER ENCLOSURE & FENCING
 LASTING IMPRESSIONS
 PART OF THE NORTH 1/2 OF SECTION 1, T3N, R8E,
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE: AS SHOWN
SHEET NO: C5.02
KE 2023.104

2025-2030 Capital Improvement Plan (CIP)



CHARTER TOWNSHIP OF WHITE LAKE
Oakland County, Michigan

2025-2030 Capital Improvement Plan (CIP)



ACKNOWLEDGEMENTS

White Lake Township Board of Trustees

Rik Kowall, Supervisor | Anthony L. Noble, Clerk | Mike Roman, Treasurer |
Scott Ruggles, Trustee | Liz Fessler Smith, Trustee | Andrea C. Voorheis, Trustee | Michael Powell, Trustee |

White Lake Township Planning Commission

T. Joseph Seward, Chair | Merrie Carlock, Vice-Chair | Debby Dehart, Secretary & ZBA Liaison | Robert Seeley |
Scott Ruggles, Township Board Liaison | Mona Sevic | Peter Meagher | Matthew Slicker | Steve Anderson |

White Lake Township Department Heads

Rik Kowall, Supervisor | Anthony L. Noble, Clerk | Mike Roman, Treasurer |
David Hieber, Assessor | Aaron Potter, DPS Director | John Holland, Fire Chief |
Daniel T. Keller, Chief of Police | Sean O'Neil (AICP), Community Development Director |
Kathy Gordinear, Dublin Community Senior Center Director | Andrew Littman, Parks and Recreation | Nick Spencer,
Building Official |

White Lake Township Community Development Department — Planning Division

Sean O'Neil (AICP), Community Development Director | Andrew Littman, Staff Planner | Hannah Kennedy-Galley,
Executive Secretary |

The CIP Team

Community Development Department — Planning Division | Staff and Administration of White Lake Township

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Resolution of Adoption

White Lake Oakland County, Michigan

Capital Improvement Plan 2025-2030 Resolution #24-038

Motion by _____, Supported by _____, that the White Lake Township Board of Trustees accept the Capital Improvement Plan for the years 2025-2030. The White Lake Township Board has determined the following:

WHEREAS, the Michigan Planning Enabling Act, Act 33 of 2008, requires the White Lake Township Planning Commission to annually prepare a Capital Improvement Plan for the benefit of the health, safety, and welfare of the community as those criteria relate to the physical development of the Charter Township of White Lake; and

WHEREAS, the Township's professional engineering consultant and Community Development Director have consulted with the Township's professional staff who carry on the business of planning and providing for the present and future needs of the citizens of the Charter Township of White Lake; and

WHEREAS, the Capital Improvement Plan is intended to consider the present and future needs and goals of the Charter Township of White Lake, as identified by the public, department heads, the Township Board of Trustees, and the Township Planning Commission, in consideration of existing projects and plans as well as anticipated resources; and

WHEREAS, the Capital Improvement Plan is a flexible document, intended to be reevaluated and updated on an annual basis to project into the six (6) succeeding years, and further amended as necessary to address the policies and philosophies of relevant Township Boards, Planning Commissions, and other stakeholders; and

WHEREAS, the Capital Improvement Plan is a guide and forum to aid the Township Supervisor and Township Board of Trustees in making decisions regarding the physical development and infrastructure maintenance of the Township and determining what, if any, resources can and should be available to carry out the Township Board's policies and budgetary decisions; and

WHEREAS, the draft of the Capital Improvement Plan has been available for public review via the Township website and copies made available at the office of the Township Community Development Department, and has been an agenda item for discussion and review by the Planning Commission and Township Board at several public meetings, and has been the subject of a duly-noticed Public Hearing held before the

Resolution of Adoption, continued

White Lake Township Planning Commission on September 5, 2024 and will be reviewed, revised, and updated by the Planning Commission on an annual basis; and

WHEREAS, the Capital Improvement Projects included within the Capital Improvement Plan have been evaluated utilizing a point-system of variables that included, among other things, whether a Capital Improvement Project has already begun, whether funds have been committed to the Project, the sources of funds committed to a Project, whether the Project is required per a legal obligation, or whether the projects is part of a Township-adopted policy, plan, or program; and

WHEREAS, the White Lake Township Planning Commission on September 5, 2024 moved to adopt the 2025-2030 Capital Improvement Plan.

NOW THEREFORE BE IT RESOLVED, that the Capital Improvement Plan presented during the Public Hearing on September 5, 2024 and revised per the public comments received during that Public Hearing, and adopted by the White Lake Township Planning Commission on September 5, 2024, IS ACCEPTED BY THE WHITE LAKE TOWNSHIP BOARD OF TRUSTEES; and

BE IT FURTHER RESOLVED, that this Capital Improvement Plan should be published and attested to according to State law.

Ayes:

Nays:

Absent:

RESOLUTION DECLARED ADOPTED.

I HEREBY CERTIFY, that I am duly elected and qualified Clerk of the Charter Township of White Lake, County of Oakland, State of Michigan, and the keeper of the records of the proceedings of said Township as authorized by the Township Board, and the foregoing is a true and correct copy of a resolution duly adopted by a majority vote at a regular meeting of the Township Board legally held on the September 17, 2024 at which a quorum was present.

Anthony L. Noble, Clerk
White Lake Township
Oakland County, Michigan

1. Overview

The 2025-2030 White Lake Township Capital Improvement Plan (CIP) will serve as a tool to assist White Lake Township in turning long-range policy planning into real improvements on the ground. A six-year capital improvement plan and an annual update of that plan is a requirement for White Lake Township under the Michigan Planning Enabling Act of 2008. The following report identifies the major capital improvements needed and/or planned for the community, the timeframe for implementation of those improvements, and the budget and revenue sources that will make those improvements a reality. Capital improvements cover multiple departments within White Lake Township, and include new Township facilities, water and sewer extensions, fire protection vehicles and equipment, police equipment, parks and recreation facilities, non-motorized pathways, and professional services.

The following subsections within this first chapter include an introduction to capital improvement planning, the community of White Lake Township, and the capital improvement planning process. In subsequent chapters, this report summarizes existing facilities (Chapter 2), provides detailed components for all major Township departments, facilities, and systems (Chapter 3), and presents the projected cost and revenue sources for all covered improvements (Chapter 4).



1a. Overview - CIP Overview

What is a Capital Improvement Plan (CIP)?

A Capital Improvement Plan is a six-year schedule of public physical improvements which identifies the needs for major public infrastructure improvements, and the sources of funding to make those improvements. It provides a schedule of expenditures for constructing, maintaining, upgrading, and/or replacing a community's physical inventory. The CIP, therefore, is a tool to assess the long-term capital project requirements (the "big jobs") of White Lake Township. Since capital improvement projects are spread across multiple community needs (fire protection, police, water and sewer, parks and recreation, municipal administration, etc.), the CIP prioritizes these projects across the entire community and over time, providing an "apples-to-apples" comparison of the community's various needs and wants.

What are Capital Improvement Projects?

Capital improvement projects are major and infrequent expenditures, such as the construction of a new facility, a major rehabilitation or repair of an existing facility, or the purchase of major equipment. Capital improvement projects are non-recurring expenditures that tend to be large both in physical size and in cost, and have a long-term usefulness (10 years or more).

Examples of capital improvement projects can include:

- Construction of a new township hall
- Construction of a new fire station
- Extension of a water/sewer line
- Purchase of a new fire truck
- Major rehabilitation of a township's community/senior center
- Creation of a new township park

Examples of expenditures which would not usually constitute a capital improvement project include:

- Purchase of new office furniture
- Purchase of small equipment (lawn mowers, copiers, individual computers, etc.)
- Recurring maintenance of existing facilities
- Minor repairs of existing buildings and equipment
- Minor improvements to existing buildings (carpet, painting, etc.)

The term “major expenditure” is relative; what is “major” to one community might be “minor” to another. The City of Ann Arbor, for example, sets a minimum threshold of \$100,000 for projects to be included in the City’s CIP, while the City of Rochester Hills sets a minimum of \$25,000. White Lake Township’s policy for determining a Capital Improvement is defined in the following section.

What is White Lake Township’s Capital Improvement Policy?

A capital improvement project is a major, nonrecurring expenditure that meets one of more of the following criteria:

- Any acquisition of land for a public purpose which costs \$50,000 or more.
- Any construction of a new public facility (Township building, water/sewer lines, pathways), or any addition to an existing public facility, the cost of which equals \$50,000 or more and has a useful life of three or more years.
- A nonrecurring rehabilitation (not to include annual/recurring maintenance) of a building, its grounds, a facility, or equipment, the cost of said rehabilitation being \$50,000 or more with a useful life of three or more years.
- Purchase of major equipment which, individually or in total, cost \$50,000 or more with a useful life of three or more years.
- Planning, feasibility, engineering, or design studies related to an individual capital improvement project, or program implemented through individual capital improvement projects, with a cost of \$50,000 or more and a useful life of three or more years.

Why a CIP for White Lake Township?

The Michigan Planning Enabling Act of 2008 requires a Capital Improvement Program for any Michigan township which owns and/or operates a water supply or sewage disposal system. Since White Lake Township owns and manages both a public water and sanitary sewer system, adopting and annually updating a Capital Improvement Plan is a requirement per State law.

What are the benefits of preparing a CIP?

The CIP is more than just a State requirement; it is an essential planning tool in addition to a statement of budgetary policy. It informs the taxpayers of White Lake Township how the Township plans to prioritize, schedule, and coordinate capital improvement projects over the next six (6) years. The benefits of creating and annually updating the CIP include:

- Prudent use of taxpayer dollars;
- Focusing the Township expenditures on the needs of the community;
- Prioritizing projects across the needs of the community;
- Generating community support by inviting public input;
- Promoting economic development;
- Improving the Township’s eligibility for State and Federal grants;

- Providing an implementation tool for the goals and objectives of the Township Master Plan;
- Transparency in identification of high-priority projects;
- Coordination/cost-sharing between projects.

What is the role of the Township Planning Commission in the CIP process?

The Capital Improvement Program is a dynamic planning document, intended to serve as a tool to implement the White Lake Township Master Plan. The Master Plan should correspondingly include capital improvement projects as well as guide long-term capital planning. The White Lake Township Planning Commission is uniquely qualified to manage the development and annual update of the Township's CIP, based on its role in creating and updating the Township Master Plan. The Planning Commission's role will ensure that public works projects are consistent with the land uses identified within the Master Plan. By making a recommendation of approval for the CIP to the Township Board, the Planning Commission agrees that the projects outlined within it reasonably address the Township's capital improvement needs.

The CIP is an essential link between planning for capital improvement projects and budgeting for them. Once approved by the Township Board, the CIP can be used to develop the capital project portion of the Township's budget. Those projects included in the CIP's first year (2025) potentially form the basis for the upcoming year's capital project budget. As the CIP is annually updated, a continuous relationship will be maintained between the CIP and the Township's annual budget. The annual update to the CIP will occur in advance of the preparation of the Township's budget.



1b. Overview - White Lake Township Overview

White Lake Township, Oakland County's "Four Seasons Playground," prides itself as a community which continues to promote economic growth, sustainable development, and a strong sense of place. White Lake's character as a premier residential community, with ample recreational opportunities and superior public and private schools, sets it apart and establishes the Township's unique identity.

The Township continues to promote sound fiscal policy while maintaining appropriate levels of service to meet the needs of its growing population. Public utilities infrastructure, police, fire and emergency services, parks, recreation and senior services, as well as planning, building inspection and administrative services are all designed to provide residents with the full-service amenities of a modern municipality in a cost-effective, fiscally responsible, and sustainable manner.

Principal Land Uses

While the commercial base of White Lake Township continues to grow, the principal land use within the Township remains single-family residential. Based on existing land use data from Oakland County Economic Development and Community Affairs, 46.7% of the Township's nearly 24,000 acres is developed as single-family residential. The second largest land use in the Township (in terms of land area) is recreation/open space, comprised of two State Recreation Areas (Pontiac Lake and Highland), a regional Metropark (HCMA's Indian Springs), and an Oakland County-owned golf course (White Lake Oaks). Combined, the recreation/open space land uses within the Township comprise over 25% of the land area (6,000 acres). The Township's commercial, industrial, and office uses comprised 2.2% of the land area in 2019. The majority of the commercial, industrial, and office uses in White Lake Township are located along the Highland Road (M-59) corridor, although some are scattered elsewhere throughout the Township, mostly in the southeast quadrant. There is also a small industrial concentration in the Township's northeast corner. The 21 lakes within White Lake Township comprise almost 11% of its total land area. Figure 1-1 displays the 2021 Existing Land Use Map.

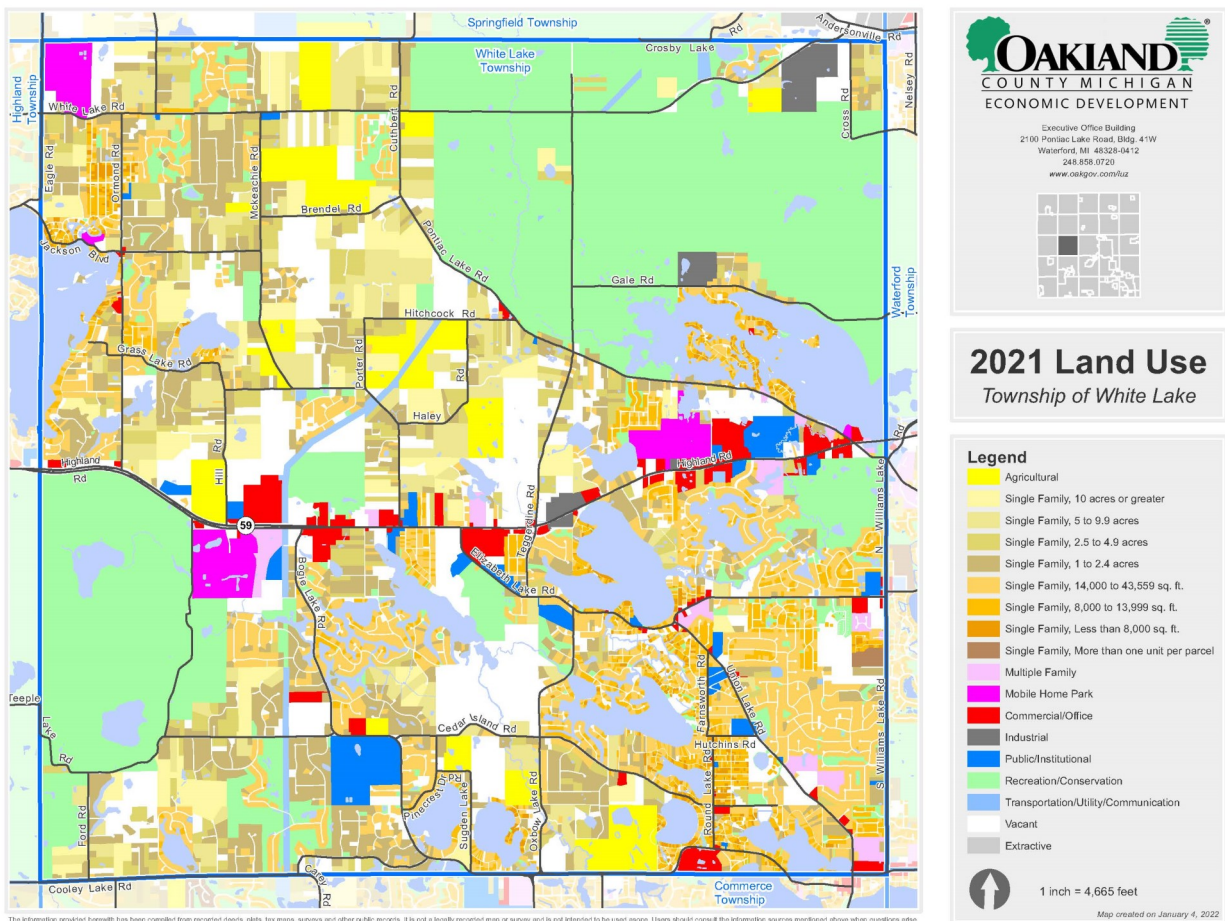
Population

As of the 2020 Census, the population of White Lake Township was 30,950, a 3.1% increase from the 2010 Census (30,019). Population projections by the Southeast Michigan Council of Governments (SEMCOG) estimate the population of White Lake Township will only increase slightly over the next twenty years, with a forecasted population of 32,236 in 2040. This projection is subject to change based on economic and social factors.

Employment

SEMCOG Community Data for White Lake Township shows the two highest employment sectors within the Township to be Retail Trade (approximately 21% of total employment) and Information and Financial Activities (approximately 15%).

FIGURE 1-1. EXISTING LAND USE, 2021



1c. Overview - CIP Process Overview

Background

The development and the adoption of a CIP is driven by a statutory requirement at the State level. The State of Michigan has set forth the requirement for a CIP under the Michigan Planning Enabling Act, Act 33 of 2008. This reporting requirement for townships was effective September 1, 2008. The following excerpt from Act 33 sets forth the requirement of a township to adopt a CIP:

"...(2) Any township may prepare and adopt a capital improvement program. However, subsection (1) is only mandatory for a township if the township, alone or jointly with 1 or more other local units of government, owns or operates a water supply or sewage disposal system."

The contents of the CIP are set forth under the Government Accounting Standards Board Statement 34 that basically requires the CIP to report on the value of their infrastructure. GASB 34 requires state and local governments to begin reporting all financial transactions, including the value of their infrastructure assets, roads, bridges, water and sewer facilities, and dams, in their annual financial reports on an accrual accounting basis.

The Charter Township of White Lake is not a road agency under Public Act 51 of the laws of the State of Michigan. Accordingly, public road and bridge projects are not reported in this CIP. **All other infrastructure components with construction costs in excess of \$50,000 per year are reported in this CIP.**

The following sections outline the Program Areas of the White Lake Township CIP:

1. Data Collection Process
2. Data Compilation Process
3. CIP Adoption Process

PROGRAM AREAS

The components of the CIP are compiled and reported by Program Areas. The following table (Figure 1-2) displays the Program Areas used in this CIP (each assigned with a color). These program areas represent the stakeholders in the CIP.

FIGURE 1-2. CIP PROGRAM AREAS	
Label	Definition / Description
BP / PK	Bike paths, trail ways, and park facilities/services
FA	Township-owned buildings and facilities (offices, storage buildings, museums, etc.)
FD	Fire protection / EMS facilities and equipment
IS	Internal support services (IT, GIS, fleet vehicles, communications, etc.)
PD	Police Department facilities and equipment
SS	Sanitary sewerage disposal system
WS	Water supply system

1. Data Collection

Each of the stakeholders outlined above has either a master plan or schedule that defines the needs and resource level within their respective area of responsibility. This information is in varied formats and cannot be readily compiled without a significant amount of interpretation. To resolve this interface situation, standard forms were created that allow the stakeholders to define their projects and resource allocation levels. The standard forms used for data collection are found in the Appendix. At a meeting with the stakeholders, the CIP process and the forms were explained in detail along with a request for the forms to be filled out based on what information is currently available. The information generated from these forms has been systematically compiled as the core of the CIP. A definition of the forms is provided as follows:

- **Project Application Form** - Consists of project descriptions, schedules, necessity, and possible sources of funding. The information provides an understanding of the overall scope of each project and how it is valued within its program area and within the Township. While stakeholders may be aware of major projects further out on the horizon, only those planned for within the six-year window of the 2024-2029 CIP were included.
- **Project Cost Detail Form** - Consists of a matrix of six (6) budget years across the top of the form and a listing of costing components along the side of the form. The form is split into two (2) parts; the upper half is the capital cost for the project and the lower half is the cost of operations or maintenance for that project if applicable. Recognition of the operations and maintenance costs of a project is a valuable tool in forecasting future needs for resource allocation. Investment in a new facility is only worthwhile if there are funds available to operate and maintain it.

- **Project Rating Form** - Used to rate both the importance and impact of a project within its program area and within the Township (an “apples-to-apples” comparison). The rating number is not an absolute in itself but is important in distinguishing between projects that are similar in scope. The ratings are weighted with emphasis given to those projects that are mandated by law, by agreement, or because they are a matter affecting health, safety, and welfare.

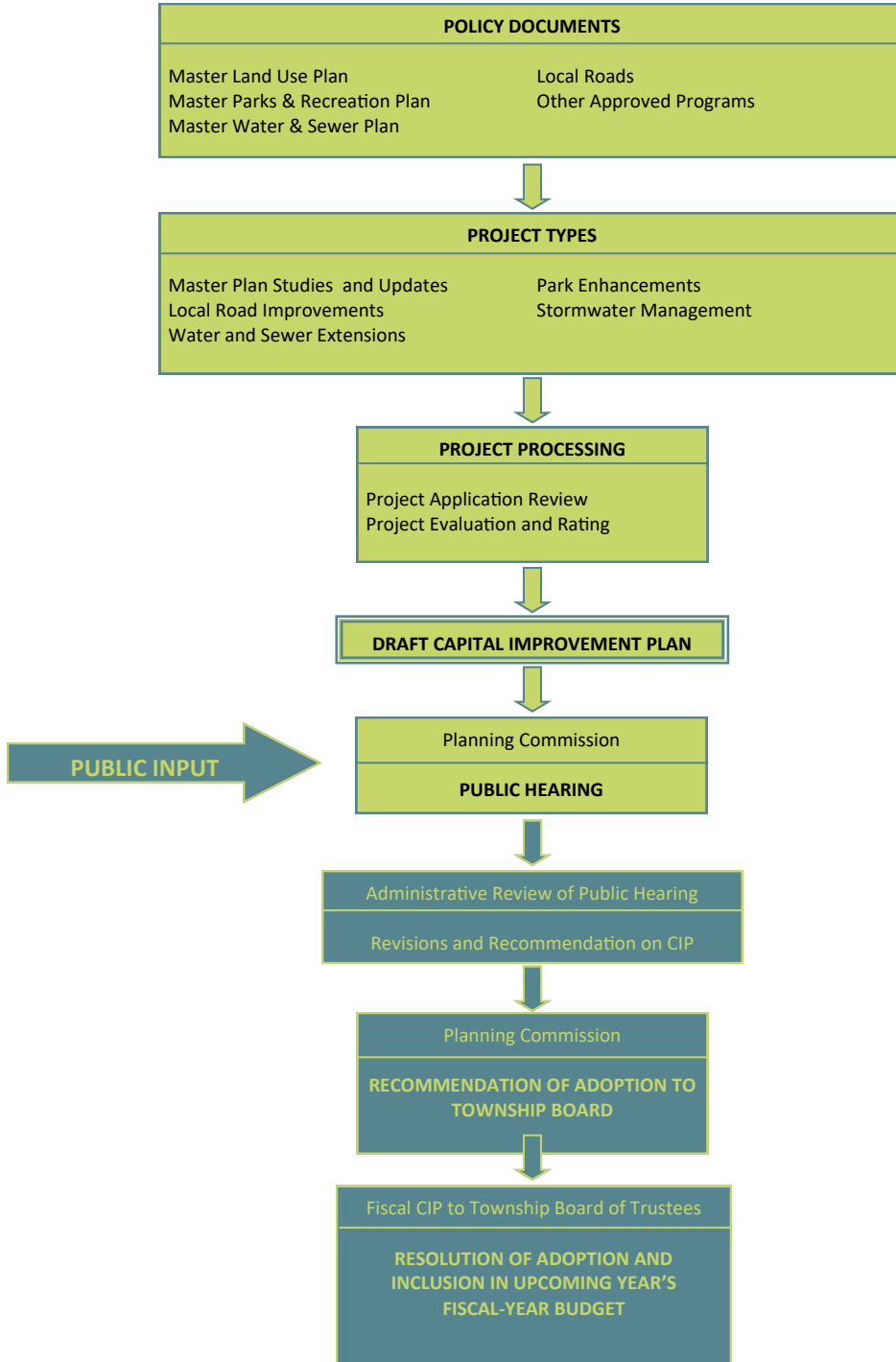
2. Data Compilation

The information received from the stakeholders has been compiled into a Project Summary Worksheet. This worksheet contains all of the projects in the CIP over six (6) budget years with a cost summary of each budget year by program area and for the entire CIP. Included with the worksheet is the listing of possible funding sources and an estimate of the Township’s share for each project. The Project Summary Worksheet can be found in the Appendix of this CIP.

3. CIP Adoption Process

The adoption process involves a public hearing to solicit citizen input. The CIP will then be modified (if necessary), approved by the Township Planning Commission (via a formal recommendation for approval to the Township Board), and forwarded to the Township Board for adoption. Adoption of the CIP by the Township’s Board of Trustees does not constitute an authorization to commit resources to any project. This approval is recognition of a plan for projects within the community that may move toward implementation in the future. The projects included within Year 1 of the Capital Improvement Plan potentially form the basis for the upcoming year’s capital projects budget. An outline of the process is displayed in Figure 1-3 on the following page.

FIGURE 1-3. CIP ADOPTION PROCESS



2. Existing Capital Facilities

In developing a Capital Improvements Plan, communities often find it essential to develop an inventory of their existing capital facilities. Before a community develops a list of “What we need,” it is important to first look at “What we have.” As stated in White Lake Township’s Master Plan, “A municipality’s public facilities are an important part of community life and are directly related to important issues such as quality of life and protection of the public health, safety, and welfare.” The following is a summary of White Lake Township’s major capital facilities and their current condition (where applicable), as determined by the directors of the respective departments. The location of existing Township facilities is noted on the Existing Facilities Map (Figure 2-1).

White Lake Township Hall

7525 Highland Road

Year Built: 1949

Last Major Improvement: 1996

Houses: Supervisor, Clerk, Treasurer, Assessing, Building, Planning, Water, Sewer, Maintenance

Condition: Fair

Extent of Use: Heavy



White Lake Township Fleet Vehicles

Includes: Administrative vehicles, inspection vehicles; does not include Fire Dept. vehicles

Year Acquired: Varies

Condition: Varies

Extent of Use: Varies

Average Duty Cycle: Approximately 7 years



Fire Hall Number 1 (Headquarters)

7420 Highland Road

Year Built: Unknown

Last Major Improvement: Parking Lot Replacement

Serves: M-59 corridor; northeast and southwest quadrant

Condition: Fair

Extent of Use: Heavy



Fire Hall Number 2

Address: 860 Round Lake Road
Year Built: Unknown
Last Major Improvement: None
Serves: Southeast quadrant
Condition: Fair
Extent of Use: Heavy



Fire Hall Number 3

4870 Ormond Road
Year Built: Unknown
Last Major Improvement: None
Serves: Northwest quadrant
Condition: Fair
Extent of Use: Moderate



White Lake Township Police Station

7525 Highland Road
Year Built: approx. 1950
Last Major Improvement: 2001 (expansion)
Condition: Poor
Extent of Use: Heavy



White Lake Township Police Garage

Location: Behind Police Station
Year Built: 2004
Last Major Improvement: None
Condition: Poor
Extent of Use: Heavy



White Lake Township Police Communications System

Year Acquired: New in 2010
Last Major Improvement: None
Condition: Good
Extent of Use: Heavy



White Lake Township Police Vehicles

Includes: 18 Vehicles
 Year Acquired: Varies
 Condition: Excellent
 Extent of Use: Heavy



Fire and EMS Equipment

Includes: three engines, two tankers, two ambulances / transporting units, one light duty rescue (no pumping or water carrying capabilities), one pickup style grass truck with a skid-mounted pump and tank, four fleet vehicles, one drone aircraft, two cardiac monitors, and breathing apparatus
 Year acquired: Varies; between 1997 and 2022
 Condition: Varies; from Fair to Excellent
 Extent of Use: Varies; primarily Moderate to Heavy



Township Office Annex

7527 Highland Road
 Year Built: 1985
 Last Major Improvement: 2020 remodel
 Condition: Good
 Extent of Use: Moderate



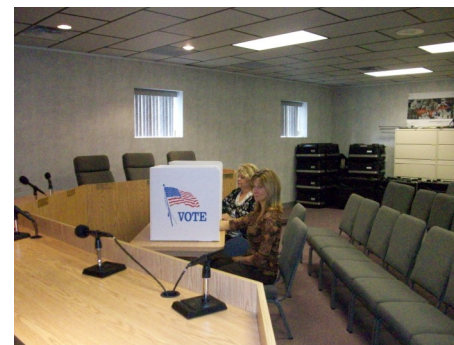
Dublin Community Senior Center

685 Union Lake Road
 Year Built: approx. 1950
 Last Major Improvement: 2001
 Condition: Good
 Extent of Use: Heavy



White Lake Township Clerk's Equipment

Includes: Voting tabulation machines (18)
 Voter assist terminals (13)
 Year acquired: Varies; between 2018 and 2022
 Condition: Excellent
 Extent of Use: Varies



White Lake Township Water System

Includes: Approx. 55 miles of water main ranging in size from 4 to 16 inches in diameter, service supply laterals, 15 pressure control valves, approx. 1,000 gate valves, approx. 700 fire hydrants and hydrant valves, 2 one million gallon elevated water storage tanks, 5 water treatment plants, 9 water supply wells

Year Built: Ongoing

Last Major Improvement/Extension: 2020 Hillview Well House & 2019 Twin Lakes II Well House

Condition: Varies; primarily Good to Excellent

Extent of Use: Varies; primarily Moderate to Heavy



White Lake Township Sanitary Sewer System

Includes: The Township’s wastewater collection system serves approximately 4,500 people in the Township. Sewer mains were constructed largely in 1999 or later. There are approximately 20 miles of gravity sewer mains and approximately 22 miles of pressured mains. The Township’s sanitary system contains ten (10) pumping stations. The wastewater flow is ultimately discharged into Commerce Township’s collection system and is conveyed to the Commerce Township Wastewater Treatment Plant for treatment.

Year Built: Ongoing since 1998

Last Major Improvement/Extension: 2012

Condition: Good to Excellent

Extent of Use: Light to Moderate



Water Tower 1

360 Woodsedge Drive

Year Built: 1994

Last Major Improvement: 2007

Condition: Good

Extent of Use: Heavy



Water Tower 2

6055 Highland Road

Year Built: 2004

Last Major Improvement: None

Condition: Excellent

Extent of Use: Moderate



Hidden Pines Park

Location: Intersection of White Lake Road and Hidden Pines Drive.
Size: 9 Acres
Includes: Baseball Field and parking area



Township-Owned Land

Total acreage: approx. 177 acres (including Township parks)



Judy Hawley Park

Location: Behind Township Hall, just east of the Township Annex
Size: 12 acres
Includes: Soccer fields, pavilion, play structure, basketball courts, sand volleyball court, and pathway



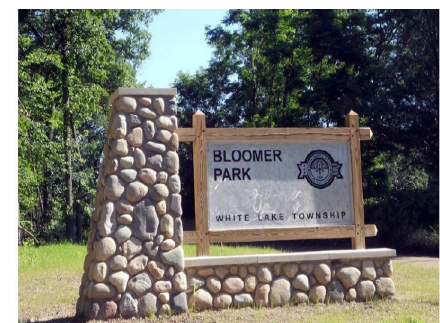
Ferdinand C. Vetter Park

Location: Behind Dublin Community Center on Union Lake Road
Size: 6 acres
Includes: Baseball field, picnic shelter, pathway, and play structure



Bloomer Park

Location: West side of McKeachie Road, between Grass Lake and Jackson Roads
Size: Approximately 28 acres
Description: Picnic shelter, scenic overlook, and nature trails



Stanley Park

Location: West side of Elizabeth Lake Road, south of White Lake Library
Size: 59 acres
Description: Undeveloped; development anticipated 2024-2027



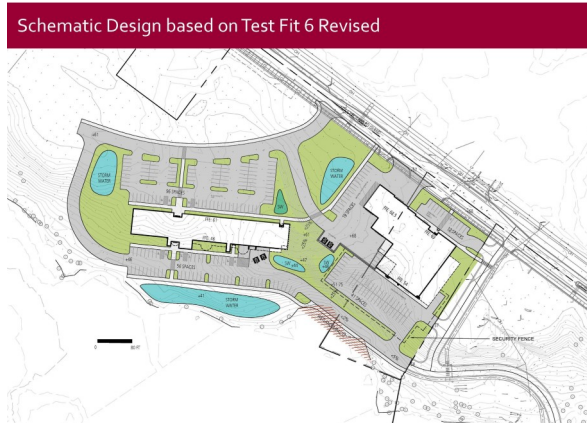
White Lake Community Hall

Address: 7500 Highland Road
Year Built: 1875 (State-designated historic site)
Last Major Renovation: 2013 (Interior)
Condition: Good
Extent of Use: Light



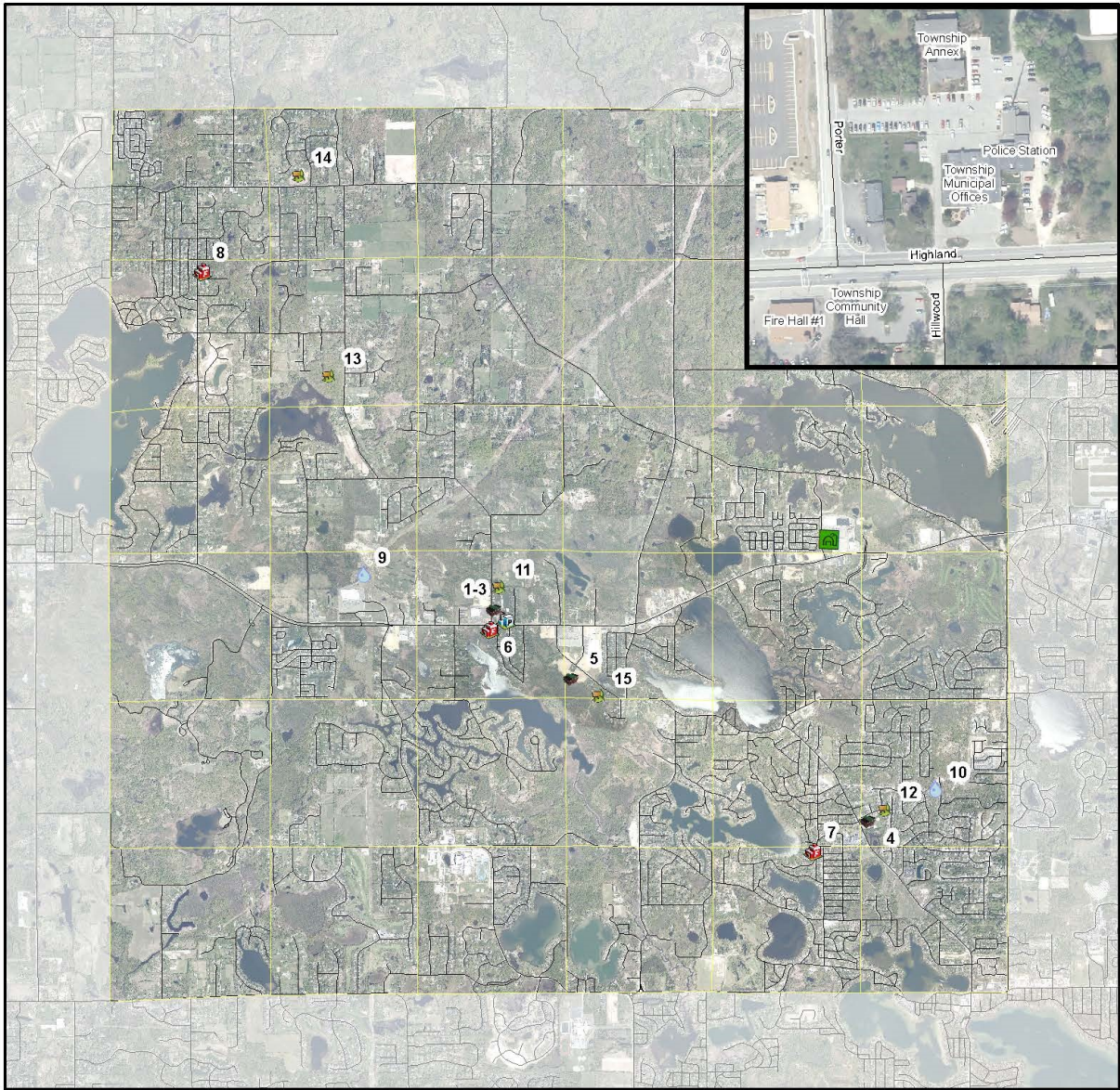
Civic Center

Location: West side of Elizabeth Lake Road, south of White Lake Library
Size: 29 acres
Description: Undeveloped; development anticipated 2024-2025



White Lake Charter Township

FIGURE 2-1



White Lake Charter Township



Existing Facilities

- | | | | |
|--------------------------------|--------------------------|-------------------------------|---------------------|
| | Public Facilities | | Water Towers |
| 1 - Township Municipal Offices | | 9 - Water Tower #1 | |
| 2 - Community Hall | | 10 - Water Tower #2 | |
| 3 - Township Annex | | | |
| 4 - Dublin Community Center | | Township Parks | |
| 5 - Civic Center Property | 11 - Judy Hawley Park | 12 - Ferdinand C. Vetter Park | |
| | Fire Stations | 13 - Bloomer Park | |
| 6 - Fire Hall #1 | | 14 - Hidden Pines Park | |
| 7 - Fire Hall #2 | | 15 - Stanley Park | |
| 8 - Fire Hall #3 | | Fisk Farm | |
| | Police Station | | |



3. Executive Summary

Stakeholders

The level of input from the stakeholders has greatly contributed toward the formulation of the CIP. Project profiles consisting of the Project Application Form, the Project Cost Detail Form, and the Project Rating Form were received from Parks and Recreation, Senior Center, Police Department, Fire Protection, Facilities, and Department of Public Services. Though some of the information received will require further detail, it is the most current information available until future refinements are made to the project profile.

Project Histories

Just as important as tracking current and future projects is cataloging the past accomplishments of the Capital Improvement Plan. Located in the back of the plan is a Project Histories Summary Table. This table illustrates those past projects that have been completed or canceled. Some projects are changed over time, the original project number may be dropped and new project numbers created in its place. The Project Histories Summary can be used to track the priorities of the Township over time and can help track overall investment in the community based on geographic regions.

2024 Project Histories

The sole capital improvement project, outlined in the 2024-2029 CIP, completed during 2024 was the Triangle Trail Development (BP-0009).

3. Executive Summary

Projects

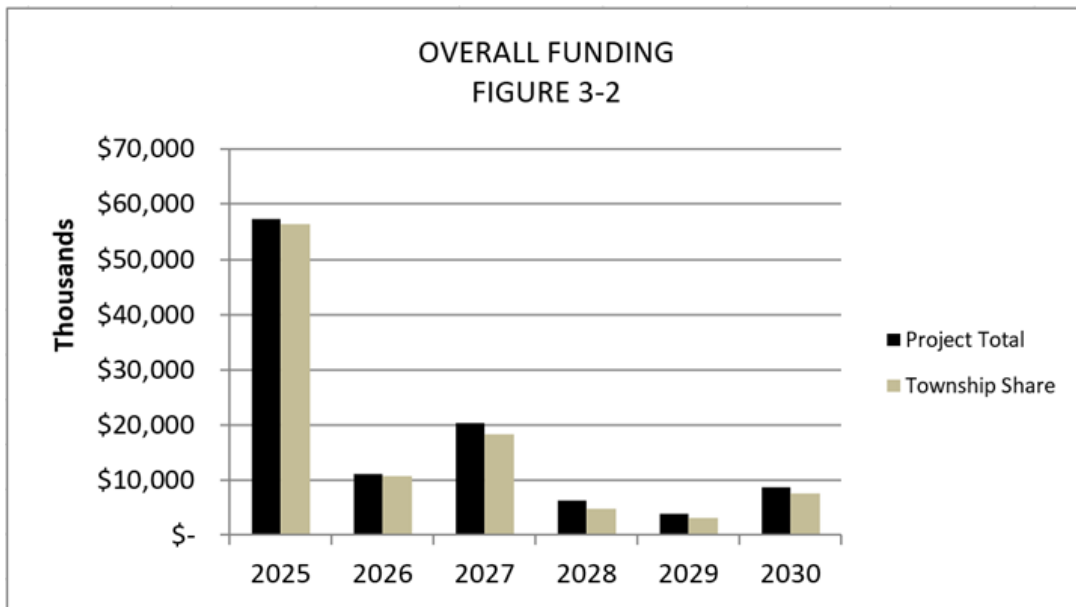
Review of the Project Summary Worksheet (found in the Appendix of this report) indicates that there are several individual projects located in the same geographic area. There are potential cost savings that can be realized by combining projects. At a minimum, mobilization, traffic control, and restoration are just some of the potential cost savings achieved by combining projects for construction. The potential grouping of projects are identified in Figure 3-1 below:

FIGURE 3-1	
Location	Project Labels
M-59, Teggerdine east 0.3 miles	BP-0003 and PK-0006
Bogie Lake Road, Huron Valley Schools to M-59	BP-0006 and SS-0003
Elizabeth Lake Road, south of White Lake Library	FA-0006 and FA-0007

If the funding and timing of these projects can be orchestrated, the savings are significant. The exact savings cannot be determined until a detailed project costing and analysis of the common scope between the projects is performed. Also, in the future other projects such as new facilities can be studied to determine if combining operations can realize a cost savings. Other benefits include providing a list of projects in advance in order to help establish the need for grants and funding opportunities.

Funding

This CIP has many projects that are unfunded. The limitations of funding will likely cause projects to be delayed, deferred or cancelled. Each project has a potential funding source and many are dependent on a contribution from the Township’s General Fund (GF). Many projects list funding sources from State and Federal grant programs, but those grants have not yet been secured. The following chart depicts the relationship between total project costs, and the Township’s share of those costs. Additional revenue for projects that are not completely funded by the Township will come from grants and other funding sources.



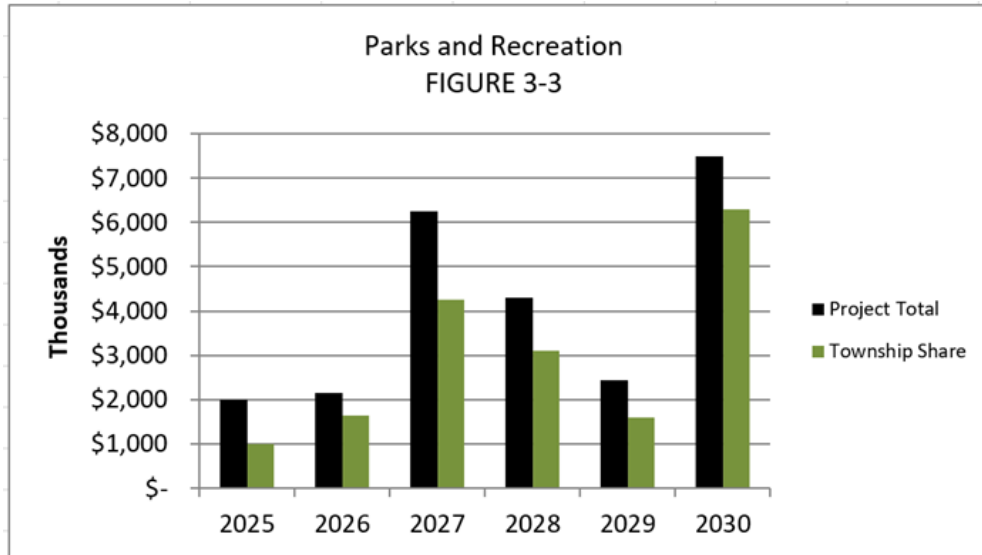
The Township’s General Fund balance at the end of fiscal year 2023 was \$7,376,522. That amount is inadequate to support the Township’s share of the CIP, which is shown in Figure 3-2 above.

Funding Components

In the following section, each of the funds shown on the Project Summary Worksheet are graphed and reported as part of the CIP with the exception of the projects listed under Internal Services.

Parks and Recreation

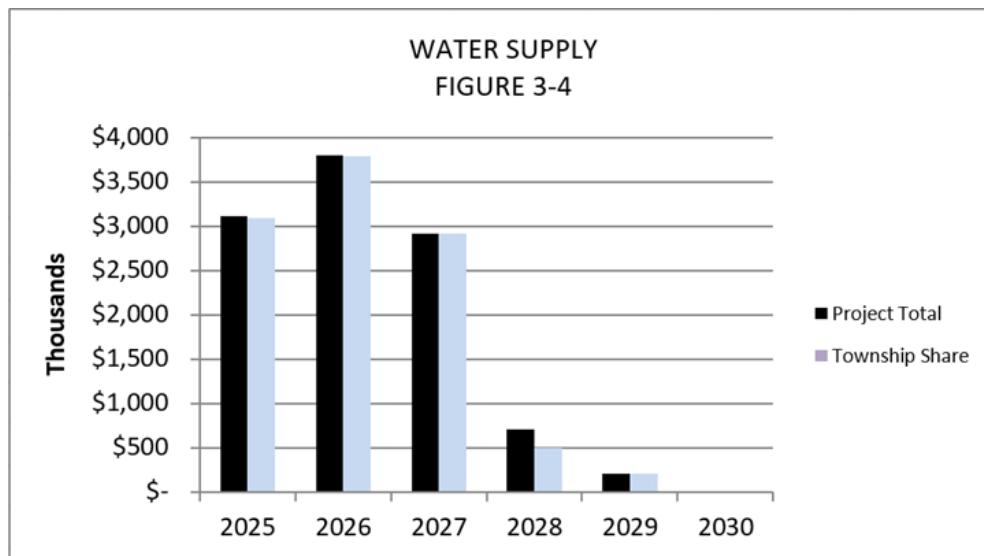
The Parks and Recreation Fund has a balance of \$1,457,076 as shown in the 2023 Comprehensive Annual Financial Report (CAFR). This fund balance along with a \$500,000 Land and Water Conservation Fund grant will be used to leverage park improvement projects.



Careful budgeting of the Parks and Recreation Fund will allow the level of service and maintenance of the Township’s current and future park facilities to occur until additional parks funding can be established.

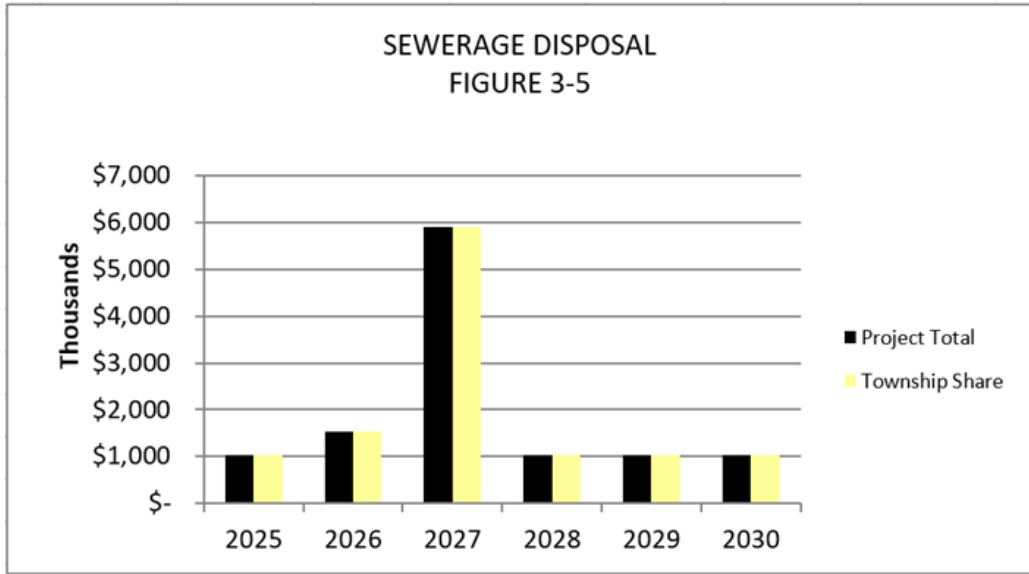
Water Supply Fund

The Water Supply Fund (WF) is an enterprise fund that is not dependent on support from the General Fund. The Water Supply Fund (WF) has a balance of \$15,861,011 as of the close of 2023. Several projects in this program area are funded using the Drinking Water Revolving Fund supplemented by the Water Supply Fund balance.



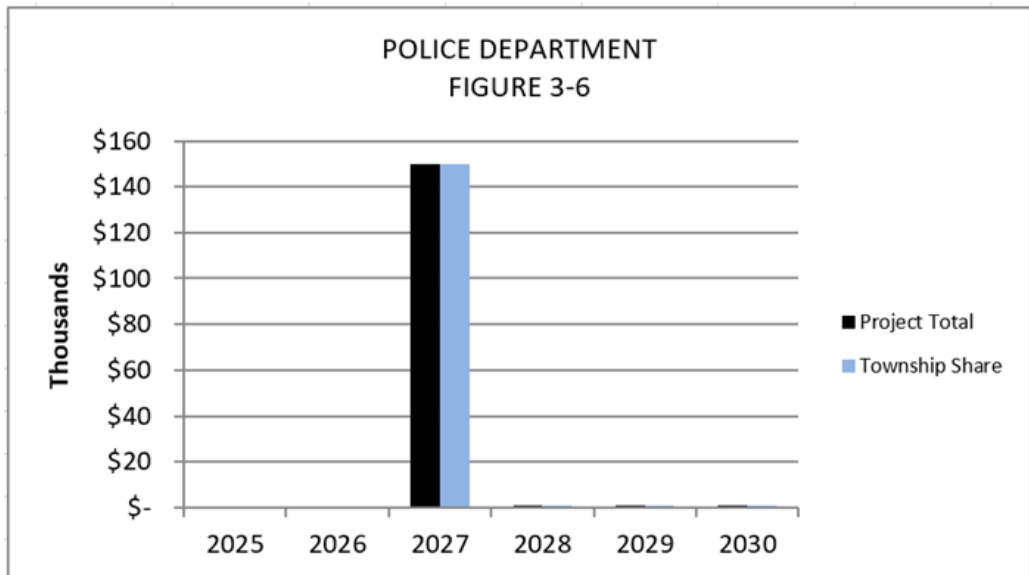
Sewerage Disposal System

Development of sewer has been done either by private development or special assessment districts (SADs). As of 2023, the Sewer Fund (Enterprise Fund) has a balance of \$12,921,604.



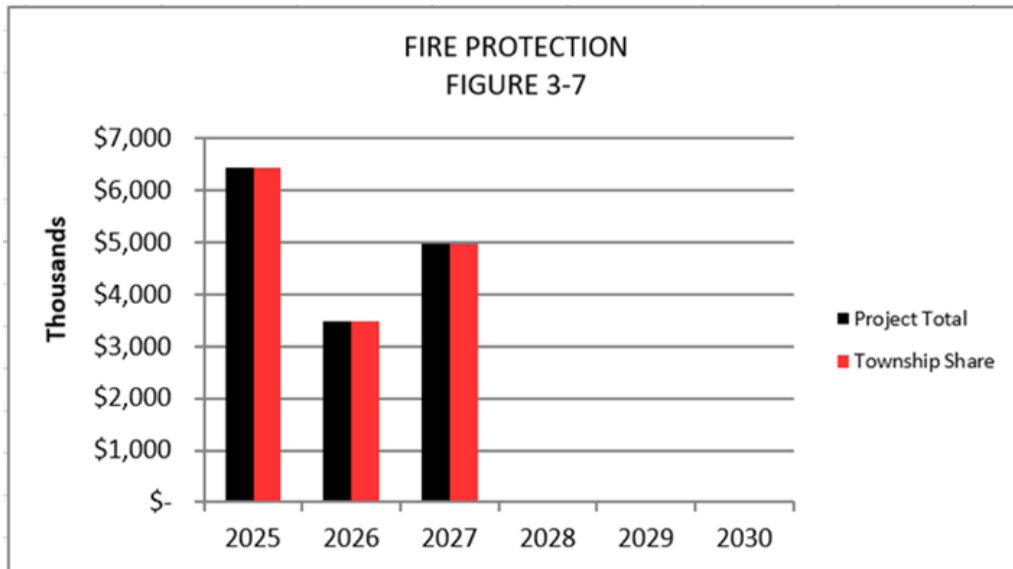
Police Department

The 2023 CAFR reports a balance of \$5,190,389 in the Police Fund. The Police Department is currently funded by a Township Millage.



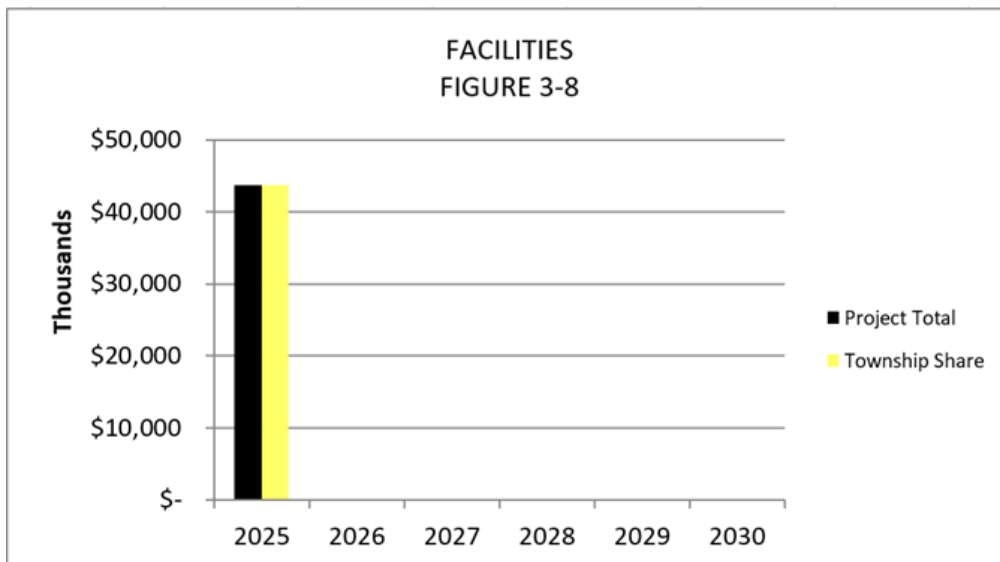
Fire Protection

The Fire Protection Fund has a balance of \$6,401,139 as reported in the 2023 CAFR. The Fire Protection Fund is supported solely through millage money.



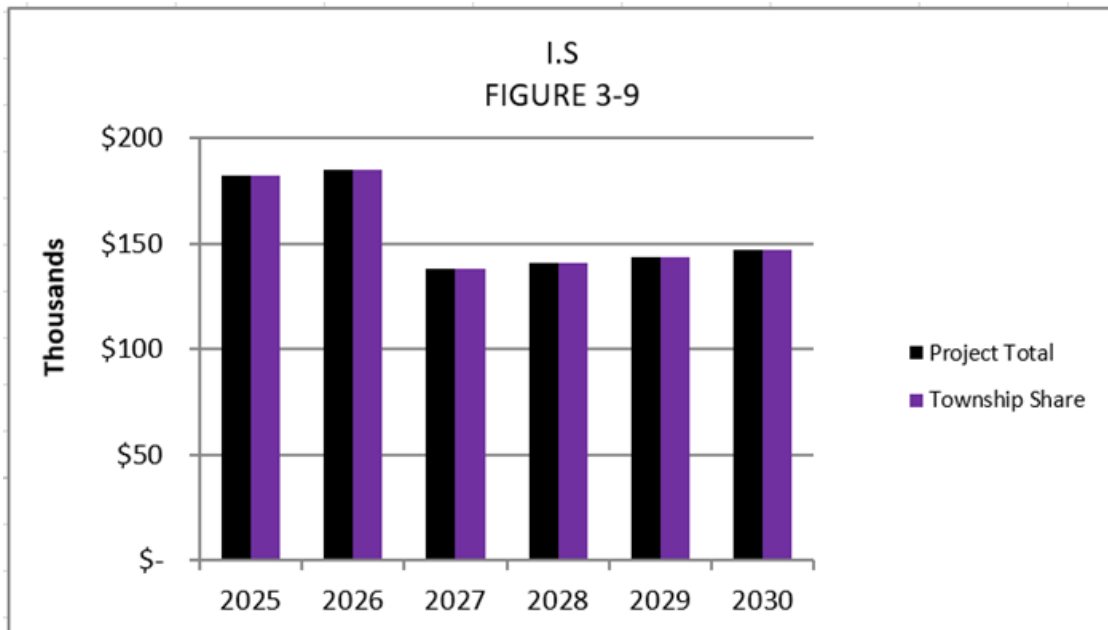
Facilities

The Township Civic Center district will have a new Public Safety Headquarters that will cost approximately \$25 million dollars and a new Civic Center Building to replace the current Township Offices at an approximate cost of \$20 million dollars. This money will come from the Capital Project Fund and the issuance of bonds. The Township currently has \$12,664,817 available for a new Township Municipal Complex in an Improvement Revolving Fund listed in the 2023 CAFR.



Internal Services

The Internal Services used to support the operating departments are included in the CIP due to their costs that are in excess of \$50,000. As these services are collected as a charge back to the operating departments, there is no special fund involved.



4. CIP Components

The components of the Capital Improvement Plan have been compiled and reported by the following seven program areas, each representing a stakeholder in the CIP.

Section 4a. Facilities

FA-0006 Public Safety Headquarters
FA-0007 Township Civic Building

Section 4b. Fire Protection / Emergency Medical Services

FD-0002 - Fire Station 2 Replacement
FD-0006 - Fire Ladder Truck
FD-0009 - Fire Station 3 Replacement
FD-0017 - Structural Firefighting Gear
FD-0018 - Ambulance Replacement
FD-0019 - Engine / Pumper Replacement
FD-0020 - Emergency Medical Service Equipment

Section 4c. Internal Services

IS-0002 - Fleet Vehicles (excluding Fire)
IS-0003 - Document Management Program

Section 4d. Parks and Recreation

BP-0002 - M-59 Pathway (Phase I)
BP-0003 - M-59 Pathway (Phase II)
BP-0004 - M-59 Pathway (Phase III)
BP-0005 - Union Lake Rd. Pathway
BP-0006 - Bogie Lake Rd. Pathway
PK-0002 - Four Seasons Trail (Phase I)
PK-0003 - Four Seasons Trail (Phase II)
PK-0004 - Four Seasons Trail (Phase III)
PK-0008 - Hidden Pines Park Phase II
PK-0009 - Teggerdine Trail Design
PK-0010 - Bloomer Park (Phase II)
PK-0012 - Stanley Park (Phase I)
PK-0013 - Stanley Park (Phase II)
PK-0014 - Pickleball Courts

Section 4e. Police Department

PD-0002 - Mobile Command Center

Section 4f. Sanitary Sewerage Disposal System

SS-0005 - Western Outlet Sanitary Extension Phase 2
SS-0006 - Pump Station at Lakeland High school
SS-0008 - Upgrades & Equipment Replacement of 7 Sanitary Sewage Pump Stations
SS-0011 - Sewer Main Rehabilitation Projects

Section 4g. Water Supply System

WS-0004 - Twin Lakes Well Replacement and Upgrades
WS-0012 - 6 - Inch Diameter Water Main Replacement
WS-0015 - Twin Lakes I Well House Updates
WS-0017 - Interconnection of High Pressure Districts (Elizabeth Lake Road)
WS-0018 - Residual Chlorine Analyzers at Water Towers
WS-0019 - Residential and Commercial Meter Replacement with AMR System
WS-0021 - Repaint Water Tower 1
WS-0022 - Repaint Water Tower 2
WS-0023 - Backhoe Machine
WS-0024 - Waterford / White Lake Emergency Interconnection
WS-0025 - DPS Storage / Maintenance Building

Funding Sources Abbreviations

Building Authority	BA
Fire Protection Fund	FPF
General Fund	GF
Federal Housing and Urban Development	HUD
Michigan Dept. of Transportation Enhancement Grant	MDOT-EG
Michigan Natural Resources Trust Fund Grant	MNRTFG
Michigan Safe Routes to School Program	MSRSP
Parks & Recreation - Special Township Revenue Fund	P&RF
Police Department Fund	PDF
Road Commission Tri-Party Program	RCOCTP
Special Assessment District	SAD
Sewer Fund (Township Enterprise Fund)	SF
State Revolving Fund	SRF
United States Dept. of Transportation	USDOT
Drinking Water Revolving Fund	DWRF
Water Supply Fund (Township Enterprise Fund)	WF

4a. CIP Components - Facilities

Overview

Facilities play an important role in providing an environment that is conducive to supporting the various operating departments that provide services directly to the residents in the Township. Facilities can be new building projects, building renovations, building expansions or the cost of services to support the existing buildings if this cost is significant. Identification of significant costs to support existing building operations is an important tool in determining the cost effectiveness of operating existing public buildings.

Funding for supporting existing Facilities is normally derived by either a charge back to the budgets from the operating departments or done as a direct operating cost to General Fund. Funding for new Facilities can be accomplished by a building authority. The Township has a legally established Building Authority that would be the governing body to finance and construct any new public buildings in the Township.

On the following page, each of the Facilities projects are listed along with their cost and funding sources.

CHARTER TOWNSHIP OF WHITE LAKE CAPITAL IMPROVEMENTS PLAN PROJECT SUMMARY FACILITIES (FA)							
PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FA-0006	Public Safety Headquarters	New Construction	110	Grant, GF, Bond Issue, PDF, FPF	\$25,000,000 +/-	\$25,000,000 +/-	\$--

Project Description

This building project is for the construction of a combined Police and Fire Headquarters Building to be located on Elizabeth Lake Road. The project cost includes the 40,000 square foot building and the associated site work.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FA-0007	Township Civic Building	New Construction	96	Grant, GF, Bond Issue	\$20,000,000 +/-	\$20,000,000 +/-	\$--

Project Description

The Township Civic Building will replace the 70 year Township Office Building (circa 1949) with a modern facility that will accommodate the Township's current needs. The building will be approximately 30,000 square feet.

4b. CIP Components - Fire Protection/EMS

Overview

Fire Protection/Emergency Medical Services provides a variety of vital services to Township residents. Fire Protection facilities are provided at several locations within the Township. In the CIP, new Fire Protection facilities, new Fire Protection equipment, and new Fire Protection vehicles are included under this section.

Fire Protection is principally funded by a Township Millage. Potential sources of funding for projects are the Fire Protection Fund balance, bond issue, or grants. Another possibility would be to use the Township's Building Authority to finance new fire stations.

On the following pages, each of the Fire Protection projects are listed along with their cost and potential funding sources.

CHARTER TOWNSHIP OF WHITE LAKE CAPITAL IMPROVEMENTS PLAN PROJECT SUMMARY FIRE PROTECTION (FD)							
PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FD-0002	Fire Station 2 Replacement	New Construction	140	Grant, Bond Issue, BA	\$4,000,000	\$4,000,000	\$--
<u>Project Description</u> Construct a satellite fire station with living quarters and three bays.							

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FD-0006	Fire Ladder Truck	New Equipment	108	FPF	\$1,500,000	\$1,500,000	\$--
<u>Project Description</u> 100-foot fire-fighting ladder truck.							

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FD-0009	Fire Station 3 Replacement	New Construction	112	Grant, Bond Issue, BA, GF	\$5,000,000	\$5,000,000	\$--
<u>Project Description</u> Restoration and Addition to the existing Fire Station 3.							

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FD-0017	Structural Firefighting Gear (30 sets)	New Equipment	102	FPF	\$126,000	\$126,000	\$--
<u>Project Description</u> Structural Firefighting Gear. \$4,200 per set = \$126,000							

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FD-0018	Ambulance Replacement and Refurbishment	New Equipment	112	FPF	\$1,034,850	\$1,034,850	\$--
<u>Project Description</u> Ambulance replacement - 3 (2 new units and 1 refurbishment planned for 2025).							

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FD-0019	Engine/Pumper Replacement	New Equipment	112	FPF	\$3,000,000	\$3,000,000	\$--
<u>Project Description</u> Specification process beginning in 2027.							

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
FD-0020	Emergency Medical Service Equipment	New Equipment	137	FPF	\$283,262	\$283,262	\$--
<u>Project Description</u> Purchase of emergency medical service equipment for year 2025, consisting of 1 cardiac monitor, 3 power load systems, 3 power load cots, and 3 stair-chair lifting systems.							



4c. CIP Components - Internal Services

Overview

Internal Services play an important role in supporting the various operating departments that provide services directly to the residents in the Township. While Internal Services in itself is not a “project,” the cost of this internal support is significant and bears inclusion as part of the CIP. Internal Services in this CIP are defined as computer networks, geographic information service (GIS), document storage, communications, and fleet vehicles.

There is no dedicated fund for Internal Services. Funding for Internal Services is normally derived by a charge back to the budgets from the operating departments that use or are supported by these services.

On the following page, each of the Internal Services projects are listed along with their cost and funding sources.

**CHARTER TOWNSHIP OF WHITE LAKE
CAPITAL IMPROVEMENTS PLAN
PROJECT SUMMARY
INTERNAL SERVICES (IS)**

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
IS-0002	Fleet Vehicles	New Equipment	80	PD / GF	\$ 837,000	\$ 837,000	\$--

Project Description

Replacement of cars and trucks (except Fire Department) on an annual basis to systematize the vehicle replacement process. Estimates are for a combination of three (3) cars and two (2) trucks each year, for a total of six (6) years.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
IS-0003	Document Management Program	Equipment / Professional Services	90	GF	\$100,000	\$100,000	\$--

Project Description

Project includes providing Township Departments with the necessary software and hardware needed to continue digitizing the Township's document files. Project also includes funding for contracting with private firms to help expedite the process.

4d. CIP Components - Parks & Recreation

Overview

The Parks and Recreation Master Plan outlines a variety of services to Township residents. Parks and Recreation is principally funded by a non-major special revenue fund. Potential funding for projects can be from Parks and Recreation Fund balance, grants such as Michigan Department of Natural Resources Trust Fund, County based tri-party funding, Michigan Safe Routes to School Program, Michigan Department of Transportation Enhancement Grant, Federal Housing and Urban Development.

In January 2023 the Township Board adopted the 2023-2027 Parks and Recreation Master Plan. The Plan outlines goals and objectives illustrating the vision for parks and recreation over the next five plus years and documents desired capital improvements to meet the goals, and categorizes them as short-, mid-, long-term, or ongoing priorities including magnitude of cost of the proposed capital improvements. The Plan also identifies potential funding sources that might best align with the various capital projects. The CIP incorporates several of the capital projects identified in the 2023-2027 Parks and Recreation Master Plan.

On the following pages, each of the Parks and Recreation projects are listed along with their cost and potential funding sources.

CHARTER TOWNSHIP OF WHITE LAKE
CAPITAL IMPROVEMENTS PLAN
PROJECT SUMMARY
PARKS AND RECREATION (BP and PK)

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
BP-0002	M-59 Pathway (Phase I)	Rehabilitation	98	MDOT-EG; P&RF	\$2,000,000	\$1,500,000	\$500,000

Project Description
An important, long term, high-priority objective is the development of a Township-wide system of pathways connected to the regional network. Renovation of the M-59 pathway is an essential element that will connect future north-south routes, for example, Bogie Lake Pathway to the Four Seasons Trail.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
BP-0003	M-59 Pathway (Phase II)	Rehabilitation	98	MDOT-EG; P&RF	\$2,000,000	\$1,500,000	\$500,000

Project Description
An important, long term, high-priority objective is the development of a Township-wide system of pathways connected to the regional network. Renovation of the M-59 pathway is an essential element that will connect future north-south routes, for example, Bogie Lake Pathway to the Four Seasons Trail.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
BP-0004	M-59 Pathway (Phase III)	Rehabilitation	98	MDOT-EG; P&RF	\$2,000,000	\$1,500,000	\$500,000

Project Description
An important, long term, high-priority objective is the development of a Township-wide system of pathways connected to the regional network. Renovation of the M-59 pathway is an essential element that will connect future north-south routes, for example, Bogie Lake Pathway to the Four Seasons Trail.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
BP-0005	Union Lake Road Pathway	New Construction	98	MNRTFG; RCOCTP; P&RF	\$1,500,000	\$1,150,000	\$350,000

Project Description
The Union Lake Road corridor is the area of White Lake that contains the highest density of residential development in the Township. A pathway along the corridor is critical to provide residents with safe, non-motorized access to the homes, churches, schools, parks, retail, and other places in the area.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
BP-0006	Bogie Lake Road Pathway	New Construction	83	MDOT-EG; P&RF; MSRSP	\$5,500,000	\$5,000,000	\$500,000

Project Description

An important, long term, high-priority objective is the development of a Township wide system of pathways connected to the regional network. This pathway provides the north-south connection from M-59 (north) to the Township's southern boundary and connects a complex of 3 schools to neighborhoods throughout the length of the corridor.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0002	Four Seasons Trail (Phase I)	New Construction	67	MNRTFG; P&RF; USDOT	\$2,000,000	\$1,500,000	\$500,000

Project Description

An important, long-term, high-priority objective is the development of a Township-wide pathways system. The ITC Corridor Four Seasons Trail provides a critical link between Pontiac Lake State Recreation Area and Highland Lake State Recreation Area, via the M-59 trailway. This route is included in the Oakland County Greenways Plan and should include state and regional financial participation. Construction of the trailway is expected to occur over several years.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0003	Four Seasons Trail (Phase II)	New Construction	67	MNRTFG; P&RF; USDOT	\$2,000,000	\$1,500,000	\$500,000

Project Description

An important, long-term, high-priority objective is the development of a Township-wide pathways system. The ITC Corridor Four Seasons Trail provides a critical link between Pontiac Lake State Recreation Area and Highland Lake State Recreation Area, via the M-59 trailway. This route is included in the Oakland County Greenways Plan and should include state and regional financial participation. Construction of the trailway is expected to occur over several years.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0004	Four Seasons Trail (Phase III)	New Construction	67	MNRTFG; P&RF; USDOT	\$2,000,000	\$1,500,000	\$500,000

Project Description

An important, long-term, high-priority objective is the development of a Township-wide pathways system. The ITC Corridor Four Seasons Trail provides a critical link between Pontiac Lake State Recreation Area and Highland Lake State Recreation Area, via the M-59 trailway. This route is included in the Oakland County Greenways Plan and should include state and regional financial participation. Construction of the trailway is expected to occur over several years.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0008	Hidden Pines Park Phase II	New Construction	80	MNRTFG; P&RF, Passport Grant	\$500,000	\$150,000	\$350,000

Project Description
 This property would be further developed using the Hidden Pines Park Master Plan that was completed in 2012. Improvements would include a playground as well as other park amenities.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0009	Teggerdine Trail Development Design	New Construction	78	MNRTFG, P&RF	\$150,000	\$150,000	-

Project Description
 The Teggerdine Road Pathway would connect M-59 in the south to Indian Springs Metro Park in the north. This pathway would provide access at certain points to the Pontiac Lake Recreation Area. This pathway would connect to regional pathways through Indian Springs Metro Park, and through the potential development of a trail inside of the ITC transmission corridor in White Lake.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0010	Bloomer Park Phase II	New Construction	60	MNRTFG, P&RF	\$305,000	\$105,000	\$200,000

Project Description
 With the completion of Bloomer Park’s Phase I redevelopment in 2013, the Township seeks to complete the restoration of the northern half of the park. The second phase of development would include completing the pathway network and providing other park amenities including park benches.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0012	Stanley Park Phase 1	Improvements	91	MNRTFG; P&RF; GF; Donations	\$2,000,000	\$1,000,000	\$1,000,000

Project Description
 Expansion of recreational land is critical to meet the needs of both existing and future residents, especially as vacant land becomes scarcer and the Township’s population continues to grow. This property is unique with frontage on Brendel Lake and location adjacent to the future Township Civic Center. Phase 1 improvements are planned to include an entrance drive, accessible pathway, fishing dock, rain garden, exercise stations, boardwalk, sled hill, landscaping, and signage.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0013	Stanley Park Phase II	Improvements	91	MNRTFG; P&RF; GF; Donations	\$2,250,000	\$1,250,000	\$1,000,000

Project Description
Balance of Stanley Park improvements.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PK-0014	Pickleball Courts	New Construction	91	Grant(s); P&RF	\$450,000	\$100,000	\$350,000

Project Description
Location to be determined. This recreational amenity is identified in the Parks and Recreation Master Plan.

4e. CIP Components - Police Department

Overview

The Township Police Department provides a variety of vital services to Township residents. The costs of operations and the demand for services create financial circumstances that are difficult to predict. In this CIP, special police equipment is listed as projects. Standard police cars are included as Internal Services under Fleet.

Police Department operations are funded by a major special revenue fund. Potential funding for projects can be from the Police Fund balance, grants from sources such as Homeland Security, and drug forfeitures. The Police also have a 10-year operating millage that will collect through 2031.

On the following page, each of the Police Department projects are listed along with their cost and potential funding sources.

CHARTER TOWNSHIP OF WHITE LAKE CAPITAL IMPROVEMENTS PLAN PROJECT SUMMARY POLICE DEPARTMENT (PD)							
PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
PD-0002	Mobile Command Center	New Equipment	65	Grants; Drug Forfeitures	\$152,000	\$152,000	\$--

Project Description
 A Mobile Command Center is a vehicle-based police facility, usually built around a motor home chassis. It allows command officers to provide on-scene command and control of large scale events or catastrophes.

4f. CIP Components - Sanitary Sewerage Disposal System

Overview

Sanitary Sewerage Disposal Systems do not currently provide service to all Township residents. Sewerage Disposal Systems that do exist are operated by the Water Resources Commissioner for Oakland County.

A Sanitary Sewerage Disposal Enterprise Fund was created in 2022.

The Department of Public Services completed an asset management plan in 2019 following a roughly three year study of the condition of the Township waste water system. Potential sources of funding for projects are the Sewer Fund, Special Assessment Districts (SADs), and the State Revolving Fund (SRF) loan program.

On the following page, each of the Sanitary Sewerage Disposal projects are listed along with their cost and potential funding sources.

CHARTER TOWNSHIP OF WHITE LAKE
CAPITAL IMPROVEMENTS PLAN
PROJECT SUMMARY
Sanitary Sewer (SS)

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
SS-0005	Western Outlet Sanitary Extension Phase Two	New Construction	80	SF, SRF	\$4,876,000	\$4,876,000	\$--

Project Description
The proposed project will provide public force main sewer from the HVS Lakeland Campus north to M-59. The scope of the project will include the placement of 12" HDD directionally drilled pressure sewer (force main) with related appurtenances, pipe rework within the temporary diversion district, traffic control, pavement replacement, and restoration.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
SS-0006	Pump Station at Lakeland	New Construction	110	SF, SRF	\$500,000	\$500,000	\$--

Project Description
Installation of intermediate booster pumping station on sanitary sewer force main consisting of two submersible pumps and building housing controls and generator.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
SS-0008	Sanitary Sewer Pump Stations (7)	Rehabilitation	139	SF, SRF	\$4,084,110	\$4,084,110	\$--

Project Description
Replacement of pumping equipment, controls, and addition of VFDs (Variable Frequency Drive). VFDs will provide better system control and operational cost savings.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
SS-0011	Sewer Main Rehabilitation Projects	Rehabilitation	137	SF, SRF	\$2,850,000	\$2,850,000	\$--

Project Description
Approximately 9,138 linear feet.

4g. CIP Components - Water Supply System

Overview

The Municipal Water Supply System that is owned and operated by the Township and administered by the Department of Public Services does not provide service to all Township residents. The Municipal Water Supply System derives its water from underground aquifers and is used for fire protection and domestic consumption. Many areas of the Township currently operate with private wells as their source of potable water supply.

The Township has a Water Enterprise Fund managed by the Department of Public Services.

The Department of Public Services completed an asset management plan in 2017 following a roughly three year study of the condition of the Township water system. Potential sources of funding for Water Supply projects are the Water Fund balance, Drinking Water Revolving Fund (DWRF), revenue bonds, special assessment districts (SADs), or contributions from General Fund.

On the following page, each of the Water Supply projects are listed along with their cost and potential funding sources.

CHARTER TOWNSHIP OF WHITE LAKE
CAPITAL IMPROVEMENTS PLAN
PROJECT SUMMARY
WATER SUPPLY (WS)

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0004	Twin Lakes I Well Replacement and Upgrades	Rehabilitation	126	DWRF, WF	\$500,000	\$484,000	\$16,000

Project Description
The Township proposes to install a new well and pump at Twin Lakes I well site to replace the smaller capacity well at the site. This will require discussion with the MDEQ water bureau, site investigation using test/production well(s) to evaluate aquifer capacities, engineering design, permitting, identifying funding sources, contract administration and construction.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0012	6-Inch Water Main Replacement (9,000ft)	Rehabilitation	114	WF, DWRF	\$2,616,250	\$2,616,250	\$--

Project Description
Replace 6-inch diameter water main in Colony Heights, Twin Lakes Village, and Suburban Knolls for better system pressure sand fire flow.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0015	Twin Lakes Well House Upgrades	Rehabilitation	108	WF, DWRF	\$2,500,000	\$2,500,000	\$--

Project Description
Update controls, piping, and instrumentation to allow efficient operation of the Twin Lakes well house.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0017	High Pressure Districts Elizabeth Lake Road	New Construction	90	WF, DWRF	\$3,593,750	\$3,593,750	\$--

Project Description
The interconnect will allow the high pressure district to utilize both elevated towers for storage at Aspen Meadows and Village Acres well houses for water supply. This will increase system reliability.

CHARTER TOWNSHIP OF WHITE LAKE
CAPITAL IMPROVEMENTS PLAN
PROJECT SUMMARY
WATER SUPPLY (WS)

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0018	Residual Chlorine Analyzer for Water Towers	New Construction	146	WF, DWRF	\$50,000	\$50,000	\$--

Project Description
Residual Chlorine Analyzers will allow monitoring of water quality both in an out of the Townships water towers. It will allow adjustments of chlorine feed rates to maintain minimum chlorine residuals throughout the water system as required by regulations.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0019	Meter Replacement	Rehabilitation	82	WF, DWRF	\$1,000,000	\$1,000,000	\$--

Project Description
The water system meters in older subdivisions are reaching or exceeding their useful life. As meters age they deteriorate and develop inaccuracies in readings. Replacing meters will provide homeowners with the proper readings and provide accurate billing of water usage.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0021	Repaint Water Tower 1	Rehabilitation	127	WF, DWRF	\$602,600	\$602,600	\$--

Project Description
Exterior overcoat polyurethane paint. Complete wet interior repaint.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0022	Repaint Water Tower 2	Rehabilitation	127	WF, DWRF	\$287,500	\$287,500	\$--

Project Description
Exterior overcoat polyurethane paint. Dry interior partial repaint.

CHARTER TOWNSHIP OF WHITE LAKE
CAPITAL IMPROVEMENTS PLAN
PROJECT SUMMARY
WATER SUPPLY (WS)

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0023	Backhoe Machine	New Equipment	74	WF, DWRF	\$100,000	\$100,000	\$--

Project Description
Purchase a Backhoe Machine to assist in day-to-day department operations.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0024	Waterford / White Lake Emergency Interconnection	New Construction	103	WF, DWRF, Waterford	\$500,000	\$250,000	\$--

Project Description
Construction of a second interconnection between the Waterford and White Lake water systems to increase reliability and capacity.

PROJECT NUMBER	PROJECT TITLE	CATEGORY	RATING	FUNDING	PROJECT COST	TOWNSHIP SHARE	OTHER FUNDS
WS-0025	DPS Storage / Maintenance Building	New Construction	58	SF, WF	\$500,000	\$500,000	\$--

Project Description
Currently gathering estimates and developing preliminary site plan.



Appendix

Excerpt from the Michigan Planning Enabling Act of 2008:

**MICHIGAN PLANNING ENABLING ACT (EXCERPT)
Act 33 of 2008**

**125.3865 Capital improvements program of public structures and improvements;
preparation; basis.**

Sec. 65.

(1) To further the desirable future development of the local unit of government under the master plan, a planning commission, after adoption of a master plan, shall annually prepare a capital improvements program of public structures and improvements, unless the planning commission is exempted from this requirement by charter or otherwise. If the planning commission is exempted, the legislative body either shall prepare and adopt a capital improvements program, separate from or as a part of the annual budget, or shall delegate the preparation of the capital improvements program to the chief elected official or a nonelected administrative official, subject to final approval by the legislative body. The capital improvements program shall show those public structures and improvements, in the general order of their priority, that in the commission's judgment will be needed or desirable and can be undertaken within the ensuing 6-year period. The capital improvements program shall be based upon the requirements of the local unit of government for all types of public structures and improvements. Consequently, each agency or department of the local unit of government with authority for public structures or improvements shall upon request furnish the planning commission with lists, plans, and estimates of time and cost of those public structures and improvements.

(2) Any township may prepare and adopt a capital improvement program. However, subsection (1) is only mandatory for a township if the township, alone or jointly with 1 or more other local units of government, owns or operates a water supply or sewage disposal system.

History: 2008, Act 33, Eff. Sept. 1, 2008

Charter Township of White Lake Capital Improvement Plan – Project Application

Project Title: [Click here to enter text.](#)
Program Area: [Choose an item.](#)
Prepared By: [Click here to enter text.](#)
Date Prepared: [Click here to enter a date.](#)
CIP ID #: [Click here to enter text.](#)

Project Description: Provide a brief (1-2 paragraph) description of project:

[Click here to enter text.](#)

Planning Context: Is the project part of an Adopted Program, Policy or Plan?

Yes or No

[Choose an item.](#) If yes, identify Program, Policy or Plan

[Click here to enter text.](#)

List the adopted program or policy, and how this project directly or indirectly meets these objectives:

[Click here to enter text.](#)

Planning Context: Is the Township Legally Obligated to perform this service? (E.G. Federal or State Law, Consent Judgment, etc.)

Yes or No

[Choose an item.](#)

If yes, please describe Township’s Obligation:

[Click here to enter text.](#)

Schedule: Estimated project beginning and ending dates. If project will take several years to complete, fill out Form 2. If applicable, be sure to include any work done in prior years, including studies or other planning:

[Click here to enter text.](#)

Coordination: Please identify if this project is dependant upon one or more other CIP projects, and describe what the relationship is:

[Click here to enter text.](#)

Project Priority: Low, Medium, High

[Choose an item.](#) Priority within Program Area

[Choose an item.](#) Priority for the Township

Capital Improvement Plan – Project Application

Prior Approval: Is this project included the prior year’s budget?
Has this project been approved by the Township Board, Commission or Authority?

Yes or No
Choose an item.
If Yes, Choose an item.

Total Estimated Cost: In today’s dollars (Amount shown here should agree with total on Form 2)

[Click here to enter text.](#)
List all funding options available for this project.

[Click here to enter text.](#)

Recommended funding option(s) to be used? (i.e: Operating Revenues, Grants, Fund Balance, Bond Issue etc...)

[Click here to enter text.](#)

Basis of Cost Estimate: Please check the following

[Choose an item.](#)

Impacts. Describe potential loss of service, benefit or opportunity if the project is not included in the C.I.P.

[Click here to enter text.](#)

CHARTER TOWNSHIP OF WHITE LAKE
 Capital Improvement Plan
 Project Cost Detail

Project ID _____
 Category _____

	Prior Year	Budget Year	Budget Year 2	Budget Year 3	Budget Year 4	Budget Year 5	Budget Year 6	Totals	TWP Share
Project Construction Components									
Preliminary Engineering								\$ -	-
Right of Way or Easement Services								\$ -	-
Land Acquisition								\$ -	-
Geotechnical Engineering								\$ -	-
Environmental Services								\$ -	-
Contractor payments								\$ -	-
Construction Engineering								\$ -	-
Depreciable equipment or facilities								\$ -	-
Post Construction Monitoring								\$ -	-
Finance Costs								\$ -	-
Other Construction Costs								\$ -	-
Total Construction Cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Costs									
Contracted Services								0	
Staff								0	
Routine Maintenance								0	
Utilities, Insurance, Communication								0	
Other								0	
Total Operating Cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Project Cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

10/5/2009

WLT_Project Costing Form template template

CHARTER TOWNSHIP OF WHITE LAKE Capital Improvement Plan Project Evaluation Form		Project ID		
Rater Name:	Score Range	Rater Score	Weight	Total Points
1. Contribution to Health, Safety & Welfare			5	0
Eliminates a known hazard (accident history)	5			
Eliminates a potential hazard	4			
Materially contributes	3			
Minimally contributes	1			
No impact	0			
2. Project Needed to Comply with Local, State or Federal Law			5	0
Yes	5			
No	0			
3. Project Conforms to Adopted Program, Policy or Plan			4	0
Project is consistent with adopted City Council policy or plan	5			
Project is consistent with Administrative policy	3			
No policy / plan in place	0			
4. Project Remediates as Existing or Projected Deficiency			3	0
Completely Remedy Problem	5			
Partially Remedy Problem	3			
No	0			
5. Will Project Upgrade Facilities			3	0
Rehabilitates / upgrades existing facility	5			
Replaces existing facility	3			
New facility	1			
6. Contributes to Long-term Needs of Community			2	0
More than 30 years	5			
21 - 30 years	4			
11 - 20 years	3			
4 - 10 years	2			
3 years or less	1			
7. Annual Impact on Operating Costs Compared to Operating Costs assuming the project proceeds			2	0
Net Cost Savings	5			
No Change	4			
Minimal increase (>\$25,000)	3			
Moderate Increase (\$25,000 - \$100,000)	2			
Major Increase (>\$100,000)	1			
8. Annual Impact on Operating Costs Compared to Operating Costs assuming the project does not proceed				2
Major Impact (> \$100,000)	5			
Moderate Impact (\$50,000 - \$100,000)	3			
Minor Impact (\$25,000-\$50,000)	2			
Minimal Impact (< \$25,000)	1			
None	0			
9. Service Area of Project			2	0
Regional	5			
Township-Wide	4			
Several neighborhoods	3			
One neighborhood or less	1			
10. Department Priority			2	0
High	5			
Medium	3			
Low	1			
11. Project Delivers Level of Service Desired by Community			2	0
High	5			
Medium	3			
Low	1			



Director's Report

Project Name: Gateway Crossing
 Description: Final site plan approval
 Date on Agenda this packet pertains to: September 5, 2024

- Public Hearing
- Special Land Use
- Initial Submittal
- Rezoning
- Revised Plans
- Other:
- Preliminary Approval
- Final Approval

Contact	Consultants & Departments	Approval	Denial	Approved w/Conditions	Other	Comments
Sean O'Neil	CDD Director	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
DLZ	Engineering Consultant	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See letter dated 08/22/24
Matteo Passalacqua	Carlisle Wortman Associates, Inc	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See letter dated 08/19/24.
Jason Hanifen	WLT Fire Marshal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See letter dated 08/22/24.



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

August 22, 2024

Sean O' Neil, Director
Community Development Department
Charter Township of White Lake
7525 Highland Road
White Lake, Michigan 48383

RE: Gateway Crossing - Final Site Plan/Final Engineering Plan Review – 2nd Review

Ref: DLZ No. 2345-7567-01 Design Professional: Boss Engineering

Dear Mr. O' Neil,

Our office has reviewed the above-mentioned revised plan prepared by Boss Engineering and dated August 6, 2024. These plans were reviewed for conformance with the Township Engineering Design Standards. We offer the following comments for your consideration:

Comments-

Please note that comments from our July 24, 2024 letter are in italics. Responses to those comments are in bold. New comments are in standard font.

General

1. *Cover Sheet 1- Add WLT Engineering Design Standards Notes A.8 a.-d. on this sheet.* **Comment addressed. Standard notes have now been added to cover sheet.**
2. *Cover Sheet 1- Sheet Index- Sheets PP-4 and PP-4.1 are incorrect. Correct labels are PP-8 and PP-8.1.* **Comment addressed. Sheet labeling has been revised.**
3. *Sheet 2- General Utility Notes-1) Note 1- Remove all language beginning at "...of uniform gradation...only for watermain" and replace with "per White Lake Township standards."; 2) Note 4- Remove all language beginning at "...of granular material...by AASHTO T99" and replace with "per White Lake Township standards."* **Comment addressed. Language has been revised.**

4. *Sheet 2- General Storm Notes – Remove Notes 2 (including 2.1-2.4) and 9.* **Comment addressed. Notes have been removed.**
5. *Sheet 2- General Storm Notes- Revise Note 6- “All flared end sections 18” and larger...”* **Comment addressed. Note has been revised.**
6. *Sheet 2- General Sanitary Notes- Remove Note 9.* **Comment addressed. Note has been removed.**
7. *Sheet 2- General Sanitary Notes-Note 12- Change footage from “100’ “to “75’ and.”* **Comment addressed. Footage has been revised.**
8. *Sheet 2- General Sanitary Notes- Note 13- Replace “XX” with “20.”* **Comment addressed. Note has been revised.**
9. *Sheet 2- General Watermain Notes- Remove Note 1.* **Comment addressed. Note has been removed.**
10. *Sheet 2- General Watermain Notes- Note 7- Change watermain minimum cover from 5.5’ to 6.0’.* **Comment addressed. Note has been updated.**
11. *Sheet 2- General Watermain Notes- Note 11- Replace “XX” with “20.”* **Comment addressed. Note has been revised.**
12. *Photometric Plan Sheet- Pole A cannot be placed in the location as shown as it appears that the pole will be installed directly over the proposed underground detention area. Relocate pole outside of influence of underground detention area.* **Comment partially addressed. Per design engineer, pole cannot be relocated without increasing the total number of light poles on the site that is required to illuminate the area. Engineer states there is a 6.5’ separation between the bottom of the pole and top of underground storage. Please add a note to Sheet 5 and to the Detention Basin Plan view on Sheet 13 regarding light pole and show pole location on these two plan sheets. In addition, backfill over underground detention chamber shall take into account loading from light pole. Please add note to this effect on Sheet 15.**
13. *Sheet 3- Survey sheet shall be signed and sealed by surveyor who performed the survey.*

Sanitary Sewer

1. *Sheet 5- The utility plan shall provide sanitary sewer lengths between structures, pipe slopes, type, and diameter.* **Comment addressed. Information has now been shown on utility plan.**
2. *Sheet 5- Sanitary sewer pipe material is proposed as PVC SCH 40; SDR 26 is required for sewer mains, and SDR 23.5 is required for service leads.* **Comment addressed. Materials have been revised.**
3. *Sheet 5- In reference to the 48 LF sanitary sewer lead. Based on the inverts provided in the lead elevations table on Sheet 11, the actual pipe slope calculates to 0.90%. A minimum of 1.00% slope is required for building leads.* **Comment partially addressed. Inverts have been updated on Sheet 11;**

however, please revise pipe slope for the 9 LF from the grease interceptor to the monitoring MH to 1.5%. This is the slope we calculated based on updated inverts provided.

4. *Sheet 5- A minimum of 6" diameter is required for sanitary sewer building leads; currently 4" diameter is proposed. Comment addressed. All leads have been updated to 6" diameter.*
5. *Sheet 5- Provide diameter of monitoring manhole. A minimum 4' diameter is required. Comment addressed. Diameter (4') has been noted on plan.*
6. *Sheet 11- Provide sanitary sewer basis of design including REUs for future development on the western portion of this parcel. Comment partially addressed. Sanitary sewer basis of design has been provided; however, it appear that the future REUs of 7.50 were not factored/included in the total number of REUs (should be approximately 17). Please provide both currently proposed and future REU calculations. Please also use 270 gallons per day per REU per OCWRC requirements for this sewage district.*
7. *Sheet 11- Profile- Label SAN-SAN MH as Existing. Comment addressed. MH has been relabeled.*
8. *Sheet 11- It is not clear what the three ring shaped items are that are shown directly in the sanitary pipe. Please clarify. Comment addressed. Rings in pipe have been removed.*
9. *Sheet 11- Label the N, S, and E inverts as existing in the SAN-SAN MH. Comment addressed. Inverts have been relabeled as existing.*
10. *Sheet 11- ST X SAN 01-STORM B/P invert shown (961.95) does not match invert of 961.73 on storm sewer profile at crossing between storm sewer structure CB07 and CB 06 on Sheet 10. Please revise as needed. Comment addressed. Inverts now match.*
11. *Sheet 16- The proposed Schier oil/grease separator appears to be undersized. Township Engineering Standards require a 1000 gallon capacity tank. In addition, the inlet and outlet pipe diameters are shown as 4". A minimum of 6" diameter pipe size is required for all sanitary sewer leads. Reducers are not allowed. Comment partially addressed. A different model has now been shown. Leads in and out are now shown as 6" diameter. Please coordinate lead inverts for inlet and outlet pipes between plans and those in the sanitary lead table on Sheet 11. In addition, provide rim elevations for the two risers as per elevations shown on the grading plan.*

Watermain

1. *We defer to the Township Fire Department regarding hydrant spacing/coverage requirements. Comment addressed and remains as a notation. Per the design engineer, the Fire Department did not request changes to hydrant spacing/coverage.*
2. *Sheet 5- Specify size and material of water service lead to building. Comment addressed. Water service size and material has now been provided.*

3. *Sheet 5- Provide label for GV01 on plan.* **Comment addressed. Label has been provided.**
4. *Sheet 5- Water valve and temporary blowoff assembly- Correct sheet reference from Sheet 14 to Sheet 19.* **Comment addressed. Correct sheet reference has been provided.**
5. *Sheet 12-A minimum of 6.0' of cover is required over all watermain.* **Comment addressed. A minimum of 6.0' of cover is now shown over all watermain.**
6. *Sheet 12-CL 54 (excepting building water service lead) is required for all watermain.* **Comment addressed. Class 54 is now specified.**
7. *Sheet 12-HYD 02- HYD 01-Pipe size is shown as 6" diameter while 8" diameter is shown on Sheet 5. 6" diameter would be acceptable for the 14' hydrant lead since the lead length is <40'.* **Comment addressed. Pipe size is now 6" and is consistent between plan sheets.**
8. *Sheet 12-Provide slopes for all watermain profiles.* **Comment addressed. While slopes have not been provided, T/P elevations have been provided should a need for pipe slope calculation arise in the future.**
9. *Sheet 12-HYD 02-HYD 01-ST X WM 03- The elevations provided are reversed. ST T/P= 963.71 and WM B/P = 966.53.* **Comment addressed. Elevations have been updated.**
10. *Sheet 12- Label GV 01 also as a blow off assembly.* **Comment addressed. GV has been labeled.**
11. *Sheet 12-The pipe footages of 59' + 6" + 6' = 61' total versus 62' as shown on Sheet 5.* **Comment addressed. Footages have been updated.**
12. *Sheet 12- Show the existing sanitary sewer (along Bogie Lake Road) that crosses the watermain between the T/P 965.49 and the 45 degree bend.* **Comment addressed. Crossing is now shown.**
13. *Sheet 12- ST X WM 02-A minimum of 18" vertical separation is required between storm and watermain. Currently 12" of vertical separation is shown. In addition, label on crossing is incorrect and is labeled as SAN B/P. Please relabel to WM B/P.* **Comment addressed. A minimum of 18" vertical separation is now shown, and label has been updated.**
14. *Sheet 12-Profile shows footage as 217' while Sheet 5 shows 216'.* Please revise so footages match.
15. *Sheet 12-ST X WM 02 crossing- WM T/P elevation of 963.19 does not match that shown (963.57) for the same crossing on Sheet 10.* Please revise for consistency.

Grading/Paving

1. *Sheet 4- Site Data and Site Plan Notes(1A)- 59 total provided parking spaces are now shown. We note that the total number of spaces has been reduced by 2 spaces from the approved PSP. We defer to the Township regarding this item.* **Comment addressed. Per design engineer, the number of**

parking spaces was reduced by two (2) due to elimination of a space by the monument sign as well as the reconfiguration of the northeast parking lot.

2. *Sheet 4- 'Curb drop at sidewalk crossing to meet ADA compliance – See detail sheet 9' note along both M-59 and Bogie Lake Road entrances- We note that no such detail was found on any of the plan sheets. Please provide and provide sheet number citation.* **Comment addressed. A detail and sheet number citation have been added.**
3. *Sheet 4- Proposed 8' wide sidewalk note- Please provide a detail note and sheet number reference for the detail. Current detail shown on Sheet 16.* **Comment addressed. Detail note and sheet number reference have now been provided.**
4. *Sheet 4- Integral Sidewalk note- Please provide a detail note and sheet number reference for the detail. Current detail shown on Sheet 16.* **Comment addressed. Detail note and sheet number reference have now been provided.**
5. *Sheets-4 and 6 (ADA Details)- Westernmost ADA space scales to 7.0' on both of these sheets. Space is required to be a minimum of 8" wide.* **Comment addressed. Space scales to 8' width from edge of hatched striping to center of double striping.**
6. *Sheet 4- Proposed wall note- Please provide a detail note and sheet number reference for the detail. Current detail shown on Sheet 16.* **Comment addressed. Detail note and sheet number reference have now been provided.**
7. *Sheets 4 and 16--The proposed retaining wall references a guardrail to be mounted on the retaining wall. We defer to the Township if this is an acceptable material to use or if a decorative railing (42" high) would be more appropriate. If the proposed guardrail is acceptable, the details on the plans will need to be modified to show how the guardrail will be mounted on the proposed retaining wall.* **Comment remains. DLZ understands the Township will require this to be a decorative railing.**
8. *Sheet 4- 'Dumpster location, see arch. Dwg. Sht. PP-3 for detail.' Sheet reference is incorrect; it should be Sheet PP-8.* **Comment addressed. Sheet reference has been updated.**
9. *Sheet 4- Proposed 6' wide sidewalk note- Please provide a detail note and sheet number reference for the detail. Current detail shown on Sheet 16.* **Comment addressed. Detail note and sheet number reference have been provided.**
10. *Sheet 4- '8' wide boardwalk over wetland 265 LF. See detail Sheet 9' note. Correct to Sheet 16.* **Comment rescinded. A boardwalk is no longer proposed.**
11. *Sheet 6- Show locations of all watermain and sanitary sewer structures and provide their rim elevations on this sheet.* **Comment addressed. FG/rim elevations for watermain and sanitary sewer have now been shown on grading plan.**



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WLT- Gateway Crossing- FSP/FEP Review.02

August 22, 2024

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12. *Sheet- 15- E. Highland Road/M-59 Grading Plan- T/CONC 974.00 grade near MH 2 appears to be in error. Please remove this grade.* **Comment addressed. Spot elevation was in error and has been removed from the sheet.**
13. *Due to proposed retaining wall height, please provide calculations and report, signed and sealed, by a licensed structural engineer. The calculations and report shall demonstrate that the proposed retaining wall will provide the support necessary including for the proposed future improvements such as an internal drive/circulation lane in the areas adjacent to the proposed wall.* **Comment outstanding. Design engineer has noted that calculations for wall are in process and will be provided at a later date. Calculations will be required to be provided prior to FSP/FEP approval.**

Stormwater Management

1. *Sheet 4- Concrete Spillway note- Please provide a detail note and sheet number reference for the detail. Current detail shown on Sheet 16.* **Comment addressed. Detail note and sheet number reference have now been provided.**
2. *Sheet 5- Remove storm sewer pipe sizing calculations as these are duplicated within the plan set on Sheet 13. Please leave calculations on Sheet 13.* **Comment addressed. Duplicate calculations have been removed from Sheet 5.**
3. *Sheet 5- The utility plan shall provide storm sewer lengths between structures, pipe slopes, type, and diameter.* **Comment addressed. Information has been added to the utility plan.**
4. *Sheets 5,7 and 10- Mechanical pretreatment unit proposed in FES6- No detail has been provided on plan. Please provide type of unit and details and demonstrate that unit size will be adequate to remove a minimum of 80% of total suspended solids.* **Comment partially addressed. A KSI stormwater treatment unit has now been proposed and details have been provided on plan; however, please label bypass pipe as such on all relevant plan sheets. In addition, please clarify sizing of system, as based on storm sewer pipe sizing calculations, there would be approximately 9 cfs of flow into this unit which would require a larger unit size than the specified 1000 model.**
5. *Sheet 6- Provide underground detention inspection MH rim elevations on this plan sheet. There is a concern that there will be insufficient cover over the detention pipes. At a minimum, per Table 1 on Sheet 14, 15" minimum cover is required over a 120" diameter pipe for non-vehicle loading areas. There is also the concern that due to the steep grades in the non-paved area that there will be insufficient cover over the pipes. In addition, additional cover would be required in areas where the detention pipes are shown under the parking area based on axle loading (see Contech details on Sheet 14). Please demonstrate that there will be sufficient cover for all of the underground detention*

pipng such that pipe integrity will be guaranteed and not compromised. **Comment partially addressed.** Design engineer states that the minimum 15” of cover shall be provided over the underground detention unit. A detail has also been added to the plan that shows the underground system relative to surface grades. The above portion of the comment regarding MH rim elevations for the underground detention inspection manholes is still outstanding. Please provide these rim elevations on this plan sheet.

6. *Sheet 7- Stormwater Narrative- Second paragraph- Second to last line- Correct pipe size from 24” to 30”.* **Comment addressed. Pipe size has been corrected.**
7. *Sheet 7- Drainage Area Table lists Drainage Area 2- Although negligible in terms of C_{AVG} calculations, please show this area on the drainage map on this sheet.* **Comment addressed. Drainage Area 2 has been removed from the Drainage Area Table.**
8. *Sheet 7- Note at bottom of sheet- “See Sheet 9 for basin detail...”- Correct Sheet number to Sheet 13.* **Comment addressed. Note has been updated.**
9. *Sheet 8—Correct spelling of ‘sedimentation’ on title bar.* **Comment addressed. Spelling has been corrected.**
10. *Sheet 8- Remove General Notes information; this is in duplicate and is on Sheet 4.* **Comment addressed. Notes have been removed from Sheet 8.**
11. *Sheet 8- Soil Erosion Notes- Note 1- Remove ‘Oakland County Drain Commissioner’ and add ‘OCWRC.’* **Comment addressed. Note has been updated.**
12. *Sheet 8- Soil Erosion Notes- Note 2- Change sheet number from 15 to Sheet 20.* **Comment addressed. Sheet reference has been updated.**
13. *Sheet 8- Proposed Construction Schedule for the Year 2024- Please update as needed.* **Comment addressed. Schedule has been updated.**
14. *Sheet 8-The silt fencing location relative to the area of the proposed west retaining wall may be too tight with what is realistically needed for construction of the wall. Please verify and adjust as needed.* **Comment addressed. Silt fencing has been shifted further west to realistically allow for retaining wall construction.**
15. *Sheet 8- Relocate/wrap silt fencing in the area of the basin ES installation such that the silt fencing is around this area and that wetlands is protected.* **Comment addressed. Additional silt fencing is now shown around area of basin ES construction.**
16. *Sheet 10 -Utility plan inset- Move FES A label for readability on plan.* **Comment addressed. Label has been moved.**
17. *Sheet 10- CB07- Rim elevation is incorrect. Please match that shown on grading plan and storm sewer pipe sizing calculations. That rim elevation on the grading plan and storm calculations appears to be the correct one.* **Comment addressed. Rim elevation has been corrected.**

18. *Sheet 10-CB07-CB06-Provide/show CSB near CB07 on the profile (in the area where 'Existing Surface' arrow is shown). CSB is required within the influence of pavement. Comment addressed. CSB has now been shown in this area.*
19. *Sheet 10- Label CB06 additionally as stormwater pretreatment unit. Comment addressed. Pretreatment unit has now been shown on profile.*
20. *Sheet 10- CB12-CB11- Show electric crossing. Comment addressed. Electric crossing is now shown.*
21. *Sheet 10-CB11-CB10- WM X ST 02-A minimum of 18" vertical separation is required between storm and watermain. Currently 12" of vertical separation is shown. In addition, label on crossing is incorrect and is labeled as SAN B/P. Please relabel to WM B/P. Comment addressed. 18" minimum vertical separation is now shown, and label has been corrected.*
22. *Sheet 10-FES 14-MH 14A- Please investigate whether it is possible is lessen the pipe slope to < or = 3.62% maximum pipe grade for this run of pipe. It is understood that due to steep grade constraints on the site that this may not be feasible. In addition, please review the 8.00% grades on pipe runs FES18-MH16-MH19 for the same. Comment addressed. Severe pipe run slopes have been reduced.*
23. *Sheet 10- OCS 2- A minimum of 3' sump is required for this structure. Comment addressed. A 3' sump has been provided.*
24. *Sheet 10-Basin Out – OCS2- Pipe slope calculates to 0.50% and not 0.40% based on provided inverts. Please revise. Comment addressed. Pipe slope has been revised.*
25. *Sheet 10- MH16- Provide 2' sump for this structure. Comment addressed. A 2' sump has been added.*
26. *Sheet 10-WM X ST 03- The elevations provided are reversed. ST T/P= 963.71 and WM B/P = 966.53. Comment addressed. Revisions have been made.*
27. *Sheet 13-Storm sewer pipe sizing calculations- Please revise the following:*
 - a) *7A-7- Pipe length of 40' and diameter of 8" is not shown on Utility Plan Sheet 5. Comment addressed. The pipe run has been eliminated and calculations updated.*
 - b) *11A-11-Pipe length is 31' per Sheet 5. Comment addressed. Pipe length has been updated.*
 - c) *Basin-2- Actual slope used is 0.50%. Correct in two areas on these calculations. Comment addressed. Revisions have been made.*
28. *Sheet 13-Detention Basin Plan View- Provide sheet reference for OCS structure. Comment addressed. Sheet reference has now been updated.*
29. *Sheet 13- Detention Basin Plan View- 10' Contech Underground Detention note- Revise '(See details Sheet 10)' to Sheet 14. Comment addressed. Sheet number reference has been updated.*
30. *Sheet 5- Add pipe slope to the 31 LF of roof drain going from RD 11A to CB11.*
31. *Sheet 10-Basin Out to OCS2 and OCS2 to FES01- Shows ADS N-12 as pipe material while Sheet 5 shows ADS SCH 40 for these two runs. Please revise for consistency between sheets.*



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32. Sheet 10-CB04 to MPS 3 IN and MPS 3 OUT to BASIN IN- Shows ADS N-12 as pipe material while Sheet 5 shows ADS SCH 40 for these two runs. Please revise for consistency between sheets.
33. Sheet 10-CB04 to MPS 3 IN- Sheet 5 shows length as 5'. Please revise so footages match between sheets. In addition, revise pipe slope based on correct footage.
34. Sheet 13-Section A-A-Underground profile- A back of curb elevation of 970.00 is shown; however, based on proposed T/A elevation grade of 971.00 shown on grading Sheet 6, B/C elevation at this point would be 971.50 based on a 6" curb. Please review and revise as necessary.
35. Sheet 13-Detention Basin Plan View- 28LF of 15" pipe- Pipe diameter (15") as shown does not match Sheet 5 (18"). Please revise for consistency. In addition, please provide a profile for this bypass pipe.
36. There are several items in the pipe sizing calculations which will require revision. We have attached a marked up plan sheet for the design engineer's use.

Required Permits and Approvals

The following permits and approvals will be required:

1. Permit from the Road Commission for all work within the Bogie Lake Road right of way.
2. Permit from MDOT for work within the M-59 right of way.
3. SESC permit from OCWRC
4. Wetland Permit from EGLE.
5. NPDES Notice of Coverage for stormwater discharge from EGLE.
6. Permission from White Lake Township for work within the existing sanitary sewer easement along Bogie Lake Road.
7. Part 41 Sanitary Sewer Permit from EGLE.
8. Act 399 Watermain Permit from EGLE.
9. Executed Stormwater Maintenance Agreement and exhibit.
10. 15' wide sidewalk easement for the portion of sidewalk/boardwalk that is outside of the Bogie Lake Road ROW.



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

WLT- Gateway Crossing- FSP/FEP Review.02

August 22, 2024

Page 10 of 10

Recommendation

We are not recommending approval of the plan at this time. Although the majority of our previous comments have been addressed, there are additional comments due to some changes in site utility layout. The above comments are required to be addressed and revised plans submitted for our review. **In order to streamline the review process, we request a response letter to the above comments be provided by the engineer upon revised plan resubmittal.**

Please contact our office should you have any questions.

Sincerely,

DLZ Michigan

Michael Leuffgen, P.E.
Department Manager

Victoria Loemker, P.E.
Senior Engineer

Attachments: Red-lined plan Sheet 13

Cc: Andrew Littman, Community Development, *via email*
Matteo Passalacqua, Carlise Wortman, *via email*
Hannah Kennedy- Galley, Community Development, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
Nick Spencer, Building Official, White Lake Township *via email*
Jason Hanifen, Fire Marshall, White Lake Township, *via email*

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Carlisle | Wortman
ASSOCIATES, INC.

117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

August 19th, 2024

**Revised Final Site Plan / Special Land Use Review
for
White Lake Charter Township, Michigan**



Applicant:	Gateway Crossings LLC
Project Name:	Gateway Crossing
First Revised Plan Date:	August 6 th , 2024
Original Plan Date	May 30 th , 2024
Location:	Southwest corner of Bogie Lake Road and Highland Road (M-59) Parcel ID: 12-20-402-003 & 12-20-426-003
Action Requested:	Review of revised final site plan and special land use approval (Revision 1)

PROJECT NARRATIVE

The Applicant is requesting final site plan approval for a new 8,620 sqft multi-tenant retail center, which is a permitted use in the GB General Business zoning district. A portion of the development offers drive-thru and outdoor seating facilities for a food establishment. Drive-thru restaurants and outdoor seating areas are special land uses in the GB district and have additional use standards as outlined in Section 4.17 and 4.19.

The site is currently vacant. Special land use approval was granted April 4th, 2024, by the Planning Commission with a recommendation to the Township Board to approve the preliminary site plan. Preliminary site plan approval was granted April 16th, 2024 by the Township Board.

The applicant is currently completing the process of lot consolidation with the Township Assessing Department to accommodate a single parcel for the development to occupy.

The purpose of final site plan review is to determine if the proposed use and site are consistent with Township ordinances and other applicable county, state, and federal laws and regulations and to identify reasonable conditions that may be necessary to mitigate potential negative impacts to surrounding properties and the community.

Preliminary site plans are reviewed by the Planning Commission with recommendations then provided to

Benjamin R. Carlisle, *President* John L. Enos, *Vice President* Douglas J. Lewan, *Principal*
David Scurto, *Principal* Sally M. Elmiger, *Principal* R. Donald Wortman, *Principal* Craig Strong, *Principal*
Paul Montagno, *Principal* Megan Masson-Minock, *Principal* Laura Kreps, *Senior Associate*
Richard K. Carlisle, *Past President/Senior Principal*

Gateway Crossings

Revised Final Site Plan Review (Revision 1)
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the Township Board for approval, approval with conditions or denial. Final site plan review and approval is conducted solely by the Planning Commission.

This review focuses on revised information provided by the Applicant per updated site plan drawings dated August 6th, 2024 as well as a letter provided by Boss Engineering and dated August 8th, 2024. The following report will review whether items to be addressed identified from the planner report dated July 18th, 2024 have been satisfied or are still outstanding. Notes provided are [blue](#).

SITE DESCRIPTION

Lot Area:	5.36 acres
Frontage:	Approx. 470 feet along Highland Road (M-59) Approx. 660 feet along Bogie Lake Road
Address:	TBD.
Current Use:	Vacant

Aerial image of the site



Source: NearMap June 8, 2024

Gateway Crossings

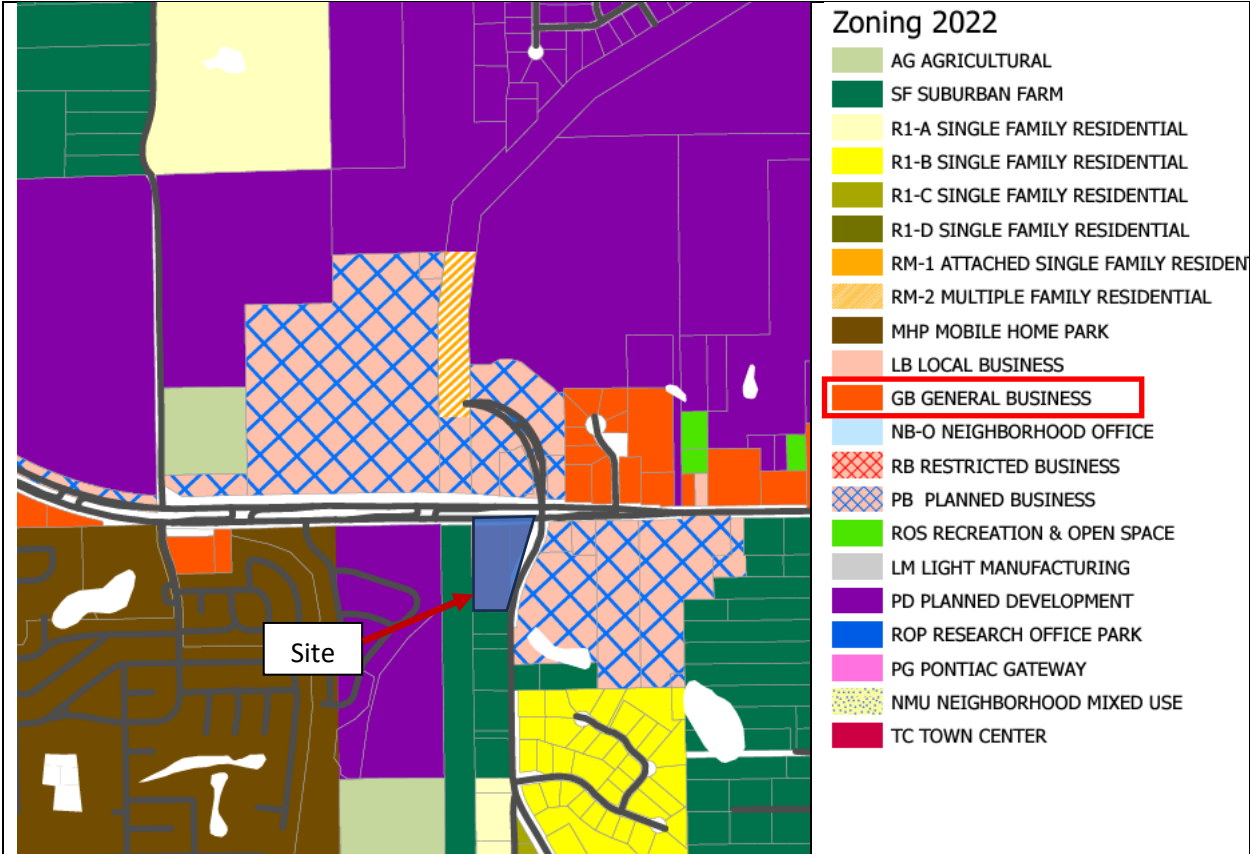
Revised Final Site Plan Review (Revision 1)
 August 19, 2024

	North	East	South	West
Surrounding Zoning	<i>PB, Planned Business</i>	<i>PB, Planned Business</i>	<i>SF, Suburban Farm</i>	<i>SF, Suburban Farm</i>
Surrounding Land Uses	<i>Vacant</i>	<i>Gas Station / Convenient Store</i>	<i>Single Family Home</i>	<i>ITC Energy Transmission Lines</i>
Future Land-Use Map	<i>Commercial Corridor</i>	<i>Commercial Corridor</i>	<i>Neighborhood Residential</i>	<i>Neighborhood Residential</i>

Current Zoning **GB, General Business**

The General Business District, as established in this article, is intended to permit a wider range of business activities than those permitted in the Local Business and Restricted Business districts. The specific intent of this article is to allow those uses which would not only serve nearby residential areas, but also the entire community's comparison business, offices, services and automotive service needs, including open-air sales and uses requiring location on a major highway or street. These uses would generate larger volumes of vehicular traffic, would need more off-street parking and loading, and would require more detailed planning to provide an appropriate transition between such districts and adjacent residential areas.

Current Zoning Map



Gateway Crossings

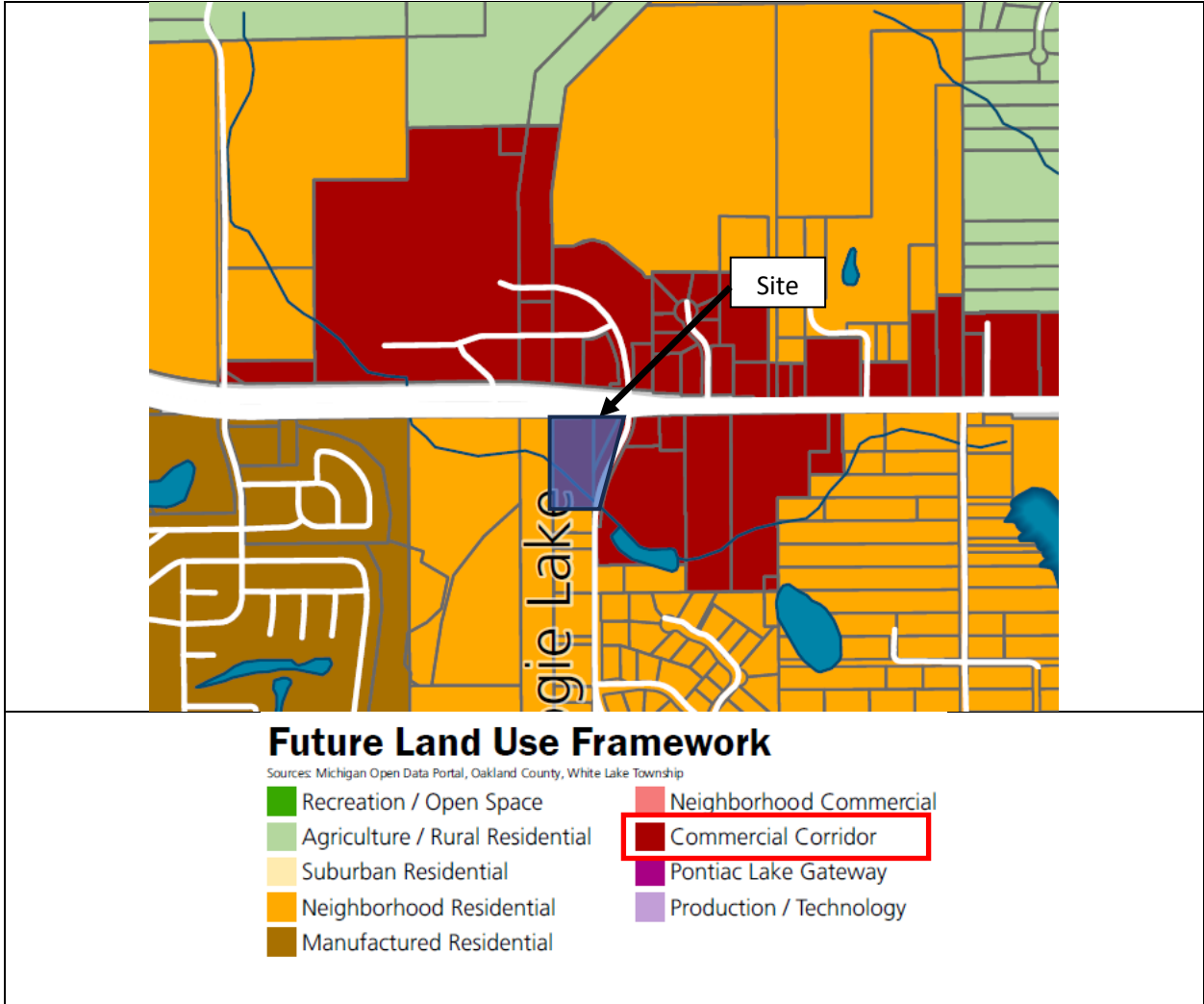
Revised Final Site Plan Review (Revision 1)

August 19, 2024

Item A.

Future Land Use	Commercial Corridor <i>Provides regional goods and services to residents and non-residents. Includes large box stores and drive-thrus.</i>
------------------------	--

Future Land Use Map



Items to be Addressed: 1.) The address (six-inch-tall numbers visible from the street) locations shall be shown on building elevations on Sheet PP-8.1. Outstanding. Response letter dated August 8, 2024 states address information added to architectural sheets however sheets are not included in revised final site plan.

NATURAL RESOURCES

Topography: Sheet 3 shows existing site topography. The area is relatively flat along the northeast and central portions of the site. A steep slope runs downwards from east to west along the western portion of the site. We note Planner review comments dated March 28th, 2024 indicate concerns with grading within the wetland setback. The review notes the Applicant has acknowledged these concerns and the requirements should the Applicant proceed with grading within the setback. We note later in this review the removal of the boardwalk over the wetland in exchange for a sidewalk adjacent to Bogie Lake Road. It should be clarified if this proposed modification is a result of the Applicant opting to minimize grading work within the wetland setback.

Wetlands: Multiple sheets indicate wetlands located in the south-central portion of the site and traversing the western lot line. Wetland setbacks are shown on Sheet 4. No improvements are proposed within the wetland setback. A wall is proposed to run alongside the sloped area leading down to the wetlands. It should be noted that the wall appears to align with the 25-foot wetland setback however it may not encroach it. Specifications for the proposed wall are shown on Sheet 16. We defer to Engineering to assess the design and placement of the proposed wall.

Sheet 7 provides drainage information for the site. Several references are made to stormwater drainage discharging into the wetland. We also note in the Planner review dated March 28th, 2024 indicates a wetland delineation report is required and has been submitted.

Woodland: Mature woodlands border the wetlands located in the southern portion of the site.

Soils: Sandy Loam, Muck and Udipsamment soils are predominant on the site.

Water: The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map indicates no floodplain is present on the site. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) Wetland Map indicates wetlands on and adjacent to the site.

Items to be Addressed: Any cited concerns from Township Engineering. These items appear to be addressed however we defer to Township Engineering.

Gateway Crossings

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AREA, WIDTH, HEIGHT, SETBACKS

Proposed building envelopes and setback standards are shown on Sheet 4. Measurements are taken from the property lines.

GB General Business District Developmental Standards

	Required:	Proposed:	Complies
Setbacks			
Front	50 feet	88.1 (Highland Road) 50 (Bogie Lake Road)	Yes
Side	15 feet / 30 feet total	245.2 feet (west)	Yes
Rear	20 feet	487.6 feet	Yes
Building Height			
	35 feet	23 feet	Yes
	2 stories	1 story	Yes

Items to be Addressed: None.

ACCESS & CIRCULATION

Site access management standards are outlined in Section 6.4. The site is accessed via an ingress/egress drive off Highland Road (M-59). A secondary ingress/egress drive is located along Bogie Lake Road.

The Applicant Planner review response dated March 28th, 2024 notes the minimum distance between a proposed driveway and the nearest intersection shall not be less than 455 feet when the speed limit is greater than or equal to 50 miles per hour (mph). Along the Highland Road (M-59) frontage the speed limit is 55 mph. The proposed distance of the Highland Road (M-59) driveway to the Bogie Lake Road intersection is 300 feet. Therefore, a 155-foot variance is required from the Zoning Board of Appeals. On May 23rd, 2024, the Zoning Board of Appeals granted this variance.

Sheet 4 outlines maneuvering capabilities for fire trucks. We defer to Township Engineering to assess the conformance of lot design and Public Safety to assess the conformance of maneuverability and accessibility for the site.

Items to be Addressed: 1.) Any cited concerns from Township Engineering for items related to site traffic design. These items appear to be addressed however we defer to Township Engineering. 2.) Any cited concerns from Township Public Safety for items related to access and maneuverability. These items appear to be addressed however we defer to Township Engineering.

PARKING & LOADING

Gateway Crossings

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Section 5.11 outlines requirements for off-street parking. For drive-thru restaurants, the zoning ordinance requires one (1) space per 75 square feet of gross floor area. For general retailers, the requirement is one (1) space per 200 square feet of gross floor area. The parking calculations within the Site Data Table on Sheet 4 indicate seventy-seven (77) parking spaces and eight (8) stacking spaces are required. Fifty-six (56) general parking spaces plus three (3) barrier-free accessible parking spaces are provided. Sixteen (16) stacking spaces are proposed. A variance to allow this deviation was granted on May 23rd, 2024 by the Zoning Board of Appeals.

In the Planner review memo dated March 28th, 2024, Township planners indicate concerns with the parking layout, specifically the designs of the eastern and western parking areas. We note the layout of the northeastern portion of the layout has been modified to reduce conflicts between parked vehicles and ones exiting the drive-thru lane.

The site requires one loading zone area. Sheet 4 shows the proposed location of the loading zone being adjacent to the stacking area on the west side of the building.

Items to be Addressed: None

ESSENTIAL SERVICES & UTILITIES

The following Sheets provide various utility information proposed for the site:

- Sheet 2 / General Utility Notes
- Sheet 5 / Utility Plan
- Sheet 7 / Drainage Plan
- Sheet 10 / Storm Profiles
- Sheet 11 / Sanitary Profiles
- Sheet 12 / Watermain Profiles
- Sheet 13 / Detention Basin Details
- Sheet 14 / Contech Underground Details
- Sheet 17 / Township Storm Details
- Sheet 18 / Township Sanitary Details
- Sheet 19 / Township Watermain Details

Sanitary sewer, water main and storm sewer standard detail specifications are provided in the final site plan application. Sheet 5 provides the location of water main and sanitary sewer connections to public utilities as well as the location and route of underground stormwater systems. We defer to Township Engineer to assess the design and capacity of the proposed utility system.

We do note the proposed location for the grease trap has changed from preliminary site plans to the final site plan submitted. We defer to Township Engineer if the new location conflicts with any utility design standards.

Final site plan reviews require applicants to identify the location of all underground and aboveground storage tanks for such uses as fuel storage, waste, old holding tanks, collection of contaminated stormwater, and similar uses. We do not anticipate the storage of hazardous or contaminated materials onsite.

Gateway Crossings

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Items to be Addressed: 1.) Any cited concerns of Township Engineering. These items appear to be addressed however we defer to Township Engineering.

LANDSCAPING & SCREENING

Landscaping and screening details are provided on Sheets 9. Planting requirements and provided counts are notated on Sheet 9. Section 5.19.B outlines general provisions for site landscaping. Those standards are reviewed below:

Part ii: All areas are proposed to be covered with grass or natural ground cover.

Part iii: No irrigation plans or notes were provided. This information should be included on Sheet 9 and conform to the requirements regarding coverage and rain sensing technology.

Part v: Sheet 16 indicates curb sizes ranging from one point five (1.5) to two (2) feet.

Part vii: A note on Sheet 9 states no trees shall be planted closer than four (4) feet to any property line.

Part ix: No large deciduous trees are proposed within public water, sewer, or storm drainage easements.

Section 5.19.D provides requirements for screening along property lines as it relates to adjacent districts. Those standards are reviewed below:

Greenbelts

Property Line	Required	Provided	Complaint
North	Depth: 20 feet 16 large deciduous or evergreen trees AND 128 shrubs	Depth: 20 feet 16 large deciduous trees AND 128 shrubs	Yes
East	Depth: 20 feet 21 large deciduous or evergreen trees AND 168 shrubs	Depth: 20 feet 13 large deciduous trees AND 104 shrubs	No / See Waiver Request #1

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<p>South</p>	<p>Depth: 20 feet</p> <p>1 large deciduous, 1 evergreen tree and 8 shrubs for every 30 linear feet</p> <p>OR</p> <p>1 large deciduous or evergreen tree and 4 shrubs for every 15 linear feet</p> <p>AND</p> <p>5 foot greenbelt adjacent to screen wall for its entire length</p> <p>OR</p> <p>Obscuring fence</p>	<p>Propose retaining existing vegetation</p>	<p>No / See Waiver Request #2</p>
<p>West</p>	<p>Depth: 20 feet</p> <p>1 large deciduous, 1 evergreen tree and 8 shrubs for every 30 linear feet</p> <p>OR</p> <p>1 large deciduous or evergreen tree and 4 shrubs for every 15 linear feet</p> <p>AND</p> <p>5 foot greenbelt adjacent to screen wall for its entire length</p> <p>OR</p> <p>Obscuring fence</p>	<p>Propose retaining existing vegetation</p>	<p>No / See Waiver Request #2</p>

Interior Landscaping

Interior landscaping areas are required to equal at least fifteen (15) percent of the total lot area. One (1) large deciduous, small ornamental deciduous, or evergreen tree and five (5) shrubs shall be planted for every three hundred (300) square feet of required interior landscaping area.

Standard	Required	Provided	Complaint
Lot Area	32,428 sqft (15%)	Existing woodlands and wetlands.	No / See Waiver Request #3

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Deciduous Trees	108 trees	Existing woodlands	No / See Waiver Request #3
Shrubs	540 shrubs	Existing woodlands	No / See Waiver Request #3

Waivers

Per Section 5.19.B.iii and v, the Planning Commission may waive or modify certain landscaping requirements. Those parts are cited below for reference.

Part.B.iii

The Planning Commission may permit the reduction of required landscaping when, based on review of a landscape plan and other relevant information, the proposed development includes the preservation of existing trees and vegetation sufficient to provide the required screening. The Planning Commission may also permit the reduction of required landscaping in order to maintain views of lakes, wetlands, and other natural features which the Planning Commission seeks to preserve. The Planning Commission may require an increase in required landscaping where such an increase is deemed necessary by the Commission to accomplish the spirit and intent of the ordinance.

Part.B.v

The Planning Commission may modify the screening requirements where, in unusual circumstances, no good purpose would be served by compliance with the requirements.

The landscaping waivers requested by the applicant are outlined below. We offer additional information for the Planning Commission to consider when assessing whether to enforce, waive or modify these requirements.

Waiver Request # 1. To only consider approximately 400 feet of Bogie Lake Road frontage for landscape screening requirements.

CWA Comment: The Applicant states that due to utility easements, designated wetlands and boardwalk encroachments, it is not feasible to institute the buffer / screen along the southern portion of the lot along Bogie Lake Road. We note no development is being proposed along the southern portion of the lot and therefore there are no improvements requiring screening from view. [Response letter dated August 8, 2024 states waiver 1 is not needed due to the southern portion of the lot along Bogie Lake Road is not buildable. We note the 25 foot wetland setback does align or crossover the property line along the lower southern end of the lot however there are still portions south of the access drive and before the wetland setback that could be accommodate a buffer. Waiver is still needed.](#)

Waiver Request #2: Waive the requirement for landscape screening along the west and south property in turn for the retention of existing vegetation and natural features.

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CWA Comment: The Applicant states there is sufficient existing vegetation along the south and west lot lines to fulfill the intent of a landscape buffer / screen. An image below shows an aerial of the site as of June 8th, 2024.



The site to the west is utilized as high-tension power lines and unlikely to be developed. The site to the south is single family residential. The home is approximately 500 feet from the improvement area and the clearing of mature vegetation would be required to meet new planting standards.

Existing conditions provide natural screening from adjacent uses. We do note that no new landscaping is proposed in the rear yard between the wetland setback and retaining wall / snow storage area. The distance between these two areas is approximately 30 feet and could support a small count of deciduous or evergreen trees to provide some screening from northbound Bogie Lake Road traffic or potential development of the vacant lot to the southeast.

Waiver Request # 3. To waive interior landscaping requirements due to a large portion of the site retaining its natural state of wetlands and mature vegetation.

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CWA Comment: The Applicant states that approximately 100,300 sqft (46.4%) of the site will remain open space with existing wetlands and 40-55 mature trees. Sheet 9 does not indicate any landscaping being proposed near building entrances or foundations. Pedestrian pathways on, and adjacent to, the site are adequately lined with shrub and tree varieties. Only seeded lawn is proposed in the western central portion of the site between the parking lot and retaining wall.

Parking Lot Landscaping

Any off-street parking areas containing ten (10) or more parking spaces shall have parking lot landscaping as prescribed in the table provided in Section 5.19.G. Additional standards require:

1. *One (1) large deciduous tree or small deciduous ornamental tree and three (3) shrubs for every one-hundred (100) square feet of required parking lot landscaping area.*
2. *Parking lot landscaping areas shall be curbed with 6 inch concrete curbing. Planting islands containing trees shall not be less than fifty (50) square feet in area and not have any dimension across the island of less than five (5) feet.*

The applicant requested, and was granted, a variance reducing the number of required parking spaces on May 23rd, 2024. Fifty-nine (59) spaces and sixteen (16) stacking spaces have been approved.

Commercial Use	Required	Provided	Complaint
Lot Area	1,180 sqft	2,810 sqft	Yes
Deciduous or Ornamental Trees	12 trees	12 trees	Yes
Shrubs	36 shrubs	36 shrubs	Yes
Curbs	6 inch concrete	1'6" to 2'	Yes
Lot Islands	50 sqft area minimum and at least 5 feet wide	One (1) Island	Yes

Minimum Plant Size

Large deciduous trees and shrubs throughout the site meet the caliper and height/spread requirements outlined in the Section.

Trash Receptacles

All requirements for trash receptacles have been satisfied.

Mechanical Equipment Screening

No exterior or rooftop mechanical equipment is shown on the site plan. We note the roof line of the building is six (6) feet lower than the facades indicating rooftop equipment will be screen by the six (6) foot difference.

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Pathways

Pathway and sidewalk standards are required for preliminary site plan review. Sheet 4 of the preliminary site plan, dated February 28, 2024, provides a note and illustrates a boardwalk over the wetlands along the southeastern portion of the site. The Sheet 4 of the final site plan submitted proposes a modification converting the pathway to a six (6) foot wide sidewalk. The sidewalk traverses along dryland and terminates at the southern property line. We note a portion of the sidewalk is strictly on the applicant's property. [A note on Sheet 4 indicates a variable width sidewalk easement. The response letter dated August 8, 2024 notes necessary easements will be created upon approval of location.](#)

This modification will require review and approval by the Planning Commission. All other portions of the sidewalks and pathways remain unchanged.

Snow Storage

Snow storage areas are shown on Sheet 9 and are located along the southern and western parking lot spaces. We note the storage area to the south is located over an area with slopes leading to the wetland area. We defer to the Township Engineer as it relates to any concerns with runoff from snow melt into the wetland.

Items to be Addressed: 1.) *Waive the requirement for landscape screening along the west and south property in turn for the retention of existing vegetation and natural features. [Comment remains as a notation.](#)* 2.) *Waiver to allow for the landscape screening requirement along Bogie Lake Road to be 400 feet of frontage from the intersection with Highland Road (M-59), south. [Comment remains as a notation.](#)* 3.) *Waive requirement for interior landscaping per existing conditions. [Comment remains as a notation.](#)* 4.) *Determination of the sidewalk along the southeastern portion of the lot, in-lieu of the originally proposed boardwalk along with the addition of necessary easements dedicating use to the public for portions not within the right-of-way. [Comment remains as a notation.](#)*

LIGHTING & NOISE

Lighting Requirements

Sheet 24-29986_V1 provides proposed pole and building mounted lighting fixture locations as well as a photometric layout for the site. Specification sheets for both building and pole mounted lighting were provided. Below is a review of lighting information provided as it relates to the requirements outlined in Section 5.18.G of the zoning ordinance.

- i. The Planning Commission or Building Official shall determine if the proposed light levels meet the minimum necessary to provide safe and secure illumination. We note exterior lighting footcandle ranges only exceed a portion of the northern and eastern property lines however the max footcandles shown in these areas is 0.3 which below the max allowable at a property line of 1 footcandle along non-residential properties. No light is shown to encroach the residential property to the south.

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- ii. The specification information for pole and building mounted light fixtures are provided.
- iii. Light poles located along Highland Road (M-59) and Bogie Lake Road appear to be less than five (5) feet from property lines. The distance from the light poles along the northern and eastern portion of the site to the adjacent property lines should be shown on Sheet 24-29986_V1. All light poles are directed away from neighboring sites.
- iv. Given the containment of footcandles along site property lines, glare does not appear to be an issue.
- v. Specification sheets provided for proposed fixtures indicate LED lighting which meets the intent of utilizing high efficiency lighting.
- vi. A note should be added to Sheet 24-29986_V1 indicating that all site lighting will be stationary and will not flicker, flash or oscillate. [The response letter dated August 8, 2024 indicates a note has been added to the "General Notes" note 4 providing this statement however no note exists on Sheet 2 and a revised photometric plan was not provided.](#)
- vii. [Sheet 4 shows the distance between light poles and Highland Road \(M-59\) and Bogie Lake Road. The response letter dated August 8, 2024 states these fixtures will be mounted 16 feet high however this note should be added to Sheet 4.](#)
- viii. A lighting statistics table is provided on the photometric plan. The only specific areas analyzed are the parking lot and property lines. However average footcandle measurements are required for the general site, driveway, parking, walks, building and loading area. We do note the maximum footcandle averages for the parking area and general site are not exceeded. Driveway, walks, building and loading area calculations should be provided. [Response letter dated August 8, 2024 states area footcandle calculation information has been added to the lighting plan however sheets are not included in revised final site plan.](#)
- ix. No flood lighting is proposed.
- x. A proposed monument sign is shown on Sheet 4 and Sheet 24-29986_V1 however no specific lighting is proposed for the sign.

Noise Requirements

Final site plan requires details regarding location of loudspeakers and purpose for public address sound systems be submitted for Township review and approval. No specifications were provided on the drive-thru speaker system and sound decibels it is proposed to create. This information should be submitted to the Township for review and approval prior to operation. Noise level regulations are outlined in Section 5.18.A.

Items to be Addressed: 1.) *Planning Commission consideration of allowing current footcandle lighting levels per onsite safety.* [Comment remains as a notation.](#) 2.) *A note should be added to Sheet 24-29986_V1 indicating that all site lighting will be stationary and will not flicker, flash or oscillate.* [Outstanding](#) 3.) *The distance between the proposed light poles along Highland Road (M-59) and Bogie Lake Road and the adjacent property lines should be added to Sheet 24-29986_V1 and conform to the maximum height*

Gateway Crossings

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requirements outlined in Section 5.18.G.vii. Outstanding, light fixture mounting height should be added to Sheet 4 4.) Driveway, walks, building and loading area footcandle average calculations should be provided on Sheet 24-29986_V1. Outstanding. 6.) Drive-thru speaker specifications should be provided to the Township for review and approval prior to operation. Comment remains as a notation.

SIGNAGE

Proposed monument signage is shown on Sheet 4 near the Highland Road (M-59) ingress/egress drive. Details of the sign are shown on Sheet PP-8. Signs are reviewed and permitted administratively by the Township however applications may be presented to the Planning Commission for review. The monument proposed monument signage meets dimensional and location zoning standards.

Sheet 4 shows proposed signage and pavement marking locations. Sheet 16 provides general details and dimensions of site signage including “ONE WAY DO NOT ENTER”, “NO PARKING FIRE LANE” and VAN ACCESSIBLE” ADA parking signage.

Items to be Addressed: Applications for site signage will need to conform to the requirements in Section 5.9.

ARCHITECTURE & LAYOUT

Architectural information required at final site plan review includes the types of facing materials to be used on structures. Sheet PP-8.1 indicates all elevations will be faced with primarily dark, medium and light brown brick veneer with EFIS being used along rooflines. We note that no material was included in the final site plan. These materials will need to be available for the Planning Commission upon final site plan review.

Per Section 6.8.E, window coverage standards have been met for the north façade along Highland Road (M-59). In the preliminary site plan dated February 28th, 2024, the east facade along Bogie Lake Road showed window coverage of 9.27%. 30% is required for all front facades. Revised elevations on the final site plan shown Sheet PP-8.1 show east façade window coverage of 30.19%. We note that the majority of the windows specified for the east frontage is spandrel glass.

The Planner response memo dated March 28th, 2024 cites additional information needed for the proposed exterior patio located in the northeast corner of the building. The memo states the requirement that details for the items to be located on the patios and details for the patios’ surfacing shall be provided at final site plan. These materials will be required to present to the Planning Commission for final site plan consideration. We note no additional information on the patio was provided between preliminary and final site plan applications.

Items to be Addressed: 1.) Exterior construction material board will be required for Planning Commission review. Comment remains as a notation. 2.) Samples of items to be located on proposed patio as well as patio surfacing materials will be required for Planning Commission review. Comment remains as a notation.

SPECIAL LAND USE / SPECIFIC USE STANDARDS

Section 6.10 provides general standards for special land uses. Citing any concerns provided by Township Engineering and/or Public Safety, we note no conflicts with the general special land use standards.

Section 4.17 provides for additional standards applicable to drive-in or drive-thru window service establishments. Upon review of these standards, we find the following items in need of addressing:

Part A: A front yard setback of at least sixty (60) feet shall be required.

CWA Comment: A note on Sheet 4 indicates the drive thru window is more than sixty (60) feet from the Bogie Lake Road lot line. However, the building is fifty (50) feet from the side lot line. The applicant is requesting an interpretation through the Zoning Board of Appeals to allow the current setup to qualify for this requirement.

Part B: Entrance and exit drives shall be at least one hundred (100) feet from any street intersection and two hundred (200) feet from any residential district.

CWA Comment: We note the Highland Road driveway is not two-hundred (200) feet from the residential zoning district to the west however, this district is currently utilized by ITC for electrical transmission and therefore unlikely to be developed as residential. A variance is required to accommodate this proposed design. On May 23rd, 2024, the Zoning Board of Appeals granted this variance.

Part C: Outdoor lights must meet the performance standards of Section 5.18.

CWA Comment: See comments in the Lighting and Noise section of this review.

Part D: An obscuring fence, screen wall, or land form buffer shall be provided in accordance with the provisions of Section 5.19 on all sides abutting a residential district.

CWA Comment: See comments in the Landscaping section of this review.

Part E: Adequate off-street waiting space shall be provided to prevent drive-through customers from waiting on a public or private street.

CWA Comment: We note adequate stacking space has been provided to ensure vehicles do not encroach upon public or private streets.

Section 4.18 provides for additional standards applicable to eating establishments with outdoor seating establishments. Upon review of these standards, and the exceptions of the lighting and noise comments in the Lighting and Noise section of this review, we note no conflicts with the specific special land use standards.

Items to be Addressed: *Waive the requirement for landscape screening along the west and south property in turn for the retention of existing vegetation and natural features.* [Comment remains as a notation.](#)

Gateway Crossings

Revised Final Site Plan Review (Revision 1)

August 19, 2024

VARIANCES

All of the following variances were granted on May 23rd, 2024 to allow for the proposed final site plan to valid.

1. *Variance granted from the Zoning Board of Appeals to allow the relocation of the Highland Road (M-59) access drive as it relates to proximity to a residential district and the intersection of Highland Road (M-59) and Bogie Lake Road.*
2. *Variance granted from the Zoning Board of Appeals for a reduction in parking requirements.*
3. *Variance granted from the Zoning Board of Appeals for the drive-thru setback requirements.*

SUMMARY

With the exception of sample material requirements, we note several items requiring additional information are minor in nature and can be approved administratively. We recommend the application be presented to the Planning Commission for final site plan consideration.

As noted above, the Applicant will be required to provide sample materials for the exterior construction of the building as well as patio paver/concrete and patio material samples for the Planning Commission consideration.

The Planning Commission will need to address the waivers and determinations listed below at final site plan review.

Waivers / Modifications / Determinations

1. *Waive the requirement for landscape screening along the west and south property in turn for the retention of existing vegetation and natural features.*
2. *Allow for the landscape screening requirement along Bogie Lake Road to be 400 feet of frontage from the intersection with Highland Road (M-59), south.*
3. *Waive requirement for interior landscaping per existing conditions.*
4. *Determination of the sidewalk along the southeastern portion of the lot, in-lieu of the originally proposed boardwalk along with the addition of necessary easements dedicating use to the public for portions not within the right-of-way.*
5. *Planning Commission consideration of allowing current footcandle lighting levels per onsite safety.*

Conditions to Approval

1. *Any cited concerns from Township Engineering are addressed.*
2. *Any cited concerns from Township Public Safety are addressed.*
3. *The address (six-inch-tall numbers visible from the street) locations shall be shown on building elevations on Sheet PP-8.1.*
4. *A note should be added to Sheet 24-29986_V1 indicating that all site lighting will be stationary and will not flicker, flash or oscillate.*
5. *Light fixture mounting height should be added to Sheet 4.*
6. *Driveway, walks, building and loading area footcandle average calculations should be provided on Sheet 24-29986_V1.*


Gateway Crossings

Revised Final Site Plan Review (Revision 1)

August 19, 2024

7. *Drive-thru speaker specifications should be provided to the Township for review and approval prior to operation.*
8. *Exterior construction material board will be required for Planning Commission review.*
9. *Samples of items to be located on proposed patio as well as patio surfacing materials will be required for Planning Commission review.*

Respectfully,



CARLISLE/WORTMAN ASSOC., INC.
Matteo Passalacqua
Community Planner



Fire Department
Charter Township
of White Lake

Fire Department
Charter Township
of White Lake

Fire Department
Charter Township
of White Lake

Site / Construction Plan Review

To: Sean O'Neil, Planning Department Director

Date: 08/22/2024

Project: Gateway Crossing

Job #: 22-029-1

Date on Plans: 08/06/2024

The Fire Department has the following comments with regards to the Final site plans for the project known as Gateway Crossing

The Fire Department has no further comments at this time.

Jason Hanifen
Fire Marshal
Charter Township of White Lake
(248)698-3993
jhanifen@whitelaketwp.com

Plans are reviewed using the International Fire Code (IFC), 2015 Edition and Referenced NFPA Standards.

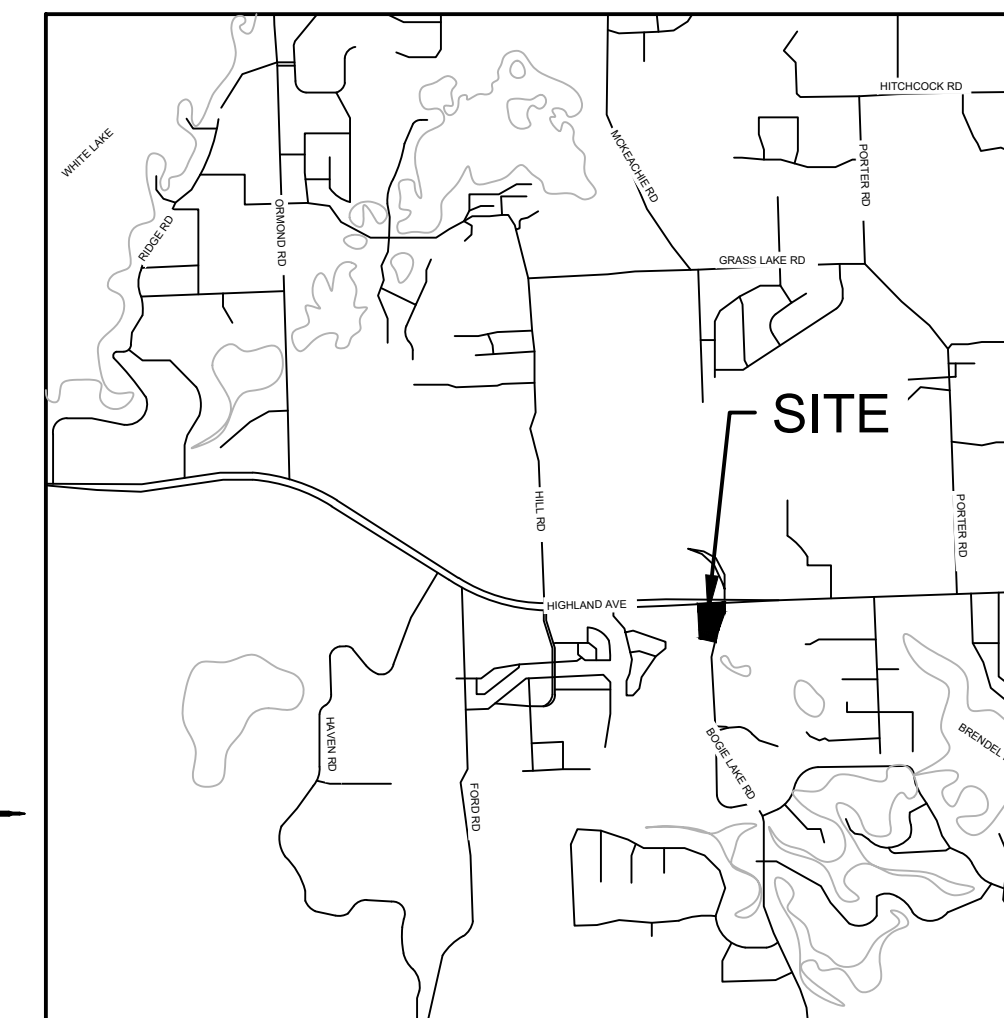
PROPERTY DESCRIPTION:

DESCRIPTION OF COMBINED PARCEL, AS SURVEYED BY KIEFT ENGINEERING, INC., JOB NO. 2012-247, DATED 1-30-13, AS SHOWN ON SURVEY BY ALPINE ENGINEERING, INC., JOB NO. 15-113, DATED 2-10-15:

PART OF THE NORTH 1/2 OF THE SOUTHEAST 1/4 OF SECTION 20, T3N-R8E, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT ON THE SOUTH RIGHT-OF-WAY LINE OF HIGHLAND ROAD (M-59, 70 FOOT HALF WIDTH) LOCATED S88°58'48"E 1032.50 FEET AND S01°25'12"W 70.00 FEET FROM THE CENTER OF SECTION 20, T3N-R8E; THENCE S88°58'48"E 480.35 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF BOGIE LAKE ROAD; THENCE ALONG SAID WESTERLY RIGHT-OF-WAY LINE ON A CURVE TO THE RIGHT 119.37 FEET, SAID CURVE HAVING A RADIUS OF 356.47 FEET, A DELTA OF 19°11'09" AND A LONG CHORD OF S18°14'12"W 118.81 FEET; THENCE S27°49'46"W 242.55 FEET; THENCE ALONG TO THE LEFT 127.93 FEET, SAID CURVE HAVING A RADIUS OF 1060.72 FEET, A DELTA OF 06°54'37" AND A LONG CHORD OF S23°39'55"W 127.85 FEET; S01°58'42"W 203.96 FEET; THENCE N88°58'48"W 287.70 FEET; THENCE N01°25'12"E 652.00 FEET TO THE POINT OF BEGINNING, SUBJECT TO THE RIGHTS OF THE PUBLIC IN BOGIE LAKE ROAD, CONTAINING 5.36 ACRES.

FINAL SITE & ENGINEERING PLAN FOR GATEWAY CROSSING

PART OF NORTHEAST QUARTER OF SOUTHEAST QUARTER, SECTION 20 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN



LOCATION MAP

NO SCALE

CONSTRUCTION NOTES

THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING NOTES AND ANY WORK INVOLVED SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

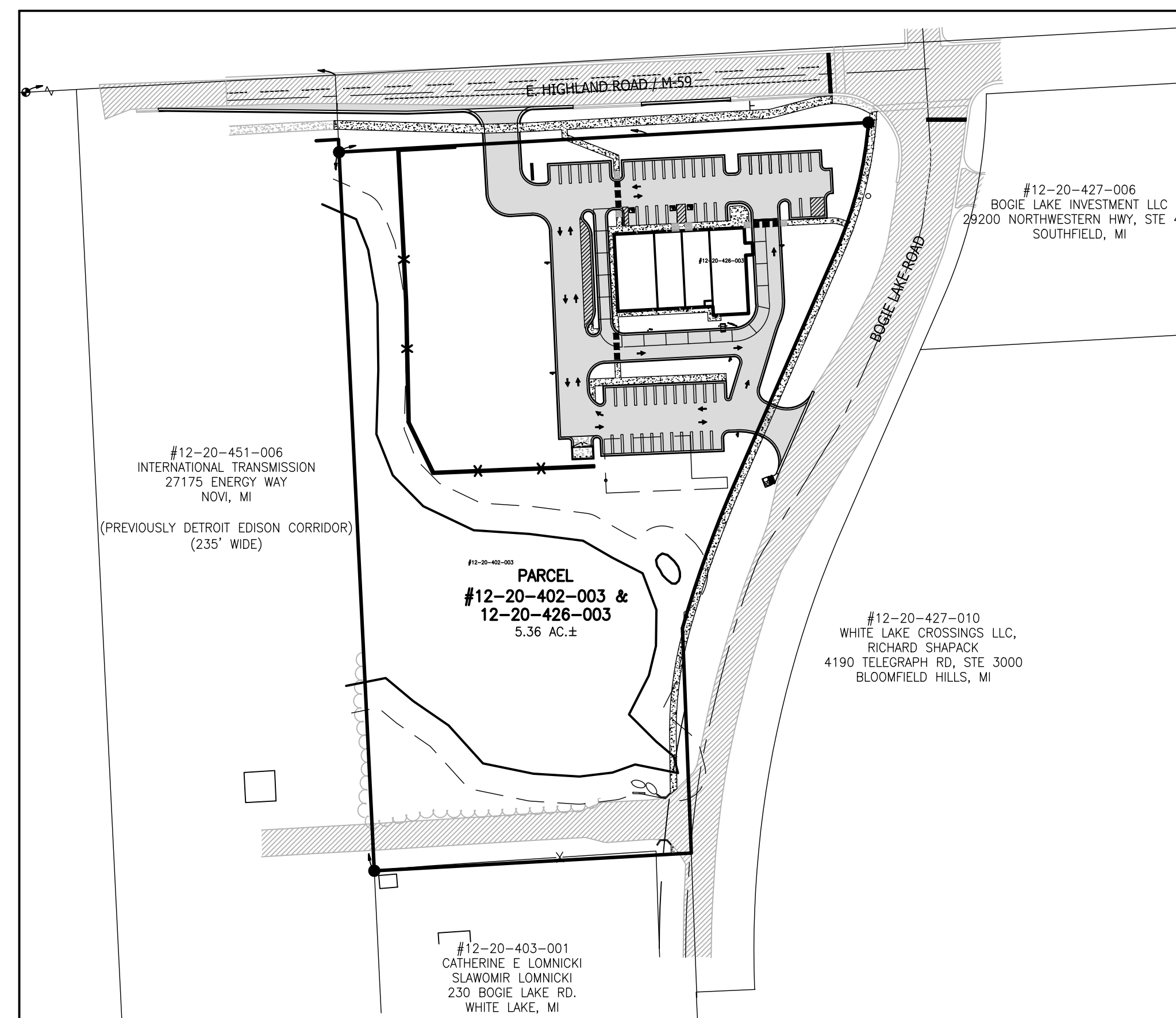
1. THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.
2. A GRADING PERMIT FOR SOIL EROSION-SEDIMENTATION CONTROL SHALL BE OBTAINED FROM THE GOVERNING AGENCY PRIOR TO THE START OF CONSTRUCTION.
3. IF DUST PROBLEM OCCURS DURING CONSTRUCTION, CONTROL WILL BE PROVIDED BY AN APPLICATION OF WATER, EITHER BY SPRINKLER OR TANK TRUCK.
4. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS AND SPECIFICATIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED TOWNSHIP, COUNTY, AND STATE OF MICHIGAN PERMITS.
6. PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY DESIGNED AND CONSTRUCTED.
7. ALL BARRIER-FREE FEATURES SHALL BE CONSTRUCTED TO MEET ALL LOCAL, STATE AND A.D.A. REQUIREMENTS.
8. ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS AND DIMENSIONS SHOWN HEREON BEFORE BEGINNING CONSTRUCTION.
9. THE CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, UTILITIES AND RIGHTS-OF-WAY, PUBLIC OR PRIVATE, PRIOR TO THE START OF CONSTRUCTION.
10. THE CONTRACTOR SHALL COORDINATE WITH ALL OWNERS TO DETERMINE THE LOCATION OF EXISTING LANDSCAPING, IRRIGATION LINES & PRIVATE UTILITY LINES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING LANDSCAPING, IRRIGATION LINES, AND PRIVATE UTILITY LINES.
11. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT.
12. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A MANNER SO THAT WORKMEN AND PUBLIC SHALL BE PROTECTED FROM INJURY, AND ADJOINING PROPERTY PROTECTED FROM DAMAGE.
13. THE CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE "CONSTRUCTION LIMITS" BROOM CLEAN AT ALL TIMES.
14. THE CONTRACTOR SHALL CALL MISS DIG A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
15. ALL EXCAVATION UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOT CLASS II).
16. ALL PAVEMENT REPLACEMENT AND OTHER WORKS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWNSHIP, INCLUDING THE LATEST MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
17. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
18. NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR ANY DELAY OR INCONVENIENCE DUE TO THE MATERIAL SHORTAGES OR RESPONSIBLE DELAYS DUE TO THE OPERATIONS OF SUCH OTHER PARTIES DOING WORK INDICATED OR SHOWN ON THE PLANS OR IN THE SPECIFICATION OR FOR ANY REASONABLE DELAYS IN CONSTRUCTION DUE TO THE ENCOUNTERING OR EXISTING UTILITIES THAT MAY OR MAY NOT BE SHOWN ON THE PLANS.
19. DURING THE CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL NOT PERFORM WORK BY PRIVATE AGREEMENT WITH PROPERTY OWNERS ADJACENT TO THE PROJECT.
20. IF WORK EXTENDS BEYOND NOVEMBER 15, NO COMPENSATION WILL BE DUE TO THE CONTRACTOR FOR ANY WINTER PROTECTION MEASURES THAT MAY BE REQUIRED BY THE ENGINEER.
21. NO TREES ARE TO BE REMOVED UNTIL MARKED IN THE FIELD BY THE ENGINEER.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PROPERTY BEYOND THE CONSTRUCTION LIMITS INCLUDING BUT NOT LIMITED TO EXISTING FENCE, LAWN, TREES AND SHRUBBERY.
23. ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE NORMAL CONSTRUCTION LIMITS OF THE PROJECT SHALL BE SODED OR SEEDED AS SPECIFIED OR DIRECTED BY THE ENGINEER.
24. ALL ROOTS, STUMPS AND OTHER OBJECTIONABLE MATERIALS SHALL BE REMOVED AND THE HOLE BACKFILLED WITH SUITABLE MATERIAL. WHERE GRADE CORRECTION IS REQUIRED, THE SUBGRADE SHALL BE CUT TO CONFORM TO THE CROSS-SECTION AS SHOWN IN THE PLANS.
25. TRAFFIC SHALL BE MAINTAINED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SIGNS AND TRAFFIC CONTROL DEVICES. FLAG PERSONS SHALL BE PROVIDED BY THE CONTRACTOR IF DETERMINED NECESSARY BY THE ENGINEER. ALL SIGNS SHALL CONFORM TO THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AT NO COST TO THE TOWNSHIP. NO WORK SHALL BE DONE UNLESS THE APPROPRIATE TRAFFIC CONTROL DEVICES ARE IN PLACE.
26. ALL DEMOLISHED MATERIALS AND SOIL SPOILS SHALL BE REMOVED FROM THE SITE AT NO ADDITIONAL COST, AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
27. AFTER REMOVAL OF TOPSOIL, THE SUBGRADE SHALL BE COMPACTED TO 95% OF ITS UNIT WEIGHT.
28. ALL GRADING IN THE PLANS SHALL BE DONE AS PART OF THIS CONTRACT. ALL DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE SUBGRADE PRIOR TO COMPACTING.
29. NO SEEDING SHALL BE DONE AFTER OCTOBER 15 WITHOUT APPROVAL OF THE ENGINEER.
30. ANY EXISTING APPURTENANCES SUCH AS MANHOLES, GATE VALVES, ETC. SHALL BE ADJUSTED TO THE PROPOSED GRADE AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
31. SOIL EROSION MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION HAS BEEN RE-ESTABLISHED.
32. ALL PERMANENT SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE MICHIGAN MUTCD MANUAL AND SHALL BE INCIDENTAL TO THE CONTRACT.

WHITE LAKE TOWNSHIP NOTES:

- a. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWNSHIP'S CURRENT STANDARDS AND SPECIFICATIONS.
- b. THE CONTRACTOR SHALL NOTIFY THE TOWNSHIP ENGINEER AND/OR AUTHORITY HAVING JURISDICTION, 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- c. CONTRACTOR SHALL CONTACT MISS DIG AT 800-482-7171, 72 HOURS IN ADVANCE OF CONSTRUCTION, FOR EXISTING UNDERGROUND UTILITY LOCATIONS.
- d. IN ORDER TO VERIFY COMPLIANCE WITH APPROVED PLANS, FULL-TIME CONSTRUCTION OBSERVATION WILL GENERALLY BE REQUIRED DURING ALL PHASES OF UNDERGROUND SITE CONSTRUCTION INCLUDING INSTALLATION OF SANITARY SEWER, STORM SEWERS, DRAINS, WATERMANS AND APPURTENANCES AS WELL AS PRIVATE STREET CURBING AND PAVING CONSTRUCTION. INTERMITTENT OBSERVATIONS WILL BE MADE FOR SITE GRADING, PARKING LOT CURBING AND PAVING, RETAINING WALL CONSTRUCTION AND OTHER CURFACE ACTIVITY.

INDEMNIFICATION STATEMENT

THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.



OVERALL SITE MAP

1" = 100'

PERMITS & APPROVALS		
AGENCY	DATE SUBMITTED	DATE APPROVED
• TOWNSHIP ENGINEERING APPROVAL	6/26/2024	-
• RCOC	6/28/2024	-
• OCWRC - SESC	7/22/2024	-
• MDEGLE ACT 399	-	-
• MDEGLE PART 41	-	-
• MDEGLE WETLANDS	7/25/2024	-

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	COVER
2	GENERAL NOTES & LEGEND
3	EXISTING CONDITIONS & DEMOLITION PLAN
4	SITE PLAN
5	UTILITY PLAN
6	GRADING PLAN
7	DRAINAGE PLAN
8	SOIL EROSION & SEDIMENTATION PLAN
9	LANDSCAPE PLAN
10	STORM PROFILES
11	SANITARY PROFILES
12	WATERMAIN PROFILES
13	DETENTION BASIN DETAILS
14	MECHANICAL PRETREATMENT DETAILS
15	CONTECH UNDERGROUND DETAILS
16	M-59 ENTRANCE DETAILS
17	M-59 MDOT LAYOUT PLAN
18	CONSTRUCTION DETAILS
19	TOWNSHIP STORM DETAILS
20	TOWNSHIP SANITARY DETAILS
21	TOWNSHIP WATERMAIN DETAILS
22	OAKLAND COUNTY SESC DETAILS
SHEET NO.	DRAWINGS BY OTHERS
1 of 1	PHOTOMETRIC PLAN
SHEET NO.	DRAWINGS BY DETROIT ARCHITECTURAL GROUP
PP-8 PP-8.1	MULTI-TENANT BUILDING PRELIMINARY FLOOR PLAN & DETAILS MULTI-TENANT BUILDING PRELIMINARY ELEVATIONS

PREPARED FOR:

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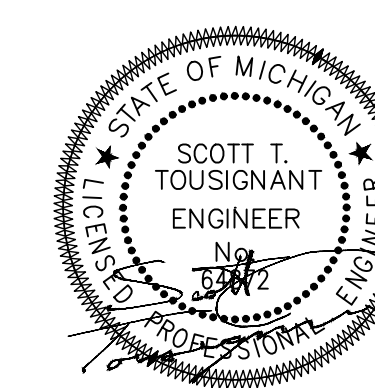
DETROIT ARCHITECTURAL GROUP
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PREPARED BY:

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CONTACT: SCOTT T. TOUSIGNANT
EMAIL: SCOTT@BOSSENG.COM



2	MJD ST	TOWNSHIP COMMENTS	8/6/24	1
1	MJD ST	MDOT COMMENTS	7/9/24	
NO BY CK	REVISION	DATE	JOB NO: 22-029-1	

GENERAL NOTES

- 1. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED TOWNSHIP, COUNTY, AND STATE OF MICHIGAN PERMITS.
2. A GRADING PERMIT FOR SOIL EROSION-SEDIMENTATION CONTROL SHALL BE OBTAINED FROM THE GOVERNING AGENCY PRIOR TO THE START OF CONSTRUCTION.
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4. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS AND SPECIFICATIONS.
5. PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY DESIGNED AND CONSTRUCTED.
6. ALL BARRIER-FREE FEATURES SHALL BE CONSTRUCTED TO MEET ALL LOCAL, STATE AND A.D.A. REQUIREMENTS. WHERE EXISTING CONDITIONS AND/OR THE REQUIREMENTS OF THE PLANS WILL RESULT IN FINISHED CONDITIONS THAT DO NOT MEET ADA REQUIREMENTS, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER PRIOR TO WORK COMMENCING.
7. ANY DISCREPANCY IN THIS PLAN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE DESIGN ENGINEER PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS AND DIMENSIONS SHOWN HEREON PRIOR TO BEGINNING CONSTRUCTION.
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12. THE CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE "CONSTRUCTION LIMITS" BROOM CLEAN AT ALL TIMES.
13. THE CONTRACTOR SHALL CALL MISS DIG A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
14. ALL PAVEMENT REPLACEMENT AND OTHER WORKS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOWNSHIP, INCLUDING THE LATEST MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.
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17. DURING THE CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL NOT PERFORM WORK BY PRIVATE AGREEMENT WITH PROPERTY OWNERS ADJACENT TO THE PROJECT.
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22. ALL DEMOLISHED MATERIALS AND SOIL SPOILS SHALL BE REMOVED FROM THE SITE AT NO ADDITIONAL COST, AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
23. ANY EXISTING APPURTENANCES SUCH AS MANHOLES, GATE VALVES, ETC. SHALL BE ADJUSTED TO THE PROPOSED GRADE AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
24. ALL PERMANENT SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE MICHIGAN MUTCD MANUAL AND SHALL BE INCIDENTAL TO THE CONTRACT.
25. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL ITEMS REQUIRED FOR CONSTRUCTION OF THE PROJECT ARE INCLUDED IN THE CONTRACT. ANY ITEMS NOT SPECIFICALLY DESIGNATED IN THE PLANS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
26. THE CONTRACTOR IS RESPONSIBLE FOR HAVING A SET OF APPROVED CONSTRUCTION PLANS, WITH THE LATEST REVISION DATE, ON SITE PRIOR TO THE START OF CONSTRUCTION; IN THE EVENT OF ANY QUESTIONS PERTAINING TO THE INTENT OF THE CONSTRUCTION PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER FOR A FINAL DETERMINATION FROM THE DESIGN ENGINEER.
27. THE CONTRACTOR, NOT THE OWNER OR THE ENGINEER, ARE RESPONSIBLE FOR THE MEANS, METHODS, AND SEQUENCE OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR SAFE EXECUTION OF THE PROJECT SCOPE IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PLANS.
28. THE CONTRACTOR IS RESPONSIBLE FOR PRESERVING CONSTRUCTION STAKING AS NECESSARY. CONTRACTOR TO NOTIFY CONSTRUCTION SURVEYOR OF REPLACEMENT STAKES NEEDED WHICH SHALL BE AT THE CONTRACTORS EXPENSE.
29. THE OWNER AND/OR CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING FRANCHISE UTILITY SERVICES (CABLE, ELECTRIC, GAS, ETC.) OWNER AND/OR CONTRACTOR SHALL WORK WITH UTILITY COMPANIES ON FURNISHING SITE UTILITY LAYOUTS AND PROVIDING CONDUIT CROSSINGS AS REQUIRED.
30. DAMAGE TO ANY EXISTING UTILITIES OR INFRASTRUCTURE (INCLUDING PAVEMENT, CURB, SIDEWALK, ETC.) SHALL PROMPTLY BE REPLACED IN KIND AND SHALL BE AT THE CONTRACTORS EXPENSE.
31. COORDINATION OF TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND PER ALL CITY/TOWNSHIP/COUNTY REQUIREMENTS. COPIES OF ALL TEST REPORTS SHALL BE FURNISHED TO THE DESIGN ENGINEER.
32. PRIOR TO THE START OF CONSTRUCTION, PROTECTION FENCING SHALL BE ERECTED AROUND THE TREE DRIPLINE OF ANY TREES INDICATED TO BE SAVED WITHIN THE LIMITS OF DISTURBANCE.
33. THE CONTRACTOR SHALL MAINTAIN DRAINAGE OF THE PROJECT AREA AND ADJACENT AREAS. WHERE EXISTING DRAINAGE FACILITIES ARE IMPACTED/DISTURBED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE ANY NECESSARY TEMPORARY DRAINAGE PROVISIONS.
34. SOIL BORING LOGS ARE REPRESENTATIVE OF SPECIFIC POINTS ON THE PROJECT SITE, AND IF PROVIDED TO THE CONTRACTOR ARE FOR INFORMATIONAL PURPOSES ONLY.
35. WHERE CITY/TOWNSHIP STANDARD CONSTRUCTION DETAILS/SPECIFICATIONS ARE PROVIDED AND ARE IN CONFLICT WITH NOTES AND SPECIFICATIONS HEREIN, THE CITY/TOWNSHIP STANDARD SHALL GOVERN.

INDEMNIFICATION STATEMENT

THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE, AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.

CONTRACTOR TO FOLLOW MANUFACTURER SPECS/RECOMMENDATIONS THAT SUPERCEDE PLANS

GENERAL GRADING & SESC NOTES

- 1. THE CONTRACTOR SHALL HAVE IN PLACE ALL REQUIRED EROSION CONTROL METHODS AS INDICATED ON THE CONSTRUCTION PLANS AND AS REQUIRED BY GENERAL PRACTICE. SPECIFIC MEANS, METHODS AND SEQUENCES OF CONSTRUCTION MAY DICTATE ADDITIONAL SOIL EROSION CONTROL MEASURES BE NEEDED. THE CONTRACTOR SHALL COORDINATE WITH THE DESIGN ENGINEER ON THESE ANTICIPATED METHODS. ADDITIONAL SOIL EROSION CONTROL METHODS SHALL BE INCIDENTAL TO THE SCOPE OF WORK.
2. ACTUAL FIELD CONDITIONS MAY DICTATE ADDITIONAL OR ALTERNATE SOIL EROSION CONTROL MEASURES BE UTILIZED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DEFICIENCIES OR FIELD CONDITIONS THAT WARRANT ADDITIONAL AND/OR ALTERNATIVE SESC MEASURES BE UTILIZED.
3. AT THE CLOSE OF EACH DAY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ALL CONSTRUCTION OPERATIONS, MATERIALS, DEBRIS, ETC ARE CONTAINED ON-SITE.
4. AT THE CLOSE OF EACH WORKING DAY, ALL DRAINAGE STRUCTURES SHALL BE FREE OF DIRT AND DEBRIS AT THE FLOW LINE.
5. ALL SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE PER MDEGLE REGULATIONS AND BEST PRACTICES. ALL SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR.
6. THE SOIL EROSION CONTROL MEASURES SHALL BE KEPT IN PLACE UNTIL SUCH A TIME THAT THE SITE IS DETERMINED TO BE ESTABLISHED WITH ACCEPTABLE AMOUNT OF VEGETATIVE GROUND COVER.
7. ALL AREAS DISTURBED BY THE CONTRACTOR BEYOND THE NORMAL CONSTRUCTION LIMITS OF THE PROJECT SHALL BE SODDED OR SEEDED AS SPECIFIED OR DIRECTED BY THE ENGINEER.
8. AFTER REMOVAL OF TOPSOIL, THE SUBGRADE SHALL BE COMPACTED TO 95% OF ITS UNIT WEIGHT.
9. ALL GRADING IN THE PLANS SHALL BE DONE AS PART OF THIS CONTRACT. ALL DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE SUBGRADE PRIOR TO COMPACTING.
10. ALL ROOTS, STUMPS AND OTHER OBJECTIONABLE MATERIALS SHALL BE REMOVED AND THE HOLE BACKFILLED WITH SUITABLE MATERIAL. WHERE GRADE CORRECTION IS REQUIRED, THE SUBGRADE SHALL BE CUT TO CONFORM TO THE CROSS-SECTION AS SHOWN IN THE PLANS.
11. ALL EXCAVATION UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOT CLASS II).

GENERAL LANDSCAPE NOTES:

- 1. ALL PLANT MATERIAL SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF THE GOVERNING MUNICIPALITY. ALL STOCK SHALL BE NURSERY GROWN, CONFORMING TO ANSO Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK", AND IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICE. STOCK SHALL EXHIBIT NORMAL GROWTH HABIT AND BE FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN-SCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT. ALL PLANT MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT.
2. ALL PLANT MATERIALS SHALL BE BALLED AND BURLAPPED OR CONTAINER STOCK. NO BARE ROOT STOCK IS PERMITTED. ALL PLANT BALLS SHALL BE FIRM, INTACT, AND SECURELY WRAPPED AND BOUND.
3. ALL PLANT BED MATERIALS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS, OTHER EXTRANEOUS OBJECTS, AND POOR SOILS TO A MINIMUM DEPTH OF 12-INCHES AND BACKFILLED TO GRADE WITH SPECIFIED PLANTING MIX (SEE BELOW).
4. PLANTING MIXTURE SHALL CONSIST OF 5 PARTS TOPSOIL FROM ON-SITE (AS APPROVED), 4 PARTS COARSE SAND, 1 PART SPHAGNUM PEAT MOSS (OR APPROVED COMPOST), AND 5 LBS OF SUPERPHOSPHATE FERTILIZER PER CU. YD. OF MIX. INGREDIENTS SHALL BE THOROUGHLY BLENDED FOR UNIFORM CONSISTENCY.
5. ALL PLANT BEDS AND INDIVIDUAL PLANTS, NOT OTHERWISE NOTED SHALL BE MULCHED WITH A 4-INCH LAYER OF SHREDDED BARK MULCH. EDGE OF MULCH BEDS AS SHOWN. DECIDUOUS TREES IN LAWN AREAS SHALL RECEIVE A 5-FT DIAMETER CIRCLE OF MULCH AND CONIFER TREES 8-FT (PLANTED CROWN OF TREE) UNLESS OTHERWISE NOTED.
6. LANDSCAPE STONE SHALL BE INSTALLED WHERE NOTED OR INDICATED (HATCHED). STONE SHALL BE 3/4"-1-1/4" WASHED RIVER GRAVEL OR AS SELECTED AND SHALL BE INSTALLED TO A MINIMUM DEPTH OF 3-INCHES.
7. ALL LANDSCAPE BEDS, UNLESS OTHERWISE NOTED SHALL BE INSTALLED OVER WEED BARRIER FABRIC - WATER PERMEABLE FILTRATION FABRIC OF NON-WOVEN POLYPROPYLENE OR POLYESTER FABRIC. FABRIC SHALL BE OF SUITABLE THICKNESS FOR APPLICATION.
8. ALL PLANTS AND PLANT BEDS SHALL BE THOROUGHLY WATERED UPON COMPLETION OF PLANTING AND STAKING OPERATIONS.
9. THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR A PERIOD OF 2 GROWING SEASONS FROM THE DATE THE WORK IS ACCEPTED, IN WRITING, BY THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE WITHOUT COST TO THE OWNER, WITHIN A SPECIFIED PERIOD OF TIME, ALL DEAD PLANTS, AND ALL PLANTS NOT IN A VIGOROUS, THRIVING CONDITION, AS DETERMINED BY THE LANDSCAPE ARCHITECT, DURING AND AT THE END OF THE GUARANTEE PERIOD. REPLACEMENT STOCK SHALL CONFORM TO THE ORIGINAL SPECIFICATIONS. THE MUNICIPALITY MAY REQUIRE A BOND OR LETTER OF CREDIT - TO BE DETERMINED AT A PRE-CONSTRUCTION MEETING.
10. EDGING SHALL BE PROVIDED FOR ALL LANDSCAPE BEDS NOT ADJACENT TO CONCRETE PAVEMENT. EDGING SHALL BE BLACK ALUMINUM EDGING, 3/16-INCH X 4-INCH. INSTALL PER MANUFACTURER'S INSTRUCTIONS, ALL EDGING SHALL BE INSTALLED IN STRAIGHT LINES OR SMOOTH CURVES WITHOUT IRREGULARITIES.
11. SOD SHALL BE DENSE, WELL ROOTED TURF, FREE OF WEEDS. IT SHALL BE COMPRISED OF A BLEND OF AT LEAST TWO KENTUCKY BLUE GRASSES AND ONE FESCUE. IT SHALL HAVE A UNIFORM THICKNESS OF 3/4-INCH AT TIME OF PLANTING, AND CUT IN UNIFORM STRIPS NOT LESS THAN 10-INCHES BY 18-INCHES. SOD SHALL BE KEPT MOIST AND LAID WITHIN 36-HOURS AFTER CUTTING.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ALL SODDED AREAS THAT BROWN-OUT OR HAVE NOT FIRMLY KNITTED TO THE SOIL BASE WITHIN A PERIOD OF 1 MONTH SHALL BE REPLACED BY THE CONTRACTOR, AT NO COST TO THE OWNER.
12. ALL AREAS OF THE SITE THAT BECOME DISTURBED DURING CONSTRUCTION AND ARE NOT TO BE PAVED, STONED, LANDSCAPED, OR SODDED SHALL BE SEEDED AND MULCHED.
SEED MIXTURE SHALL BE AS FOLLOWS:
KENTUCKY BLUEGRASS (CHOOSE 3 VARIETIES - ADELPHI, RUGBY, GLADE, OR PARADE) 30%
RUBY RED OR DAWSON RED FINE FESCUE 30%
ATLANTA RED FESCUE 20%
PENNFINE PERENNIAL RYE 20%
THE ABOVE SEED MIXTURE SHALL BE SOWN AT A RATE OF 250 LBS PER ACRE. PRIOR TO SEEDING, THE TOPSOIL SHALL BE FERTILIZED WITH A COMMERCIAL FERTILIZER WITH A 10-0-10 ANALYSIS:
10% NITROGEN - MIN 25% FROM A UREA FORMALDEHYDE SOURCE
0 % PHOSPHATE
10% POTASH - SOURCE POTASSIUM SULFATE OR POTASSIUM NITRATE
THE FIRST FERTILIZER APPLICATION SHALL BE AT A RATE OF 10 LBS PER 1000 SQ FT OF BULK FERTILIZER.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE OF LUMPS AND DEPRESSIONS. ANY PART OF THE AREA THAT FAILS TO SHOW A UNIFORM GERMINATION SHALL BE RE-SEEDED AND SUCH RE-SEEDED SHALL CONTINUE UNTIL A DENSE LAWN IS ESTABLISHED. DAMAGE TO SEEDED AREAS RESULTING FROM EROSION SHALL BE REPAIRED BY THE CONTRACTOR.
13. ALL AREAS OF THE SITE SCHEDULED FOR SEEDING OR SODDING SHALL FIRST RECEIVE A 6-INCH LAYER OF CLEAN, FRIBLE TOPSOIL. THE SOIL SHALL BE DISCED AND SHALL BE GRADED IN CONFORMANCE WITH THE GRADING PLAN.
14. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL UTILITIES AND TO INFORM THE LANDSCAPE ARCHITECT OF ANY CONFLICTS PRIOR TO COMMENCING LANDSCAPING.
15. DECORATIVE LANDSCAPE BOULDERS, WHEN INDICATED, SHALL BE OF "FIELD STONE" TYPE GENERALLY CONSISTING OF METAMORPHIC QUARTZITE OR GLACIAL TILL STONE SUITABLE FOR LANDSCAPE APPLICATION. PROVIDE A VARIETY OF SIZES RANGING FROM A MINIMUM OF 16-INCHES THROUGH 42-INCHES.

16. ALL LANDSCAPED AREAS WITHIN THE PROJECT AREA SHALL BE PROVIDED WITH AN UNDERGROUND AUTOMATIC LANDSCAPE & LAWN IRRIGATION/SPRINKLER SYSTEM - DESIGN-BUILD THROUGH GENERAL CONTRACTOR. THE SYSTEM SHALL INCLUDE A RAIN SENSOR TO PREVENT WATERING DURING OR SHORTLY THEREAFTER A PRECIPITATION EVENT, IN ADDITION TO A PROGRAMMABLE 7-DAY CLOCK AND ZONE CONTROLS. SUBMITTAL DRAWINGS SHALL BE PROVIDED FOR REVIEW.

17. MAINTENANCE. THE PROPERTY OWNER SHALL MAINTAIN ALL LANDSCAPING IN A HEALTHY CONDITION, FREE FROM REFUSE, AND DEBRIS.
18. INSTALL SOIL EROSION CONTROL FABRIC ON ALL SLOPES STEEPER THAN 6:1 UNLESS OTHERWISE NOTED.

GENERAL UTILITY NOTES

- 1. BEDDING SHALL EXTEND A MINIMUM OF 4" BELOW THE PIPE, UNLESS OTHERWISE NOTED ON THE PLANS. BEDDING SHALL BE PER WHITE LAKE TOWNSHIP STANDARDS.
2. WHERE UNSTABLE GROUND CONDITIONS ARE ENCOUNTERED, STONE BEDDING SHALL BE USED AS DIRECTED BY THE ENGINEER.
3. BACKFILL SHALL BE OF A SUITABLE MATERIAL AND SHALL BE FREE OF ANY ORGANIC MATERIALS AND ROCKS.
4. BACKFILL ABOVE THE PIPE SHALL BE PER WHITE LAKE TOWNSHIP STANDARDS.
5. 18" MINIMUM VERTICAL SEPARATION AND 10' HORIZONTAL SEPARATION IS TO BE MAINTAINED BETWEEN WATERMAIN AND SANITARY/STORM SEWER TO THE MAXIMUM EXTENT POSSIBLE.

GENERAL STORM NOTES

- 1. ALL STORM PIPE LENGTHS ARE SHOWN FROM C/L TO C/L OF STRUCTURE OR FROM C/L OF STRUCTURE TO DISCHARGE END OF FLARED END SECTION.
2. STORM PIPE JOINTS SHALL MEET THE REQUIREMENTS OF ASTM D3212. HDPE AND PP PIPE GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F477.
3. ALL STORM PIPE TO HAVE WATER TIGHT PREMIUM JOINTS, UNLESS OTHERWISE NOTED ON THE PLANS.
4. STORM DRAINAGE STRUCTURES SHALL BE FURNISHED WITH STEPS WHICH SHALL BE STEEL ENCASED WITH POLYPROPYLENE PLASTIC OR EQUIVALENT. STEPS SHALL BE SET AT 16" CENTER TO CENTER.
5. ALL FLARED END SECTIONS 18" AND LARGER SHALL BE FURNISHED WITH AN ANIMAL GRATE.
6. FLARED END SECTIONS DISCHARGING STORM WATER SHALL RECEIVE A MINIMUM OF 10 SQ YDS OF PLAIN COBBLESTONE RIP RAP WITH A MINIMUM STONE SIZE OF 6" AND SHALL BE PLACED ON A GEOTEXTILE FABRIC WRAP.
7. ALL CATCH BASINS WITHIN THE ROADWAY SHALL INCLUDE INSTALLATION OF 6" DIAMETER PERFORATED PIPE SUBDRAIN.

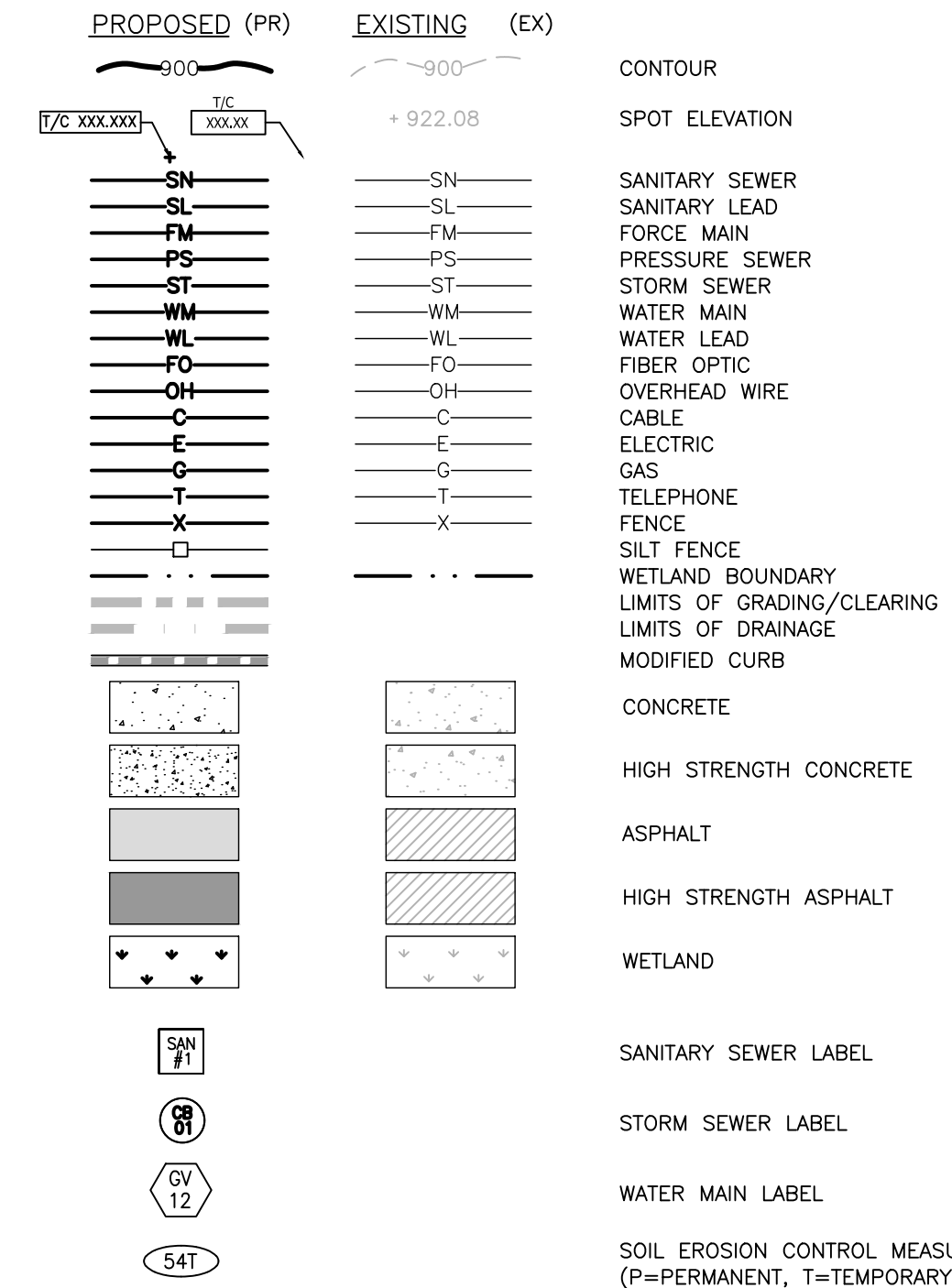
GENERAL SANITARY NOTES

- 1. ALL SANITARY PIPE LENGTHS ARE SHOWN FROM C/L OF STRUCTURE TO C/L OF STRUCTURE.
2. SANITARY PIPE MATERIALS SHALL BE AS FOLLOWS:
2.1. PVC SDR-26 (SANITARY MAIN)
2.2. PVC SDR-23.5 (SANITARY LEADS)
2.3. HDPE DR-11 (SANITARY FORCEMAIN)
3. ALL PVC SDR SANITARY SEWER PIPE SHALL MEET THE REQUIREMENTS OF ASTM D3034 AND D2241. PVC SCHD 40 PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785. GASKET JOINTS FOR SANITARY PIPE SHALL MEET THE REQUIREMENTS OF ASTM D3139 AND D3212.
4. SANITARY STRUCTURES SHALL BE FURNISHED WITH STEPS WHICH SHALL BE STEEL ENCASED WITH POLYPROPYLENE PLASTIC OR EQUIVALENT. STEPS SHALL BE SET AT 16" CENTER TO CENTER.
5. ALL NEW MANHOLES SHALL BE MINIMUM 4" DIAMETER, PRECAST MANHOLE SECTIONS AND AN ECCENTRIC CONE. PRECAST MANHOLE JOINTS SHALL BE INSTALLED WITH BUTYL ROPE MEETING THE REQUIREMENTS OF ASTM C950.
6. MANHOLES SHALL BE CONSTRUCTED WITH FLOW CHANNEL WALLS THAT ARE FORMER, AT A MINIMUM, TO THE SPRINGLINE OF THE PIPE.
7. ALL NEW MANHOLES SHALL HAVE AN APPROVED FLEXIBLE, WATER TIGHT SEALS WHERE PIPES PASS THROUGH MANHOLE WALLS.
8. WHEREVER AN EXISTING MANHOLE IS TO BE TAPPED, THE STRUCTURE SHALL BE CORED AND A KOR-N-SEAL BOOT UTILIZED FOR THE PIPE CONNECTION.
9. A MAXIMUM OF 12" OF GRADE ADJUSTMENT RING SHALL BE USED TO ADJUST THE FRAME ELEVATION. BUTYL ROPE SHALL BE USED BETWEEN EACH ADJUSTMENT RING.
10. SANITARY SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 1.0%.
11. CLEANOUTS SHALL BE INSTALLED EVERY 75', AT ALL BENDS AND STUBS.
12. PUBLIC SANITARY SEWER SHALL BE CENTERED WITHIN A 20 FOOT WIDE SANITARY SEWER EASEMENT.

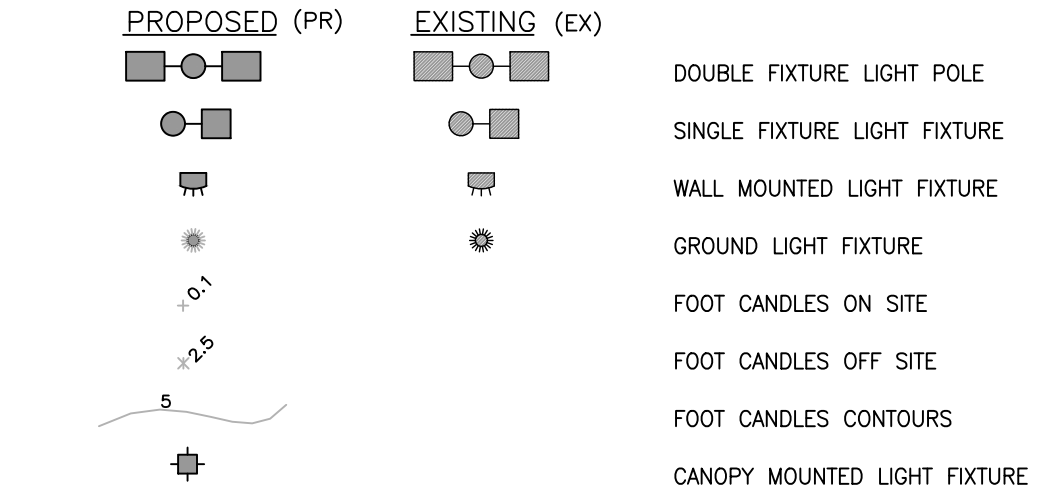
GENERAL WATERMAIN NOTES

- 1. WATERMAIN FITTINGS SHALL BE OF DUCTILE IRON WITH CEMENT MORTAR LINING AND MECHANICAL JOINTS CONFORMING TO AWWA C110.
2. WATERMANS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. BAC-11 SAMPLES SHALL BE TAKEN IN ACCORDANCE WITH R235.11110 OF THE ADMINISTRATIVE RULES PROMULGATED UNDER MICHIGAN SAFE DRINKING WATER ACT, 1976 PA 399, AS AMENDED.
3. ALLOWABLE LEAKAGE OR HYDROSTATIC PRESSURE TESTING SHALL BE IN ACCORDANCE WITH AWWA C600 AND C605.
4. MAXIMUM DEFLECTION AT PIPE JOINTS SHALL BE IN ACCORDANCE WITH PIPE MANUFACTURERS CURRENT RECOMMENDATIONS AND AWWA SPECIFICATIONS.
5. A FULL STICK OF PIPE SHALL BE LAID CENTERED AT A PIPE CROSSING IN ORDER TO MAINTAIN THE MAXIMUM SEPARATION OF WATERMAIN JOINT TO THE CROSSING PIPE.
6. WATERMAIN SHALL BE INSTALLED WITH A MINIMUM OF 6.0' OF COVER FROM FINISHED GRADE TO TOP OF PIPE AND NO MORE THAN 8' OF COVER, UNLESS SPECIAL CONDITIONS WARRANT.
7. WATERMAIN VALVES SHALL BE IRON BODY RESILIENT WEDGE GATE VALVES, NON-RISING STEMS, COUNTERCLOCKWISE OPEN, AWWA C509.
8. FIRE HYDRANTS SHALL BE INSTALLED WITH AN AUXILIARY VALVE WITH CAST IRON VALVE BOX. THE HYDRANT PUMPER HOSE CONNECTION SHALL FACE THE ROADWAY.
9. THE BREAKAWAY FLANGE AND ALL BELOW GRADE FITTINGS SHALL HAVE STAINLESS STEEL NUTS AND BOLTS.
10. PUBLIC WATERMAIN SHALL BE CENTERED WITHIN A 20 FOOT WIDE WATERMAIN EASEMENT.

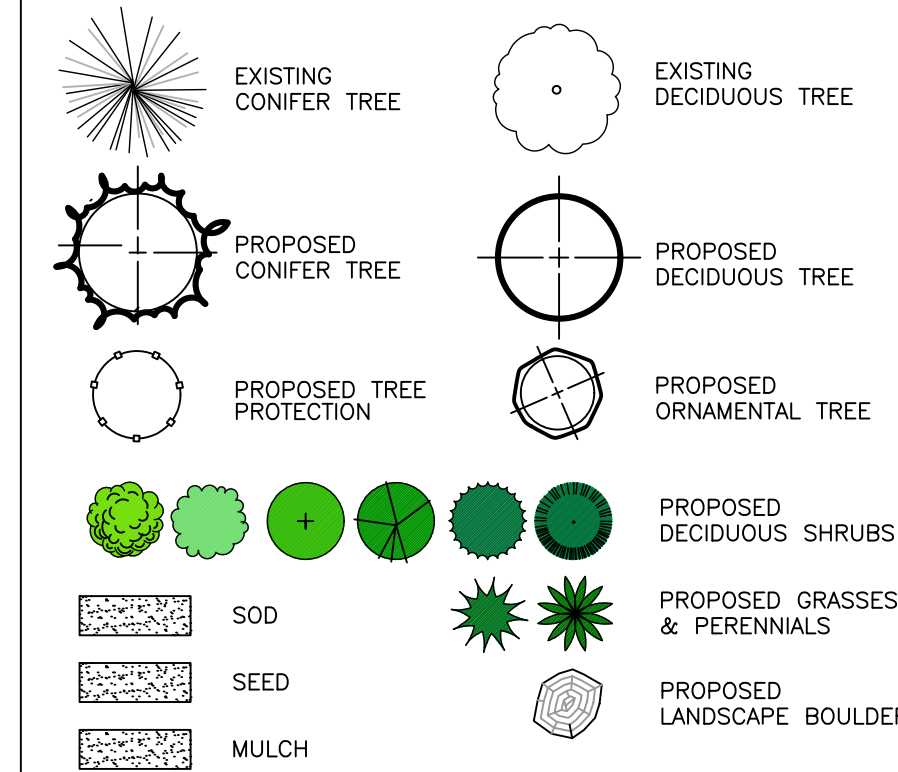
LINES & HATCHES LEGEND



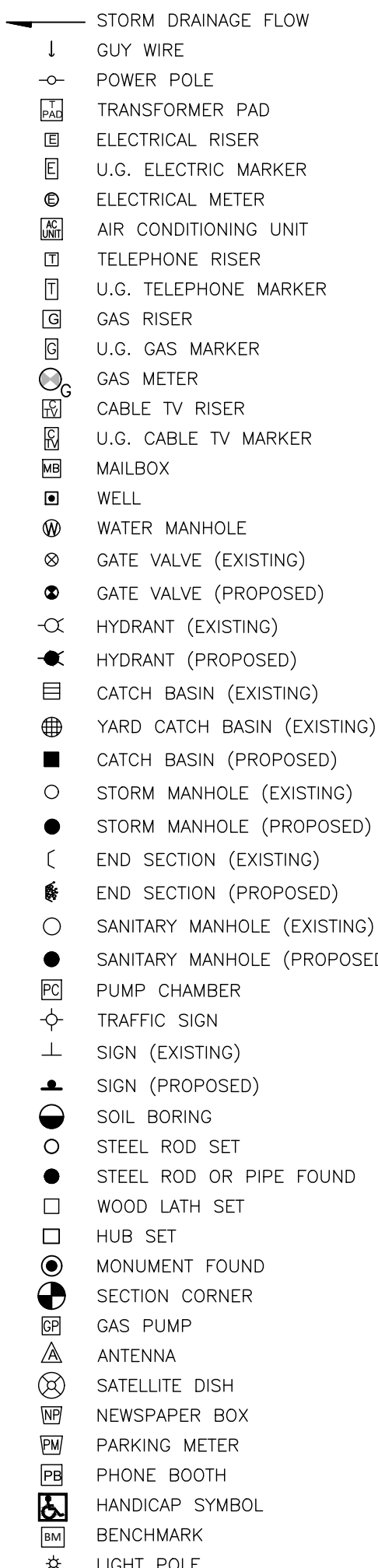
LIGHTING LEGEND



LANDSCAPE LEGEND



SYMBOL LEGEND



ABBREVIATIONS

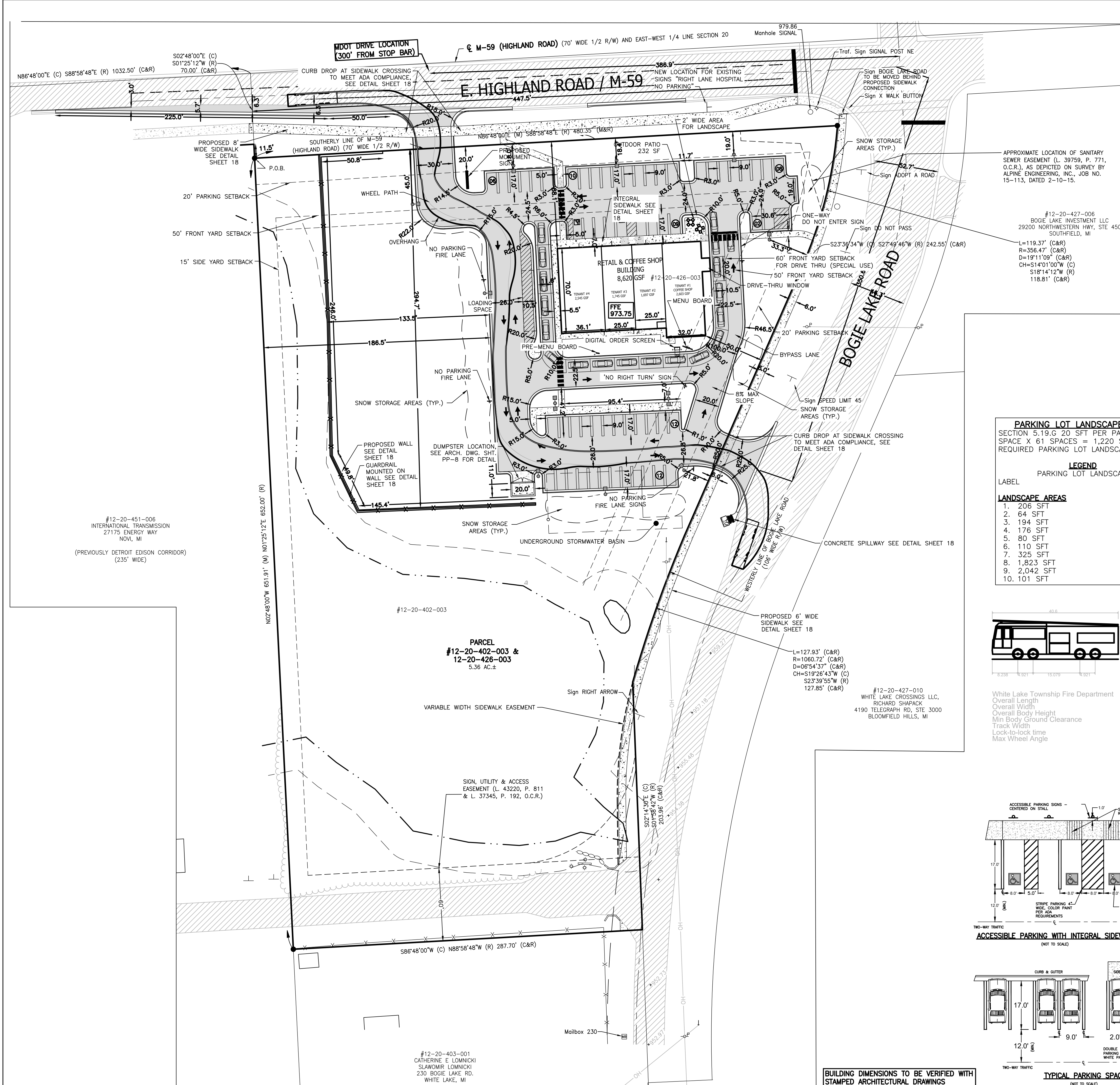
- FFE FINISHED FLOOR ELEVATION
BFE BASEMENT FLOOR ELEVATION
GFE GARAGE FLOOR ELEVATION
FG FINISHED GRADE
T/A TOP OF ASPHALT
T/C TOP OF CONCRETE/CURB
T/W TOP OF WALK
T/P TOP OF PIPE
B/P BOTTOM OF PIPE
F/L FLOW LINE
RIM RIM ELEVATION (AT FLOW LINE)
INV INVERT ELEVATION
MH MANHOLE
CB CATCH BASIN
RY REAR YARD
YD YARD DRAIN
RD ROOF DRAIN
FES FLARED END SECTION
CMP CORRUGATED METAL PIPE
GPP CORRUGATED PLASTIC PIPE
RCP REINFORCED CONCRETE PIPE
HDPE HIGH DENSITY POLYETHYLENE
PVC POLYVINYL CHLORIDE
DIP DUCTILE IRON PIPE
GV GATE VALVE
GVW GATE VALVE IN WELL
GVB GATE VALVE IN BOX
HYD HYDRANT
FDC FIRE DEPARTMENT CONNECTION
UP UTILITY POLE
NFV NOT FIELD VERIFIED
TBR TO BE REMOVED
LIBER LIBER
PAGE PAGE
L.C.R. LIVINGSTON COUNTY RECORDS
(M&R) MEASURED AND RECORD
L.O.B. POINT OF BEGINNING

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO ASSURANCE IS MADE AS TO THE ACCURACY THEREOF. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

BEBOSS Engineering logo and contact information: BEBOSS Engineering, Surveyors Planners Landscape Architects, 3121 E. GRAND RIVER AVE., HOWELL, MI. 48843, 517.546.4836 FAX 517.548.1670

GATEWAY CROSSING PROJECT PREPARED FOR GATEWAY CROSSING, LLC 600 NORTH OLD WOODWARD, SUITE 101 BIRMINGHAM, MI 35209 248-433-7000

Table with columns for TOWNSHIP COMMENTS, MDOT COMMENTS, and REVISION PER. Includes fields for DESIGNED BY (ST), DRAWN BY (DH), CHECKED BY (BL), SCALE (NO SCALE), JOB NO (22-029-1), DATE (05/30/24), SHEET NO (2), and BOSS Engineering logo.



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

LEGEND

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
---	---	CONTOUR
---	---	SPOT ELEVATION
---	---	FINISHED FLOOR ELEVATION
---	---	FINISHED GRADE ELEVATION
---	---	TOP OF ASPHALT
---	---	TOP OF CURB / CONCRETE
---	---	TOP OF WALK
---	---	FLOW LINE
---	---	TOP OF PIPE
---	---	BOTTOM OF PIPE
---	---	RIM ELEVATION
---	---	INVERT ELEVATION
---	---	MANHOLE STRUCTURE
---	---	INLET STRUCTURE
---	---	CATCHBASIN STRUCTURE
---	---	REAR-YARD STRUCTURE
---	---	END-SECTION GATEVALVE STRUCTURE
---	---	HYDRANT
---	---	UTILITY POLE
---	---	SANITARY SEWER
---	---	SANITARY LEAD
---	---	FORCE MAIN
---	---	PRESSURE SEWER
---	---	STORM SEWER
---	---	WATER MAIN
---	---	WATER LEAD
---	---	FIBER OPTIC
---	---	OVERHEAD WIRE
---	---	CABLE
---	---	ELECTRIC
---	---	TELEPHONE
---	---	FENCE
---	---	SILT FENCE
---	---	WETLAND BOUNDARY
---	---	LIMITS OF GRADING/CLEARING
---	---	INLET / CATCHBASIN FLARED END-SECTION
---	---	GATE VALVE
---	---	HYDRANT
---	---	UTILITY POLE
---	---	SIGN
---	---	NOT FIELD VERIFIED TO BE REMOVED
---	---	CONCRETE
---	---	ASPHALT
---	---	PARKING LOT LANDSCAPING

SITE DATA:

WHITE LAKE TOWNSHIP
 COMBINED PARCELS # 4712-20-402-003 AND # 4712-20-426-003
 HIGHLAND ROAD
 WHITE LAKE, MI 48383
 5.36 AC +/-

ZONING: GENERAL BUSINESS

USE: RETAIL BUILDING SQUARE FOOTAGE (FOOTPRINT): RETAIL WITH DRIVE-THROUGH 8,620 GSF

SINGLE OWNER LEASABLE BUILDING WITH ADDITIONAL DEVELOPABLE SPACE ON THE WEST SIDE OF THE PARCEL. PARCEL TO REMAIN UNDER SINGLE OWNER AT THIS TIME.

MIN. LOT AREA REQUIRED FOR ZONING: 1 ACRE
 MIN. LOT WIDTH: 200 FT
 TOTAL EX. LOT WIDTH: 485.39
 MAX. LOT COVERAGE: 40% BLDG, 85% IMPERVIOUS

MIN. SETBACKS REQUIRED: FRONT: 50'-FT
 REAR: 20'-FT
 SIDE: 15'-FT

PROPOSED SETBACKS: FRONT (NORTH): 88.1 FT
 FRONT (EAST): 50.0 FT
 REAR (SOUTH): 487.6 FT
 SIDE (WEST): 245.2 FT

REQUIRED PARKING:
 TENANT #1: (COFFEE SHOP W/ DRIVE-THROUGH)
 = 1.0 SPACE PER 75 GROSS FLOOR AREA
 2,603 / 75 = 34.70 SPACES ~ 35 SPACES PLUS 8 STACKING SPACES

TENANT #2: (GENERAL RETAIL)
 = 1.0 SPACE PER 200 GFA
 1,697 GFA / 200 = 8.48 SPACES ~ 8 SPACES

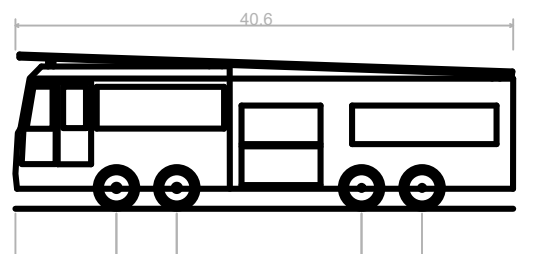
TENANT #3: (GENERAL RETAIL)
 = 1.0 SPACE PER 200 GFA
 1,745 GFA / 200 = 8.73 SPACES ~ 9 SPACES

TENANT #4: (RESTAURANT)
 = 1.0 SPACE PER 100 GFA
 2,545 GFA / 100 = 25.45 SPACES ~ 25 SPACES

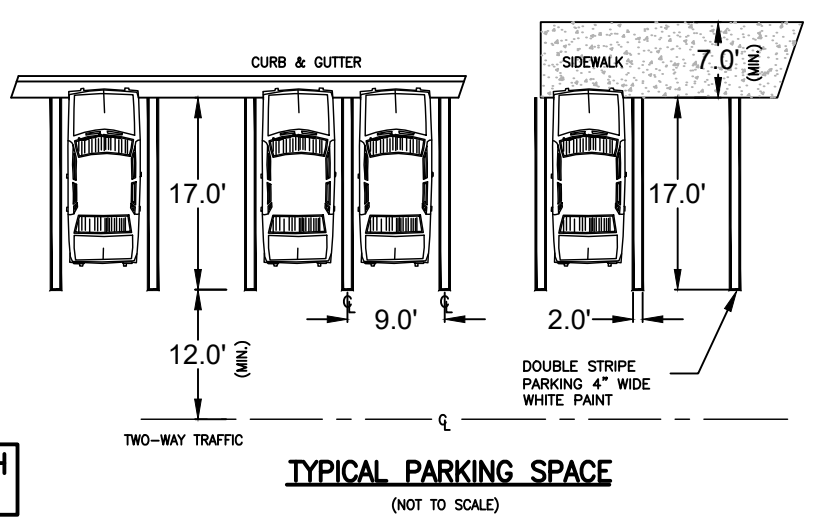
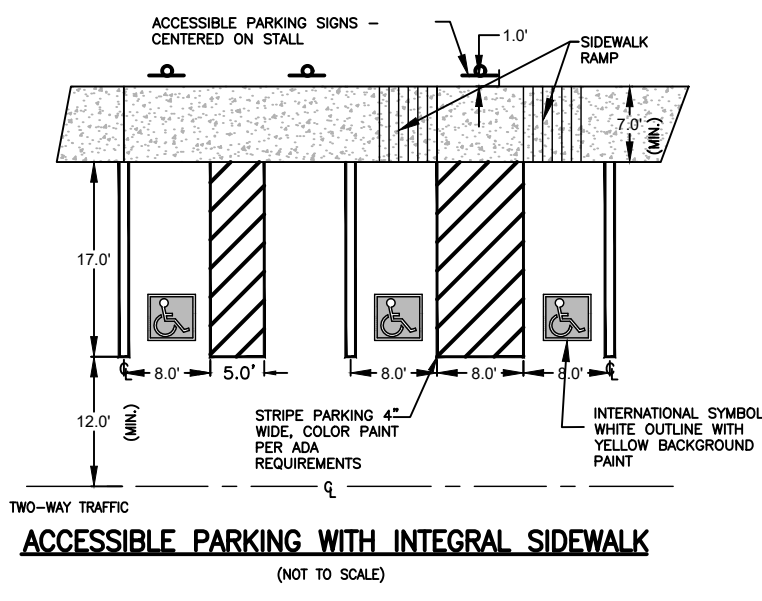
SPACES REQUIRED: 35 + 8 + 9 + 25 = 77 SPACES AND 8 STACKING SPACES
PROVIDED: 59 SPACES INCLUDING 3 ADA SPACES, PLUS 16 STACKING SPACES

PARKING LOT LANDSCAPE AREA:
 SECTION 5.19.G 20 SFT PER PARKING SPACE X 61 SPACES = 1,220 SFT
 REQUIRED PARKING LOT LANDSCAPING

- LANDSCAPE AREAS**
- 206 SFT
 - 64 SFT
 - 194 SFT
 - 176 SFT
 - 80 SFT
 - 110 SFT
 - 325 SFT
 - 1,823 SFT
 - 2,042 SFT
 - 101 SFT



White Lake Township Fire Department
 Overall Length: 40.600ft
 Overall Width: 9.665ft
 Overall Body Height: 12.582ft
 Min Body Ground Clearance: 1.826ft
 Track Width: 9.665ft
 Lock-to-lock time: 6.00s
 Max Wheel Angle: 45.00°



- SITE PLAN NOTES**
- VARIANCES TO BE REQUESTED:
 - VARIANCE FOR PARKING DEFICIENCY - 77 SPACES AND 8 STACKING SPACES REQUIRED. PROPOSED 59 SPACES WITH 16 STACKING SPACES.
 - VARIANCE FROM ACCESS MANAGEMENT STANDARDS - DISTANCE BETWEEN HIGHLAND ROAD ENTRANCE AND INTERSECTION WITH BOGIE LAKE ROAD CANNOT BE LESS THAN 455 FEET. CURRENT PROPOSED DISTANCE IS 386 FEET.
 - (SPECIAL USE) DRIVE-THRU REQUIRES A 60-FOOT FRONT YARD SETBACK FROM BOGIE LAKE ROAD R.O.W. THE DRIVE-THRU WINDOW IS MORE THAN 60' FROM THE R.O.W. BUT THE CLOSEST CORNER OF THE BUILDING IS 50 FEET. REQUEST ZONING BOARD OF APPEALS MAKES AN INTERPRETATION ALLOWING THE SETBACK AS PROPOSED BEING CONFORMING TO THE 60-FOOT FRONT YARD SETBACK TO THE DRIVE THRU WINDOW.
 - (SPECIAL USE) VARIANCE FOR HIGHLAND ROAD DRIVEWAY LOCATED LESS THAN 200 FEET FROM THE RESIDENTIAL ZONING DISTRICT TO THE WEST.
 - ACCESS DRIVE SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS AND SHALL BE SURFACED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.
 - THE OUTDOOR DINING MAY OPERATE ONLY DURING THE FOLLOWING HOURS:
 M-TH: 8:00AM TO 12:00AM (MIDNIGHT),
 FRIDAY: 8:00 AM TO 2:00 AM,
 SATURDAY: 10:00 AM TO 2:00 AM
 SUNDAY: 10:00 AM TO 10:00 PM
 - PARKING SPACES AT THE SOUTH END OF THE SITE SHALL BE DESIGNATED/MARKED AS EMPLOYEE PARKING.

BEBOSS
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 Surveyors Planners Landscape Architects
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 HOWELL, MI. 48843
 517.546.4836 FAX 517.548.1670

GATEWAY CROSSING

PROJECT: GATEWAY CROSSING, LLC
 PREPARED FOR: 600 NORTH OLD WOODWARD, SUITE 101, BIRMINGHAM, MI 48009
 TITLE: SITE PLAN

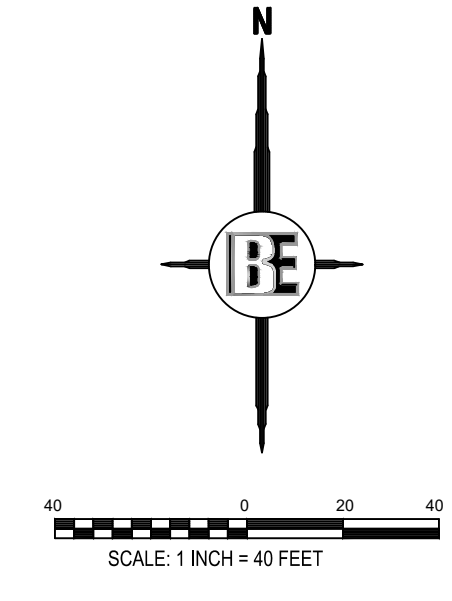
NO.	DATE	BY	REVISION
1	7/9/24	BL	MODOT COMMENTS
2	8/6/24	ST	TOWNSHIP COMMENTS

DESIGNED BY: ST
 DRAWN BY: DH
 CHECKED BY: BL
 SCALE: 1" = 40'
 JOB NO: 22-029-1
 DATE: 05/30/24
 SHEET NO. 4

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

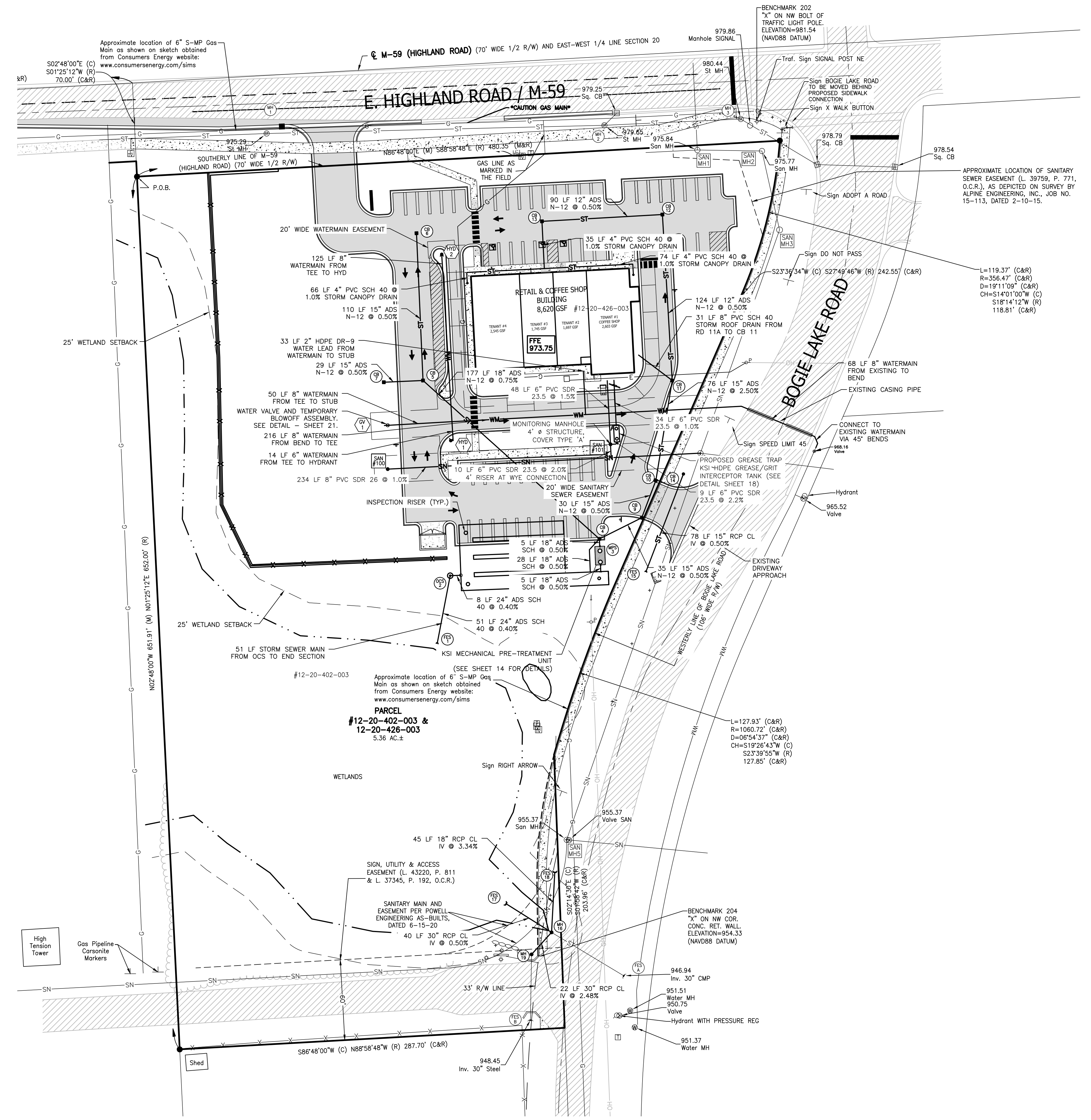
LEGEND

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
900 T/C XXXXXX	900	CONTOUR
FF	FF	FINISHED FLOOR ELEVATION
T/A	T/A	FINISHED GRADE ELEVATION
T/C	T/C	TOP OF ASPHALT
T/W	T/W	TOP OF CURB / CONCRETE
F/L	F/L	TOP OF WALK
T/P	T/P	FLOW LINE
B/P	B/P	TOP OF PIPE
RM	RM	INVERT ELEVATION
INV	INV	MANHOLE STRUCTURE
MH	MH	INLET STRUCTURE
CB	CB	CATCHBASIN STRUCTURE
RY	RY	REAR/STREET STRUCTURE
ES	ES	END-SECTION
OV	OV	GATEVALVE STRUCTURE
HY	HY	HYDRANT
UP	UP	UTILITY POLE
SN	SN	SANITARY SEWER
SL	SL	SANITARY LEAD
FM	FM	FORCE MAIN
PS	PS	PRESSURE SEWER
ST	ST	STORM SEWER
WM	WM	WATER MAIN
WL	WL	WATER LEAD
FO	FO	FIBER OPTIC
OH	OH	OVERHEAD WIRE
C	C	CABLE
E	E	ELECTRIC
G	G	GAS
T	T	TELEPHONE
F	F	FENCE
S	S	SILT FENCE
W	W	WETLAND BOUNDARY
L	L	LIMITS OF GRADING/CLEARING
IN	IN	INLET / CATCHBASIN
FL	FL	FLARED END-SECTION
CV	CV	GATE VALVE
HC	HC	HYDRANT
UP	UP	UTILITY POLE
SN	SN	SANITARY SEWER LABEL
ST	ST	STORM SEWER LABEL
WM	WM	WATER MAIN LABEL
PS	PS	SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)
CON	CON	CONCRETE
ASP	ASP	ASPHALT
MCD	MCD	MODIFIED CURB



SITE BENCHMARKS (NAVD88 DATUM):

- BM #200 = SET NAIL WITH TAG N/S POWER POLE. ELEV.=970.67
- BM #201 = SET NAIL WITH TAG W/S POWER POLE. ELEV.=973.22
- BM #202 = "X" ON NW BOLT OF TRAFFIC LIGHT POLE. ELEV.=981.54
- BM #204 = "X" ON NW CORNER CONCRETE RETAINING WALL. ELEV.=954.33



SANITARY SEWER FLOW CALCS

PROJECT: By: MJD
 JOB: 22-029
 Date: 7/29/2024

SANITARY SEWER BASIS OF DESIGN:	NUMBER OF UNITS	TOTAL REU
COFFEE SHOP (2.6 REU)	1	2.6
RESTAURANT (2.4 REU PER 1000 SF)	2545	6.11
RETAIL (0.2 REU PER 1000 SF)	3442	0.69
FUTURE DRIVETHROUGH (7.5 REU)	1	7.50
TOTAL	9	16.90

Average Flow

$Q_{avg} = 260 \text{ Gal. Per REU per day (assumed)}$
 $Q_{avg} = 2,264 \text{ GPD}$
 $Q_{avg} = \frac{2,264 \text{ GPD}}{1 \text{ day}} = 0.0262 \text{ gps}$
 $Q_{avg} = \frac{2,264 \text{ GPD}}{86,400 \text{ sec}} = 0.0262 \text{ gps}$
 $Q_{avg} = \frac{2,264 \text{ GPD}}{60 \text{ min}} = 1.57 \text{ gpm}$
 $Q_{avg} = \frac{2,264 \text{ GPD}}{1 \text{ day}} \times \frac{1 \text{ ft}^3}{7.48 \text{ gal}} = 0.0035 \text{ cfs}$
 $Q_{avg} = \frac{2,264 \text{ GPD}}{1 \text{ day}} \times \frac{1 \text{ ft}^3}{7.48 \text{ gal}} = 0.21 \text{ cfm}$

Peak Flow

$\text{Peaking Factor} = \frac{18 + \sqrt{(\text{population}/1000)}}{4 + \sqrt{(\text{population}/1000)}}$
 In order to determine the population to use in this equation
 Convert the Avg. Daily Flow of 2,264 GPD to equivalent population
 Assume: 100 GPCD
 $\text{Equivalent Population} = \frac{2,264 \text{ GPD}}{100 \text{ GPCD}} = 22,640 \text{ persons}$
 $\text{Peaking Factor} = \frac{18 + \sqrt{(22,640/1000)}}{4 + \sqrt{(22,640/1000)}} = 4.37$
 $Q_{peak} = Q_{avg} \times \text{Peaking Factor}$
 $Q_{peak} = 1.57 \text{ gpm} \times 4.37 = 6.88 \text{ gpm}$ which is equivalent to **0.02 cfs**

CAPACITY OF 8" SANITARY SEWER @ 1.00% SLOPE

USE MANNING'S EQUATION
 $Q = 1.49/n \times A \times R^{2/3} \times S^{1/2}$
 $Q = (1.49/0.013) \times (0.349) \times (0.167)^{2/3} \times (0.01)^{1/2}$
 $Q = 1.212 \text{ CFS}$

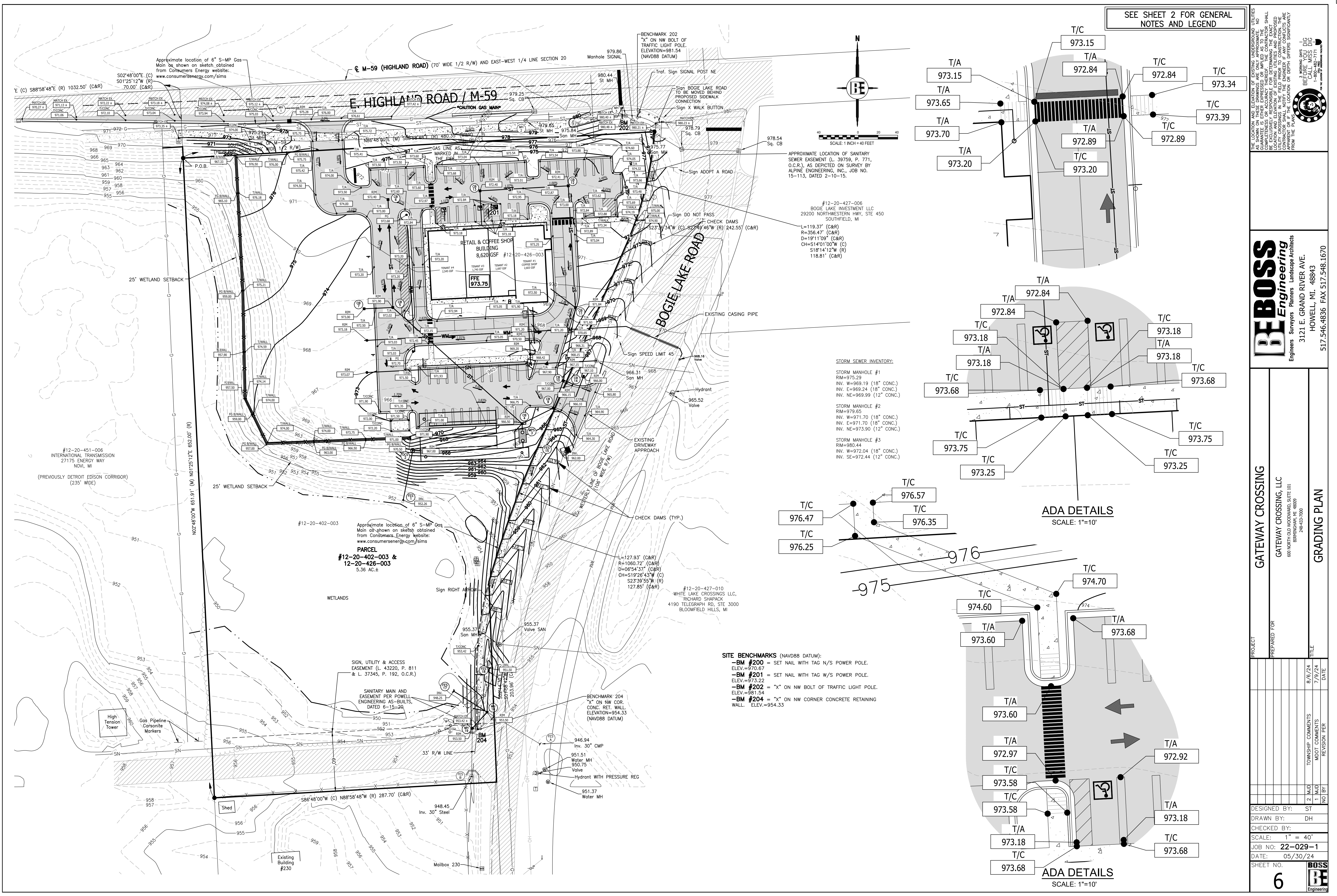
CONCLUSION:
 SINCE CAPACITY OF THE 8-INCH SEWER AT A SLOPE OF 1.00% IS GREATER THAN PEAK FLOW, A 8-INCH SEWER IS SUFFICIENT

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GATEWAY CROSSING
 GATEWAY CROSSING, LLC
 600 NORTH OGDENWOOD, SUITE 101
 BIRMINGHAM, MI 48009
 248-937-0000

PROJECT	PREPARED FOR	TITLE
GATEWAY CROSSING	GATEWAY CROSSING, LLC	UTILITY PLAN
DESIGNED BY:	DRAWN BY:	CHECKED BY:
ST	DH	
SCALE: 1" = 40'	JOB NO: 22-029-1	DATE: 05/30/24
TOWNSHIP COMMENTS: 8/6/24	MDOT COMMENTS: 7/9/24	REVISION PER: NO BY:
2 MJD	1 MJD	
SHEET NO. 5		





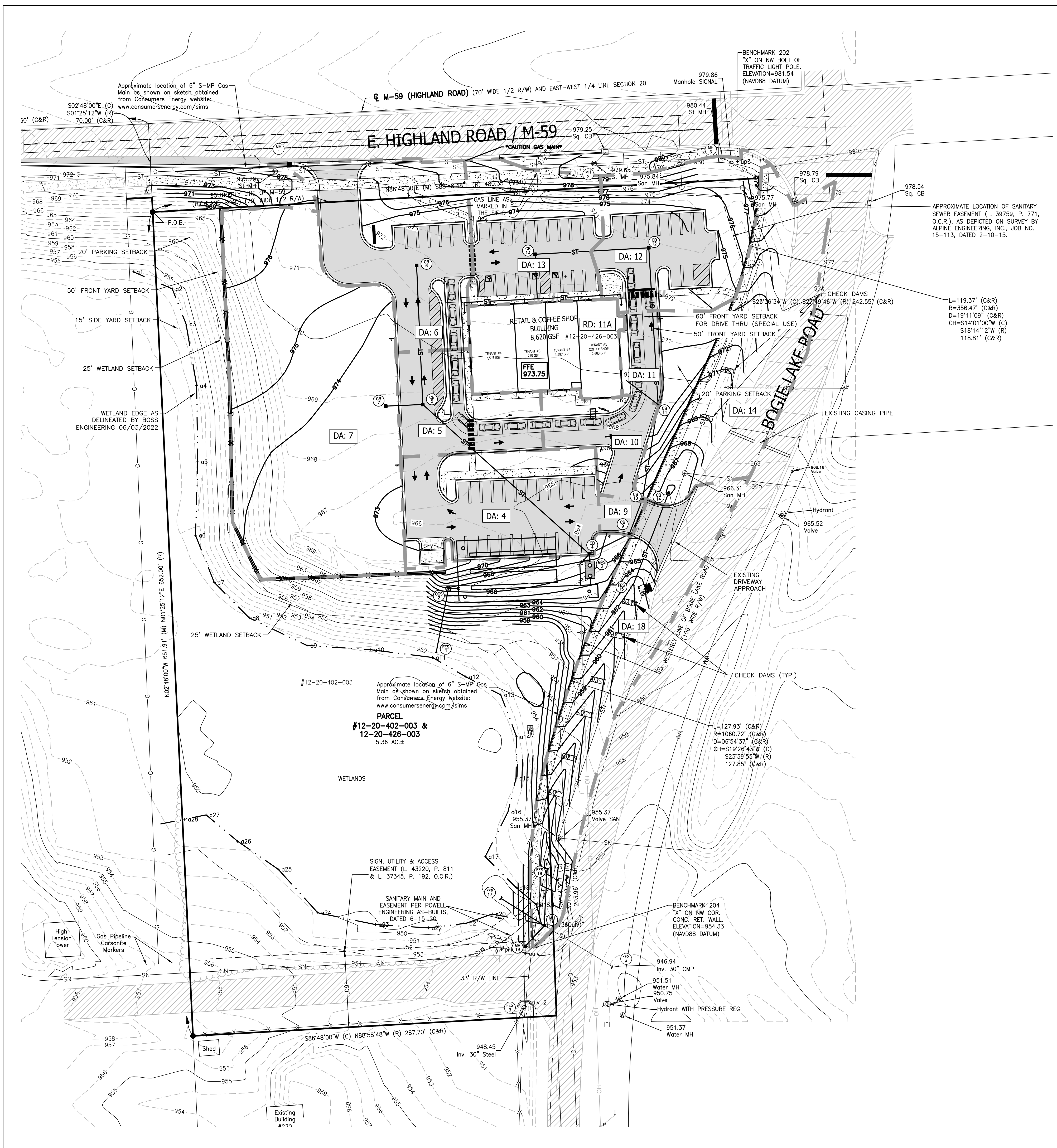
SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OF THESE UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES CROSSING IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE PLANS. BE ENGINEERING, INC. 1-800-487-7171

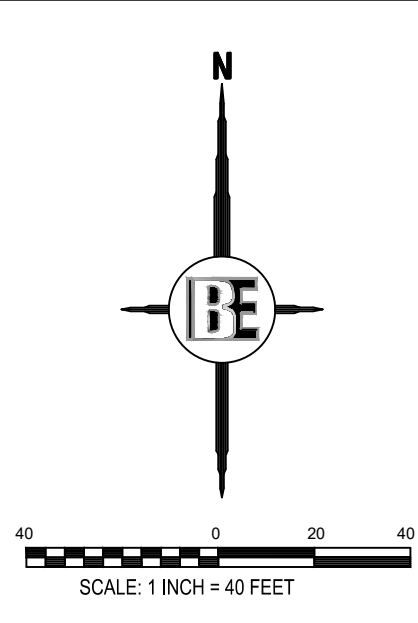
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GATEWAY CROSSING
 GATEWAY CROSSING, LLC
 600 NORTH OLD WOODWARD, SUITE 101
 BIRMINGHAM, MI. 38209
 248-433-7000

PROJECT	PREPARED FOR	TITLE
GATEWAY CROSSING	GATEWAY CROSSING, LLC	GRADING PLAN
DESIGNED BY:	ST	TOWNSHIP COMMENTS:
DRAWN BY:	DH	MDOT COMMENTS:
CHECKED BY:		REVISION PER
SCALE:	1" = 40'	DATE
JOB NO:	22-029-1	
DATE:	05/30/24	
SHEET NO.	6	



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



LEGEND

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
900	900.08	CONTOUR
T/C	XXXXXX	SPOT ELEVATION
FF	FF	FINISHED FLOOR ELEVATION
E	T/A	FINISHED GRADE ELEVATION
T/C	T/C	TOP OF ASPHALT
F/W	T/W	TOP OF CURB / CONCRETE
F/L	F/L	TOP OF WALK
T/P	T/P	FLOW LINE
B/P	B/P	TOP OF PIPE
RM	RM	RIM ELEVATION
INV	INV	INVERT ELEVATION
MH	MH	MANHOLE STRUCTURE
IN	IN	INLET STRUCTURE
CB	CB	CATCHBASIN STRUCTURE
RY	RY	REAR YARD STRUCTURE
ES	ES	END-SECTION
OV	OV	GATE VALVE STRUCTURE
HY	HY	HYDRANT
UP	UP	UTILITY POLE
SN	SN	SANITARY SEWER
SL	SL	SANITARY LEAD
FM	FM	FORCE MAIN
PS	PS	PRESSURE SEWER
ST	ST	STORM SEWER
WM	WM	WATER MAIN
WL	WL	WATER LEAD
FO	FO	FIBER OPTIC
OH	OH	OVERHEAD WIRE
C	C	CABLE
E	E	ELECTRIC
T	T	TELEPHONE
L	L	FENCE
X	X	SILT FENCE
W	W	WETLAND BOUNDARY
○	○	LIMITS OF GRADING/CLEARING
□	□	INLET / CATCHBASIN
○	○	FLARED END-SECTION
○	○	GATE VALVE
○	○	HYDRANT
○	○	UTILITY POLE
○	○	SIGN
○	○	NOT FIELD VERIFIED
○	○	TO BE REMOVED
○	○	SANITARY SEWER LABEL
○	○	STORM SEWER LABEL
○	○	WATER MAIN LABEL
○	○	SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)
○	○	CONCRETE
○	○	ASPHALT
○	○	MODIFIED CURB

STORMWATER NARRATIVE

EXISTING: THE EXISTING SITE IS A HEAVILY SLOPED SITE WITH A WETLAND IN THE SOUTHWEST. THE SITE DRAINS TO THE SOUTH EITHER TO THE WETLAND OR TO A SERIES OF CULVERTS IN THE SOUTH WITH AN ULTIMATE OUTLET TO THE SOUTHEAST THROUGH A 30" CMP PIPE.

PROPOSED: THE PROPOSED SITE WILL UTILIZE A SERIES OF STORM STRUCTURES IN ORDER TO BRING ALL RUNOFF TO THE PROPOSED BASIN IN THE SOUTH. THE STORM SYSTEM WILL UTILIZE A MECHANICAL PRETREATMENT STRUCTURE IN REPLACEMENT OF A FOREBAY AND DRAIN INTO THE BASIN WHERE IT WILL EVENTUALLY OUTLET TO THE WETLAND TO THE SOUTH. THE SYSTEM IS SET TO HANDLE THE RUNOFF EXPECTED FROM DEVELOPMENT OF THE WEST SIDE OF THE SITE AS WELL AS THE ENTIRE SITE PROPOSED. ONCE AGAIN, THE WETLAND WILL ULTIMATELY OUTLET VIA A 30" RCP PIPE TO THE SOUTHEAST.

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO FIELD SURVEY WAS CONDUCTED TO VERIFY THE LOCATION OR DEPTH OF UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND EASEMENTS FROM THE LOCAL AND STATE AUTHORITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND EASEMENTS FROM THE LOCAL AND STATE AUTHORITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND EASEMENTS FROM THE LOCAL AND STATE AUTHORITIES.

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DRAINAGE AREA TABLE

DRAINAGE AREA TABLE (TRIBUTARY TO BASIN)				
DRAINAGE AREA	TOTAL AREA (AC)	IMP. AREA (AC)	C VALUE	A°C
4	0.30	0.25	0.83	0.25
5	0.17	0.15	0.85	0.14
6	0.35	0.28	0.81	0.28
7	0.81	0.76	0.91	0.73
9	0.02	0.02	0.95	0.02
10	0.11	0.09	0.79	0.09
11	0.05	0.04	0.85	0.04
11A	0.20	0.20	0.95	0.19
12	0.31	0.14	0.55	0.17
13	0.24	0.16	0.69	0.17
13B	0.00	0.00	0.95	0.00
13C	0.00	0.00	0.95	0.00
TOTAL	2.56	2.10	0.81	2.08

DRAINAGE AREA TABLE (NOT-TRIBUTARY TO BASIN)				
DRAINAGE AREA	TOTAL AREA (AC)	IMP. AREA (AC)	A°C	
14	0.47	0.19	0.50	0.24
18	0.40	0.17	0.53	0.21

FUTURE DRAINAGE AREA REPRESENTS ESTIMATED AREA TO BE CONSTRUCTED ON THE WEST SIDE OF THE SITE FLOWING THROUGH CB 7

SEE SHEET 13 FOR BASIN DETAIL & STORM DRAINAGE CALCULATIONS

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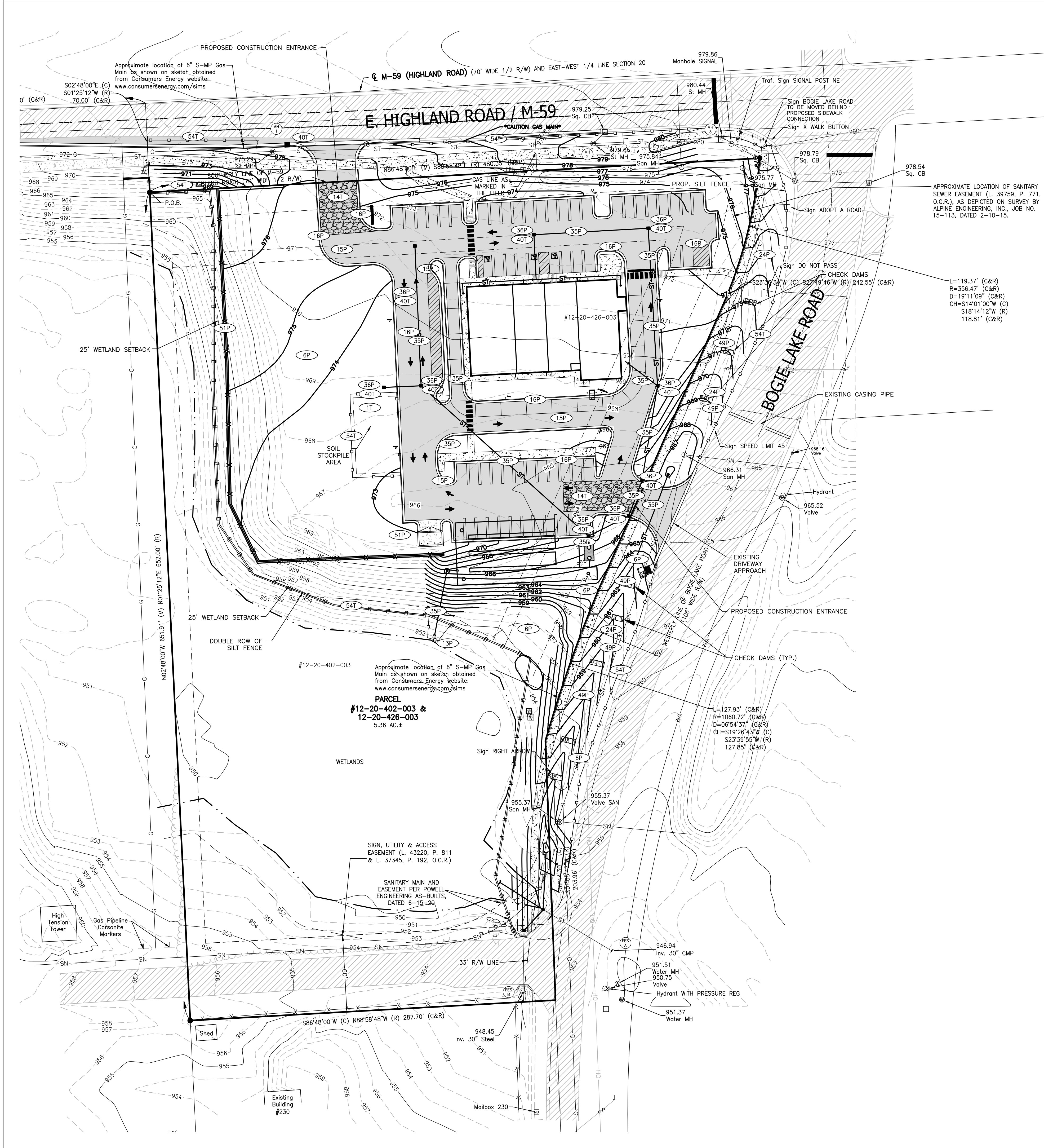
DRAINAGE PLAN

PROJECT	PREPARED FOR	TITLE
GATEWAY CROSSING	GATEWAY CROSSING, LLC	DRAINAGE PLAN

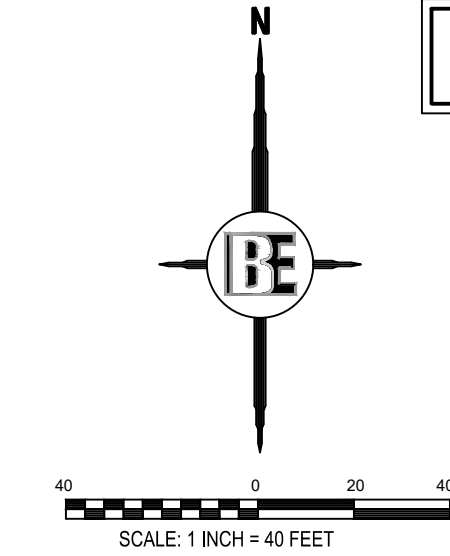
TOWNSHIP COMMENTS	DATE
2 I.M.D.	8/6/24
1 I.M.D.	7/9/24
NO BY	

DESIGNED BY:	ST
DRAWN BY:	JS
CHECKED BY:	
SCALE:	1" = 40'
JOB NO:	22-029-1
DATE:	05/30/24
SHEET NO.	7

BEBOSS Engineering



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



LEGEND

PROPOSED (PR)	EXISTING (EX)	DESCRIPTION
900	900.00	CONTOUR
T/C	T/C	FINISHED FLOOR ELEVATION
FF	FF	FINISHED GRADE ELEVATION
T/A	T/A	TOP OF ASPHALT
T/C	T/C	TOP OF CURB / CONCRETE
T/W	T/W	TOP OF WALK
F/L	F/L	FLOW LINE
T/P	T/P	TOP OF PIPE
B/P	B/P	BOTTOM OF PIPE
RM	RM	RIM ELEVATION
INV	INV	INVERT ELEVATION
MH	MH	MANHOLE STRUCTURE
IN	IN	INLET STRUCTURE
CB	CB	CATCHBASIN STRUCTURE
RY	RY	REARWARD STRUCTURE
ES	ES	END-SECTION
OV	OV	GATEVALVE STRUCTURE
HY	HY	HYDRANT
UP	UP	UTILITY POLE
SN	SN	SANITARY SEWER
SL	SL	SANITARY LEAD
FM	FM	FORCE MAIN
PS	PS	PRESSURE SEWER
ST	ST	STORM SEWER
WM	WM	WATER MAIN
WL	WL	WATER LEAD
FO	FO	FIBER OPTIC
OH	OH	OVERHEAD WIRE
C	C	CABLE
E	E	ELECTRIC
G	G	GAS
T	T	TELEPHONE
F	F	FENCE
S	S	SILT FENCE
W	W	WETLAND BOUNDARY
L	L	LIMITS OF GRADING/CLEARING
IN	IN	INLET / CATCHBASIN
FL	FL	FLARED END-SECTION
GV	GV	GATE VALVE
HY	HY	HYDRANT
UP	UP	UTILITY POLE
SN	SN	SIGN
NFV	NFV	NOT FIELD VERIFIED TO BE REMOVED
SS	SS	SANITARY SEWER LABEL
SS	SS	STORM SEWER LABEL
WM	WM	WATER MAIN LABEL
SE	SE	SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)
C	C	CONCRETE
A	A	ASPHALT
M	M	MODIFIED CURB

NRCS EXISTING SOILS DATA:
 B FOX SANDY LOAM, 2-6% SLOPES
 BID SEBEWA LOAM, 0-2% SLOPES
 AID HOUGHTON & ADRIAN MUCK
 B FOX-RIDDLES SANDY LOAM, 6-12% SLOPES
 A UDIPSAMMENTS, UNDULATING

NO.	SYMBOL	DESCRIPTION
1	[Symbol]	STRIPPING & STOCKPILE TOPSOIL TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A OVERSEER STOCKPILE SHOULD BE TEMPORARILY SEED
6	[Symbol]	SEEDING WITH MULCH AND/OR MATING FACILITATES ESTABLISHMENT OF VEGETATION COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY FRESH TRACKS IN SMALL QUANTITIES BY UNEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL SEE
13	[Symbol]	RP-500, RUBBLE, GRASSING USED WHERE VEGETATION IS NOT EASILY ESTABLISHED EFFECTIVE FOR HIGH VELOCITIES OR HIGH CONCENTRATIONS PROMPTS RUNOFF TO WITHSTAND AND DISPERSES ENERGY FLOW AT SYSTEM JOINTS
14	[Symbol]	AGGREGATE COVER STABILIZES SOIL SURFACE THIS MINIMUM EROSION PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER MAY BE USED AS PART OF PERMANENT SOIL CONSTRUCTION OF PAVED AREAS
15	[Symbol]	PAVING PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VELOCITY REGULAR SURFACE WILL HELP SLOW VELOCITY
16	[Symbol]	CURB & GUTTER KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE COLLECTS AND CONDUCTS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAYS
24	[Symbol]	GRASSED WATERWAY MUCH MORE STABLE FORM OF DRAINAGEWAY THAN GRADE CHANNEL GRASS TENDS TO SLOW RUNOFF AND FILTER OUT SEDIMENT USED WHERE GRADE CHANNEL WOULD BE ERODED
35	[Symbol]	GRASS STRIP DRAINAGE SYSTEM REMOVES COLLECTED RUNOFF FROM SLOPE, PARTICULARLY FROM PAVED AREAS CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF CONDUCTS RUNOFF TO MUNICIPAL SEWER SYSTEM OR STABILIZED OUTFALL LOCATION USE CAREFUL DESIGN TO COLLECT SEDIMENT
36	[Symbol]	CATCH BASIN, DRAIN INLET COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET
40	[Symbol]	NETT SEDIMENT FILTER EASY TO SHAKE COLLECTS SEDIMENT MAY BE CLEANED AND EXPANDED AS NEEDED
49	[Symbol]	CHECK DAMS REDUCES FLOW VELOCITY CATCHES SEDIMENT CAN BE CONSTRUCTED OF LOGS, STRAW, HAY, ROCK, LUMBER, WISKEY OR SAND BAGS
51	[Symbol]	RETAINING WALL REDUCES GRADIENT WHERE SLOPES ARE EXTREMELY STEEP PROMPTS RETENTION OF EXISTING VEGETATION, KEEPING SOIL STABLE IN CRITICAL AREAS MAINTAINS MAINTENANCE (SEE DETAIL THIS SHEET)
54	[Symbol]	SILT FENCE USES GEOTEXTILE FABRIC AND POST OR POLES, EASY TO CONSTRUCT AND LOCATE AS NECESSARY.

SOIL EROSION CONTROL NOTES:

- A SOIL EROSION CONTROL PERMIT SHALL BE OBTAINED FROM THE OCWRP PRIOR TO CONSTRUCTION.
- SEE CONSTRUCTION AND EROSION CONTROL DETAILS ON SHEET 22 FOR ADDITIONAL OAKLAND COUNTY TEMPORARY CONTROLS REQUIREMENTS.
- APPROPRIATE SOIL EROSION CONTROL MEASURES SHALL BE ESTABLISHED PRIOR TO CONSTRUCTION AND CONTINUOUSLY MAINTAINED BY THE CONTRACTOR UNTIL VEGETATION HAS BEEN RE-ESTABLISHED.
- ANY MUD OR DEBRIS TRACKED ONTO ANY STREET ADJACENT TO THE PROJECT SHALL BE REMOVED IMMEDIATELY. IF A TOWNSHIP AGENT REQUESTS IN WRITING THAT THE ROAD BE CLEANED, THE PROPRIETOR WILL HAVE 12 HOURS TO CLEAN IT. IF IT IS NOT CLEANED WITHIN 12 HOURS, THE TOWNSHIP WILL HIRE IT TO BE COMPLETED AND INVOICE THE PROPRIETOR BEFORE THE PERFORMANCE BOND IS RELEASED.
- CATCH BASIN INLET PROTECTION SHALL BE INSTALLED ON ALL NEW INLETS AS THEY ARE CONSTRUCTED.

PROPOSED CONST. SCHEDULE FOR THE YEAR 2024-2025

ACTIVITY	OCT	NOV	DEC	APRIL	MAY	JUNE	JULY	AUG
UNDERGROUND UTILITY								
BUILDING DEMO/CONST.								
PAVING								
LANDSCAPING								
SEED & MULCH								
SEED CLOSOUT								

CONTROLS & MEASURES POST CONSTRUCTION SEQUENCE

ACTIVITY	WEEKLY	MONTHLY	AS REQUIRED
MAINTAIN LANDSCAPING, REPLACE MULCH	X	X	X
CLEAN INLETS		X	X
COLLECT LITTER	X		X
SWEEP PARKING LOT		X	X

CONTROLS & MEASURES NARRATIVE

ACTIVITY	DESCRIPTION
MAINTAIN LANDSCAPING, REPLACE MULCH	COLLECT GRASS, TREE, AND SHRUB CLIPPINGS. DISPOSE IN APPROVED CONTAINER. REPLACE DEAD 500, TREES AND SHRUBS.
CLEAN INLETS	REMOVE LITTER, SEDIMENT, AND DEBRIS. DISPOSE OF IN APPROVED LANDFILL.
COLLECT LITTER	DISPOSE OF WITH INLET DEBRIS.
SWEEP PARKING LOT	REMOVE MUD, DIRT, GREASE AND OIL WITH PERIODIC SWEEPING
DUST CONTROL	SPRINKLE WATER AS NEEDED

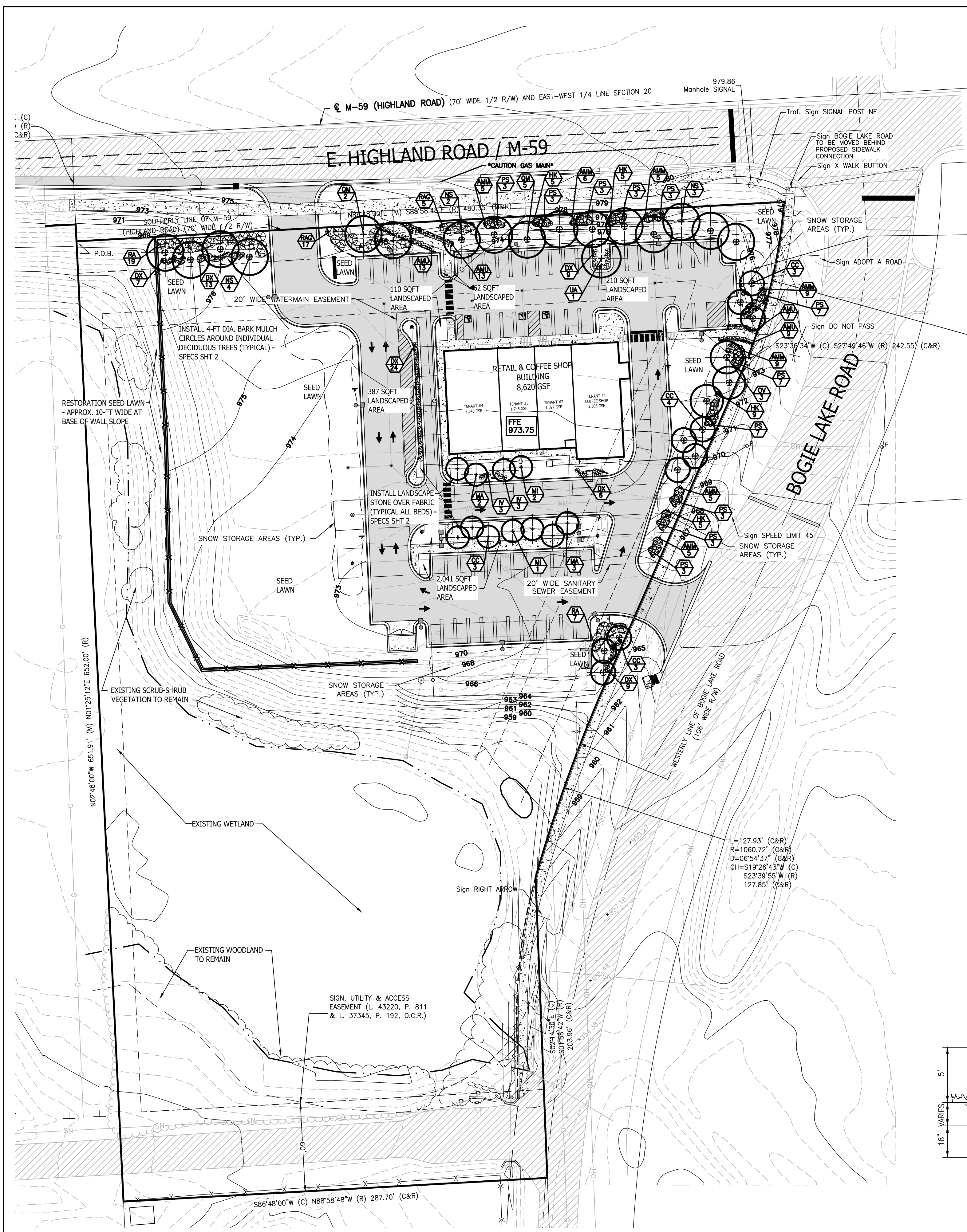
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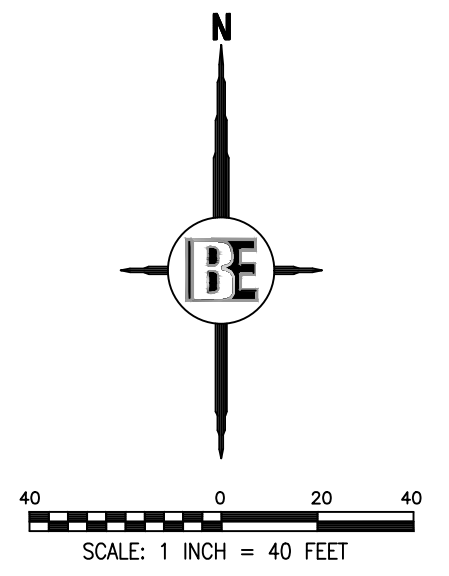
SOIL EROSION & SEDIMENTATION PLAN

PROJECT	DATE	TOWNSHIP COMMENTS	DATE
	8/6/24		
	7/9/24		

DESIGNED BY: ST
 DRAWN BY: DH
 CHECKED BY:
 SCALE: 1" = 40'
 JOB NO: 22-029-1
 DATE: 05/30/24
 SHEET NO. 8



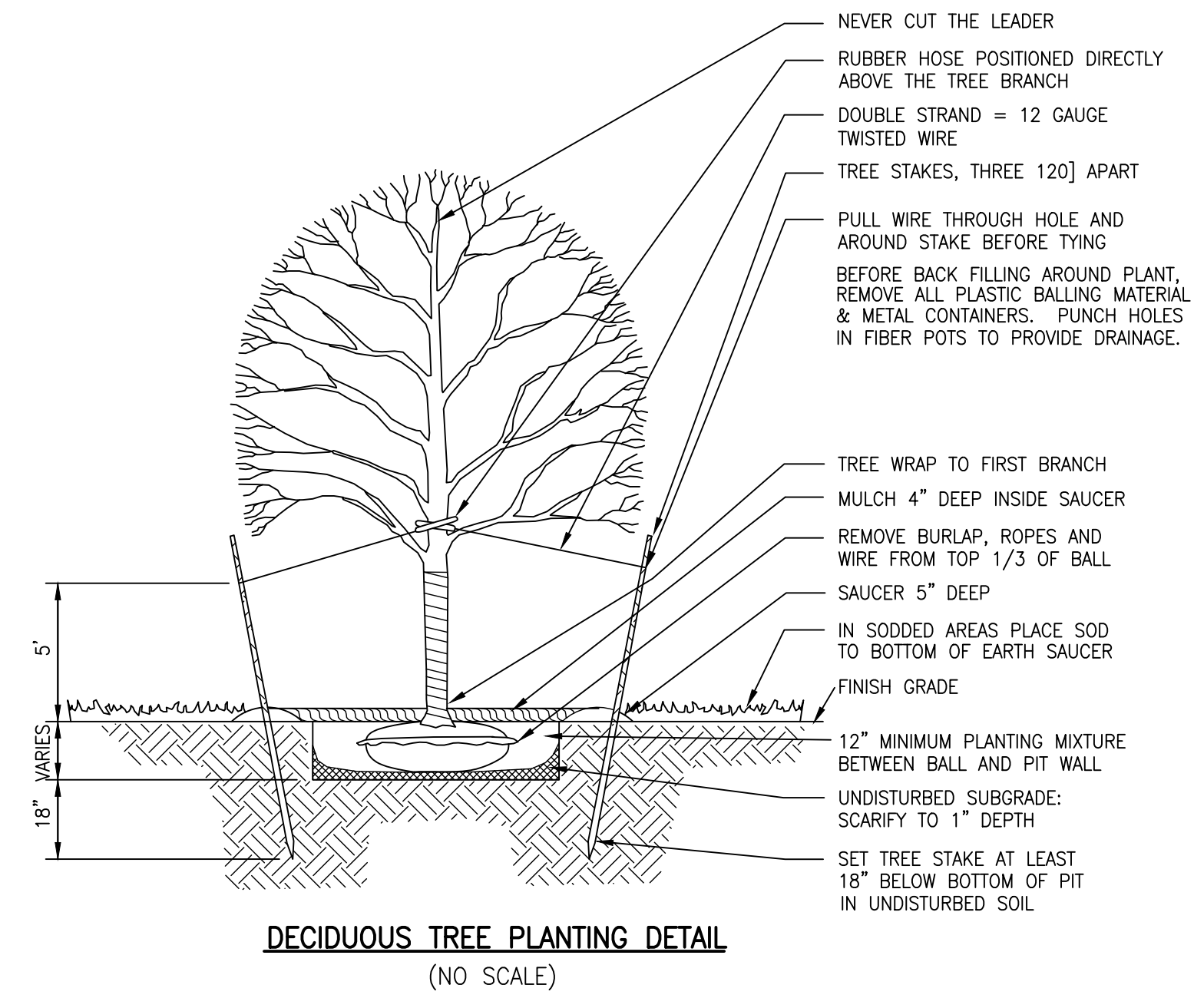
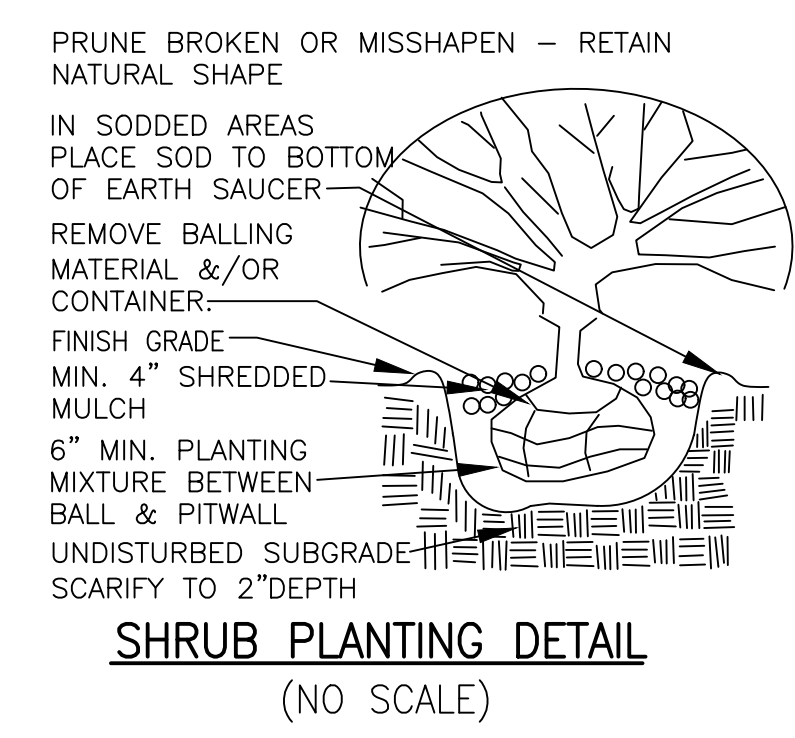
SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



SUPPLEMENTAL LANDSCAPE NOTES

- REFER TO GENERAL NOTES SHEET 2 FOR PROJECT LANDSCAPE NOTES INCLUDING LANDSCAPE IRRIGATION REQUIREMENTS AND PLANT WARRANTIES
- ANY SUBSTITUTIONS OF PLANT MATERIAL FROM THE APPROVED SITE PLAN WILL BE APPROVED BY THE PLANNING DEPARTMENT PRIOR TO INSTALLATION.
- NO TREES SHALL BE PLANTED CLOSER THAN 4-FT TO ANY PROPERTY LINE.

KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SIZE	REMARK
DECIDUOUS TREES					
CC	13	<i>Carpinus caroliniana</i> 'Urbidge'	Rising Fire American Hornbeam	2-1/2"	cal. B-B
NS	9	<i>Myrica Sylvatica</i>	Blackgum	2-1/2"	cal. B-B
OV	3	<i>Ostrya virginiana</i> 'JFS-KW5'	Autumn Treasure Hophornbeam	2-1/2"	cal. B-B
MA	5	<i>Malus 'Adirondack'</i>	Adirondack Flowering Crab	2-1/2"	cal. B-B
MI	1	<i>Malus ioensis</i> 'Prairie Rose'	Prairie Rose Flowering Crab	2-1/2"	cal. B-B
QM	7	<i>Quercus macrocarpa</i> 'JFS-KW3' PP 22815	Urban Pinnacle Oak	2-1/2"	cal. B-B
UA	1	<i>Ulmus americana</i> 'Princeton'	Princeton Elm	2-1/2"	cal. B-B
DECIDUOUS SHRUBS					
AMM	43	<i>Aronia melanocarpa</i> 'Autumn Magic'	Autumn Magic Black Chokeberry	30"	ht./#5 Cont.
AMU	41	<i>Aronia melanocarpa</i> 'UCONNAM165'	Low Scape Mound Black Chokeberry	30"	ht./#5 Cont.
DX	68	<i>Diervilla 'GZX88544'</i>	Kodiak Orange Diervilla	30"	ht./#5 Cont.
HK	21	<i>Hypericum kalmianum</i> 'Ames'	Ames St. John's Wort	30"	ht./#5 Cont.
IV	7	<i>Itea virginica</i> 'Spirch'	Little Henry Sweetgum	30"	ht./#5 Cont.
RAG	22	<i>Rhus aromatica</i> 'Gro-Low'	Gro-Low Fragrant Sumac	30"	ht./#5 Cont.
RA	42	<i>Rhus aromatica</i> 'Fine Textured Compact Select A'	Lacette Fragrant Sumac	30"	ht./#5 Cont.
CONIFER SHRUBS					
PS	45	<i>Pinus strobus</i> 'Niagara Falls'	Niagara Falls Eastern White Pine	36"	ht./#5 Cont.



ZONED: GENERAL BUSINESS (GB)

ADJACENT ZONING:
 NORTH: M-59 ROW - (E) GREENBELT REQUIRED
 EAST: BOGIE LAKE RD ROW - (E) GREENBELT REQUIRED
 SOUTH: SUBURBAN FARMING (SF) - (A-2 OR B&D OR C REQUIRED)
 WEST: SUBURBAN FARMING (SF) - (A-2 OR B&D OR C REQUIRED)

LANDSCAPE ORDINANCE REQUIREMENTS (SECTION 5.19):
 (C) SCREENING - GREENBELT: MIN. 20 FT. WIDTH; 1 LARGE DECIDUOUS OR EVERGREEN TREE + 8 SHRUBS / 30 LFT. GREEN BELTS MAY BE SUBSTITUTED IN PART WITH A 2.5-FT HGT MASONRY SCREEN WALL + 5-FT WIDTH WOODEN COMMISSION.

(E) INTERIOR LANDSCAPING REQUIREMENTS:
 MIN. 15% OF THE TOTAL LOT AREA, AREAS SHALL BE GROUPED NEAR ALL BUILDING ENTRANCES, BUILDING FOUNDATIONS, PEDESTRIAN WALKWAYS, SERVICE AREAS, ADJACENT TO FENCES, WALLS, OR RIGHTS OF WAY. 1 LARGE DECIDUOUS, SMALL ORNAMENTAL DECIDUOUS, OR EVERGREEN TREE + 5 SHRUBS / 300 SQFT OF AREA.

(G) PARKING LOT LANDSCAPING (LOTS OVER 10 SPACES):
 COMMERCIAL/OFFICE USES - 20 SQFT OF LANDSCAPE AREA / SPACE + 1 LARGE DECIDUOUS TREE OR SMALL DECIDUOUS ORNAMENTAL TREE + 3 SHRUBS / 100 SQFT OF LANDSCAPE AREA. PLANTING ISLANDS CONTAINING TREES SHALL BE CURBED, MIN 5-FT WIDE & MIN 50 SQFT

LANDSCAPE CALCULATIONS:
 HIGHLAND ROAD GREENBELT REQUIREMENT:
 480 LFT / 30 = 16 LARGE DECIDUOUS OR EVERGREEN TREES + (16 x 8) 128 SHRUBS
 BOGIE LAKE ROAD GREENBELT REQUIREMENT:
 630 LFT / 30 = 21 LARGE DECIDUOUS OR EVERGREEN TREES + (21 x 8) 168 SHRUBS

INTERIOR LANDSCAPING REQUIREMENTS:
 LOT AREA = 216,187 NET (NOT INCL ENTRANCE DRIVE R.O.W. EASEMENT)
 216,187 x 0.15 = 32,428 SQFT REQUIRED LANDSCAPE AREA
 32,428 / 300 = 108 LARGE DECIDUOUS, SMALL ORNAMENTAL, OR EVERGREEN TREES + (108 x 5) 540 SHRUBS

PARKING LOT LANDSCAPING:
 59 TOTAL PARKING SPACES PROPOSED AT 20 SQFT/SPACE
 20 x 59 = 1,180 SQFT OF LANDSCAPING + 1,180 / 100 = 12 LARGE DECIDUOUS TREES OR SMALL ORNAMENTAL TREES + (12 x 3) = 36 SHRUBS

PROVIDED:
 HIGHLAND ROAD GREENBELT: 16 DECIDUOUS TREES PROVIDED + 128 SHRUBS
 BOGIE LAKE ROAD GREENBELT: DUE TO LIMITATIONS OF SEVERAL UTILITY EASEMENTS, WETLAND & SIDEWALK ENCROACHMENTS INTO POTENTIAL PLANTING AREAS, PROPOSE LANDSCAPING OF DEVELOPED PORTION ONLY. = 400 LFT = 400 / 30 = 13 DECIDUOUS TREES + (13 x 3) 104 SHRUBS

INTERIOR LANDSCAPING - REQUEST WAIVER FROM REQUIREMENT: A LARGE WETLAND AND WOODED AREA ARE TO REMAIN. THIS CONSTITUTES APPROXIMATELY 100,300 SQFT OF OPEN SPACE OR 46.4% OF THE OVERALL SITE AND INCLUDES APPROXIMATELY 40-55 MATURE EXISTING TREES. REQUEST WAIVER AS ALLOWED UNDER SECTIONS 5.19 (B) VI AND (C) V.

PARKING LOT LANDSCAPING: 12 DECIDUOUS TREES, 36 SHRUBS AND 2,810 SQFT OF LANDSCAPE AREAS

SCREENING TO WEST & SOUTH - REQUEST WAIVER FROM REQUIREMENTS:
 TO THE SOUTH - A LARGE WETLAND WILL REMAIN ON THE PROPERTY ALONG WITH A HEAVILY WOOD BORDER BEFORE THE ENTRANCE TO THE ADJACENT DEVELOPMENT. THE WETLAND EXTENDS APPROX. 275-FT SOUTH OF THE DEVELOPED PORTION OF THE SITE AND THE WOODLAND IS ANOTHER 25-FT TO 125-FT IN WIDTH TO THE DRIVE. THIS IS PROPOSED TO PROVIDE AN EQUIVALENT BUFFER IN WIDTH AND DENSITY TO REQUIREMENTS.

TO THE WEST - SIMILARLY A LARGE WETLAND WILL REMAIN ON THE PROPERTY AND THIS WETLAND EXTENDS BEYOND PROPERTY ANOTHER APPROX. 900-FT ALONG M-59. A HIGH-VOLTAGE UTILITY CORRIDOR IS ALSO INCLUDED IN THIS AREA THAT PRECLUDES DEVELOPMENT ANY CLOSER THAN THE EXISTING 400-FT FROM THE PROPOSED DEVELOPED AREA. THIS IS PROPOSED TO PROVIDE AN EQUIVALENT BUFFER TO REQUIREMENTS.

REQUEST A WAIVER / REDUCTION OF REQUIRED LANDSCAPING TO THE SCREENING TO THE WEST AND SOUTH AS ALLOWED UNDER SECTIONS 5.19 (B) VI AND (C) V.

STATE OF MICHIGAN
 PATRICK L. CLEARY
 LANDSCAPE ARCHITECT
 No. 3901001619
 LICENSED LANDSCAPE ARCHITECT

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 Engineering
 Planners Landscape Architects
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 HOWELL, MI. 48843
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GATEWAY CROSSING

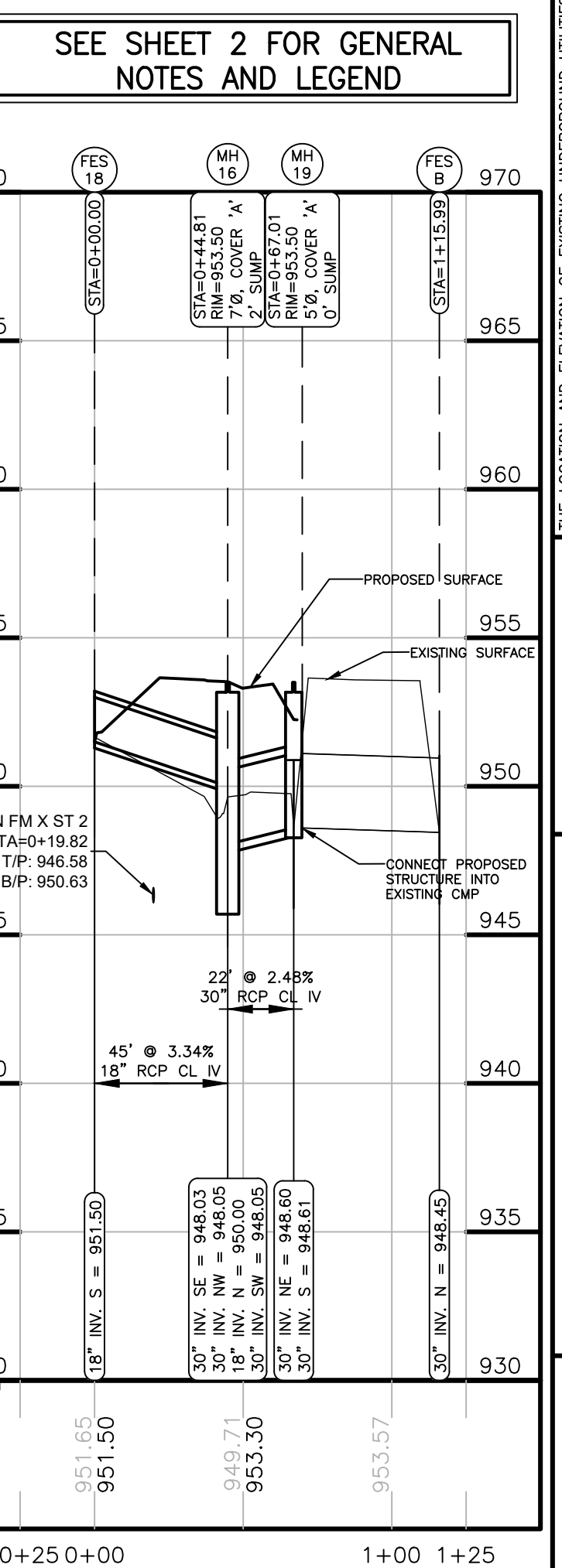
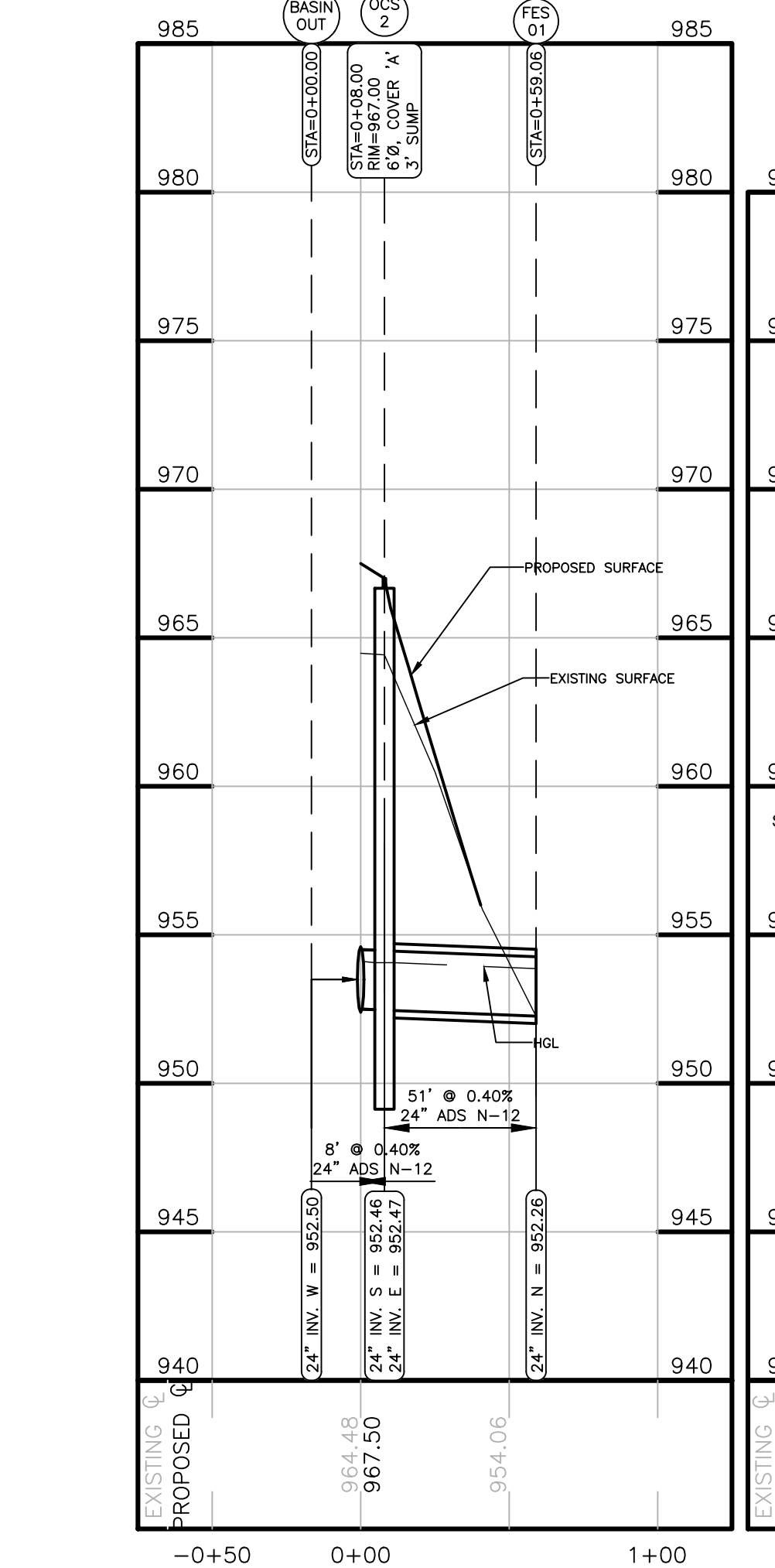
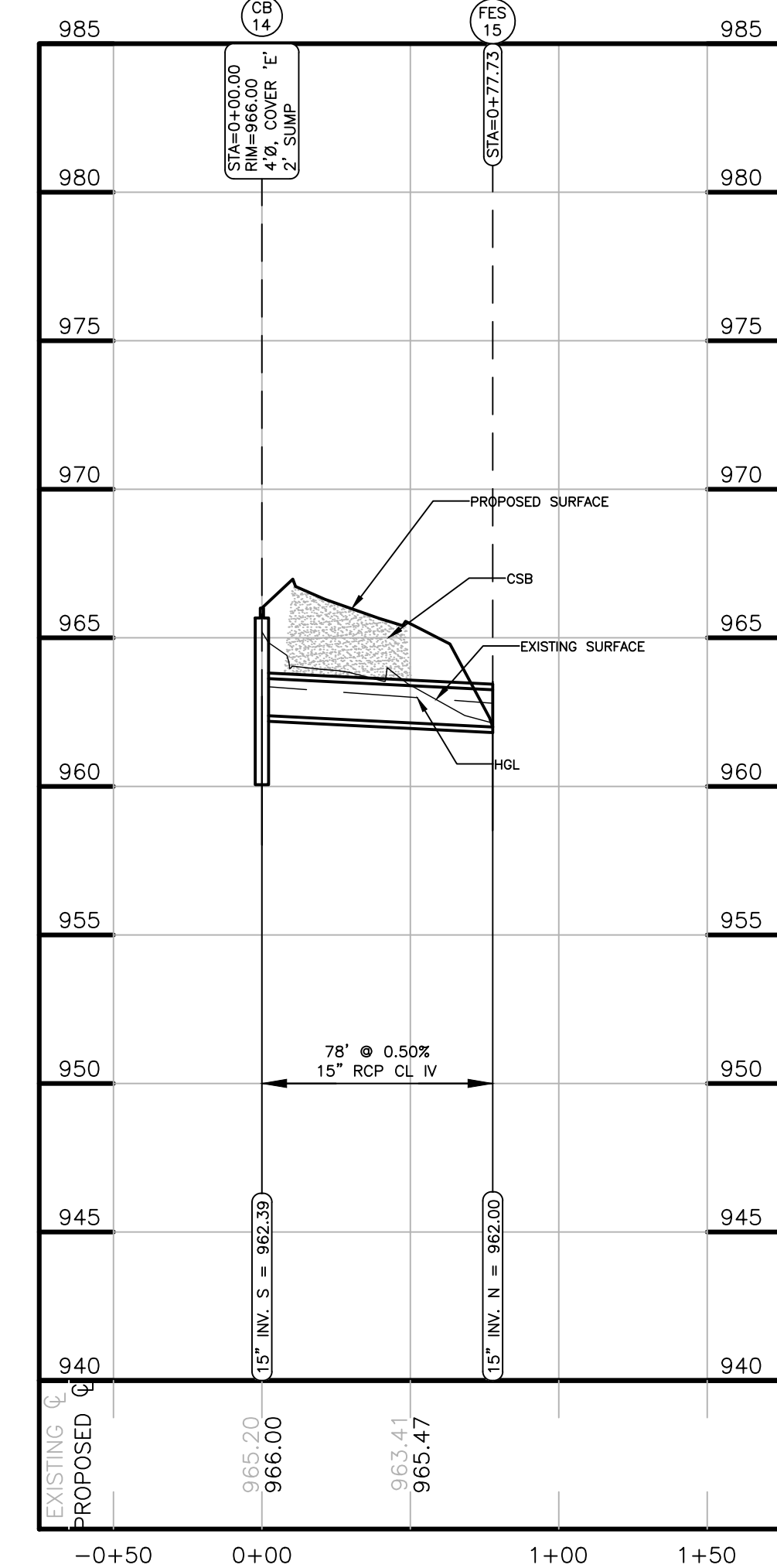
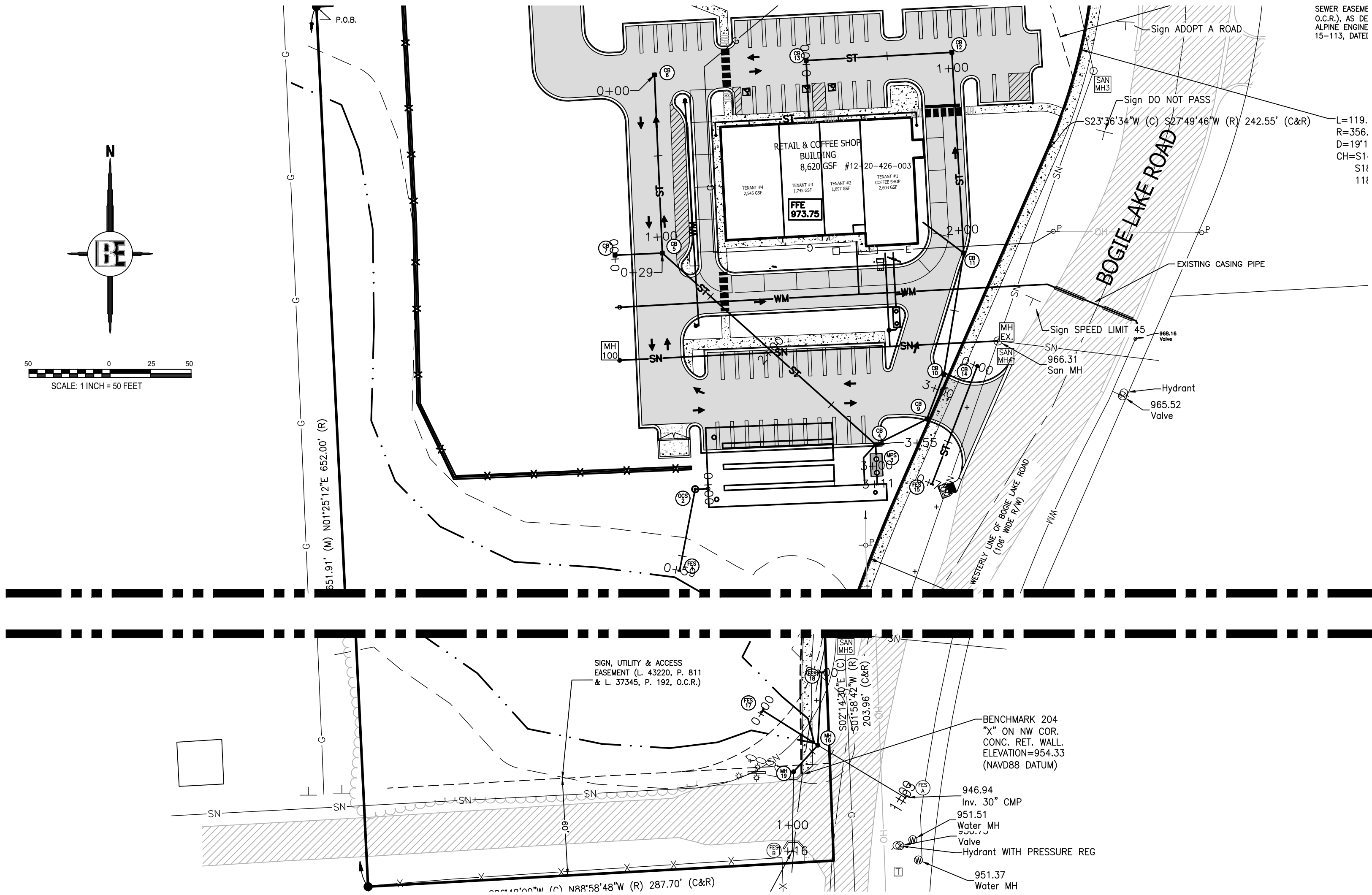
PROJECT: GATEWAY CROSSING, LLC
 600 NORTH OLD WOODWARD, SUITE 101
 BIRMINGHAM, MI 48009
 248-433-7000

PREPARED FOR: GATEWAY CROSSING, LLC

TITLE: LANDSCAPE PLAN

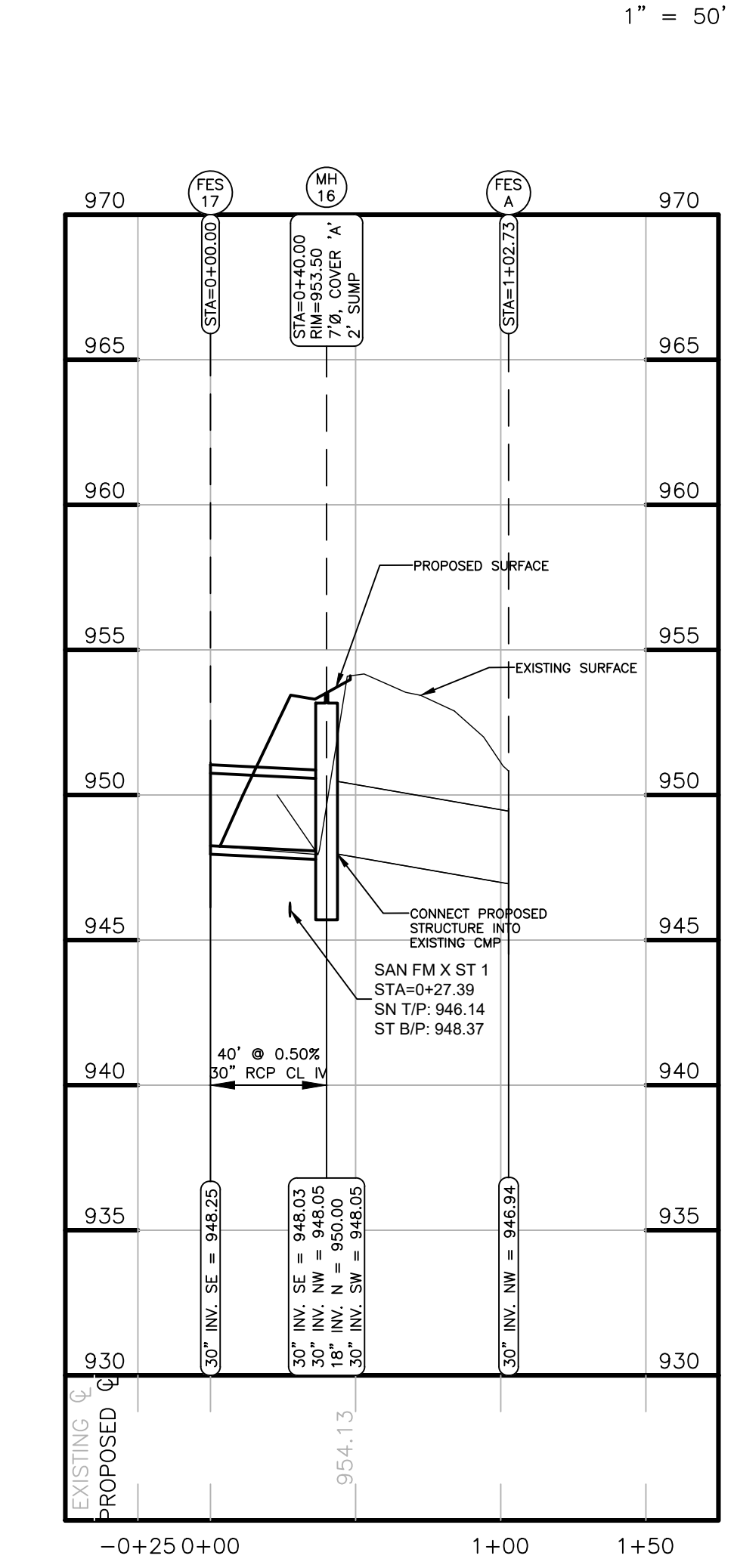
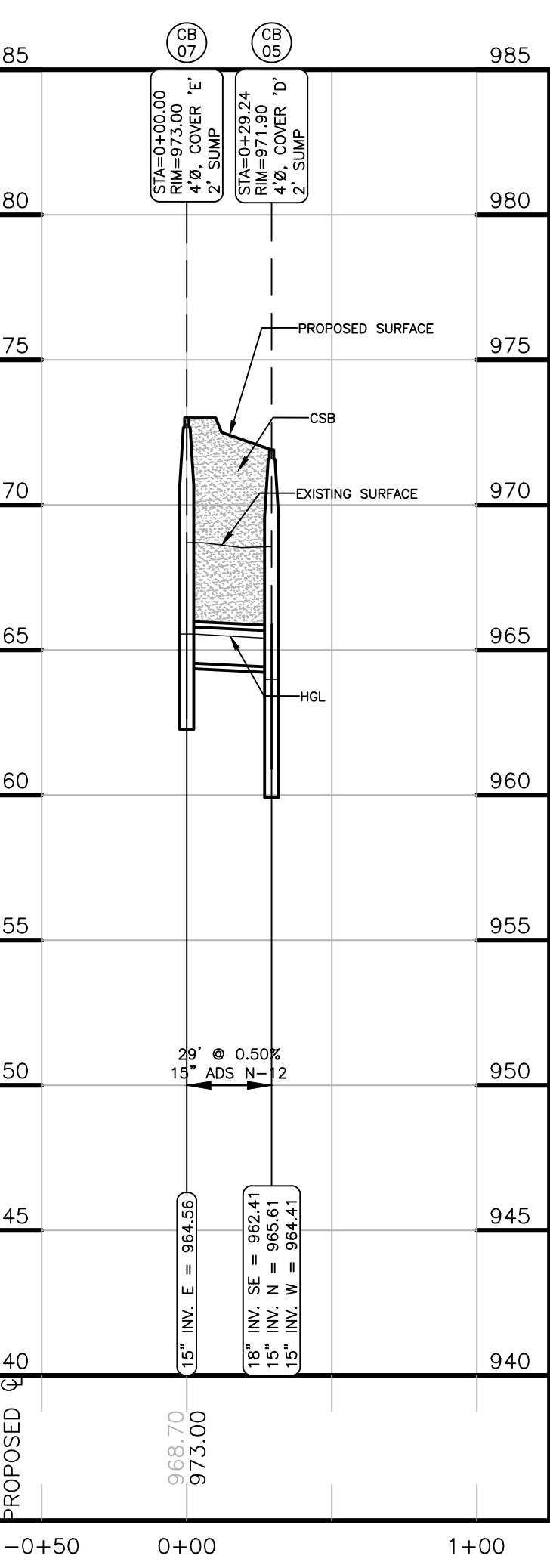
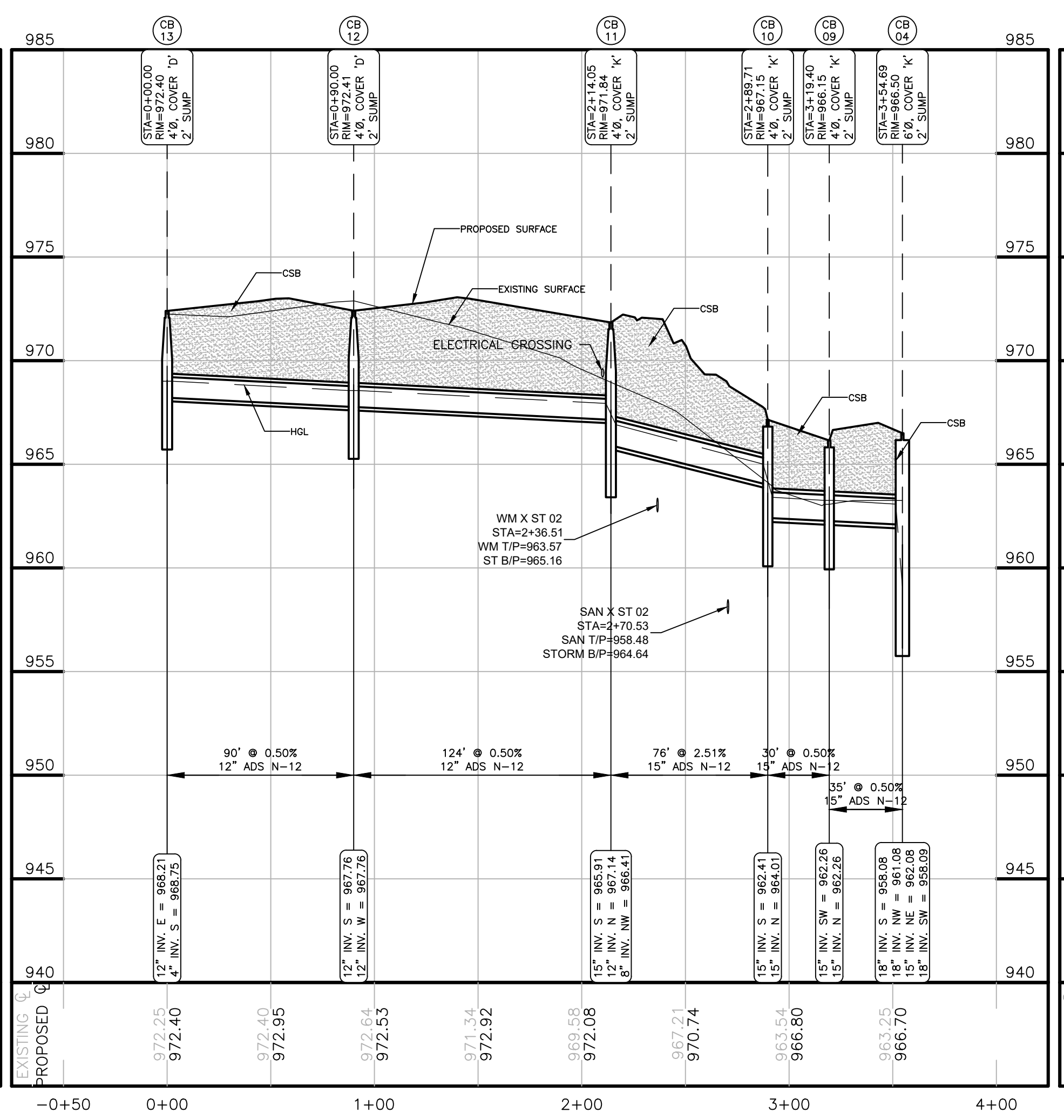
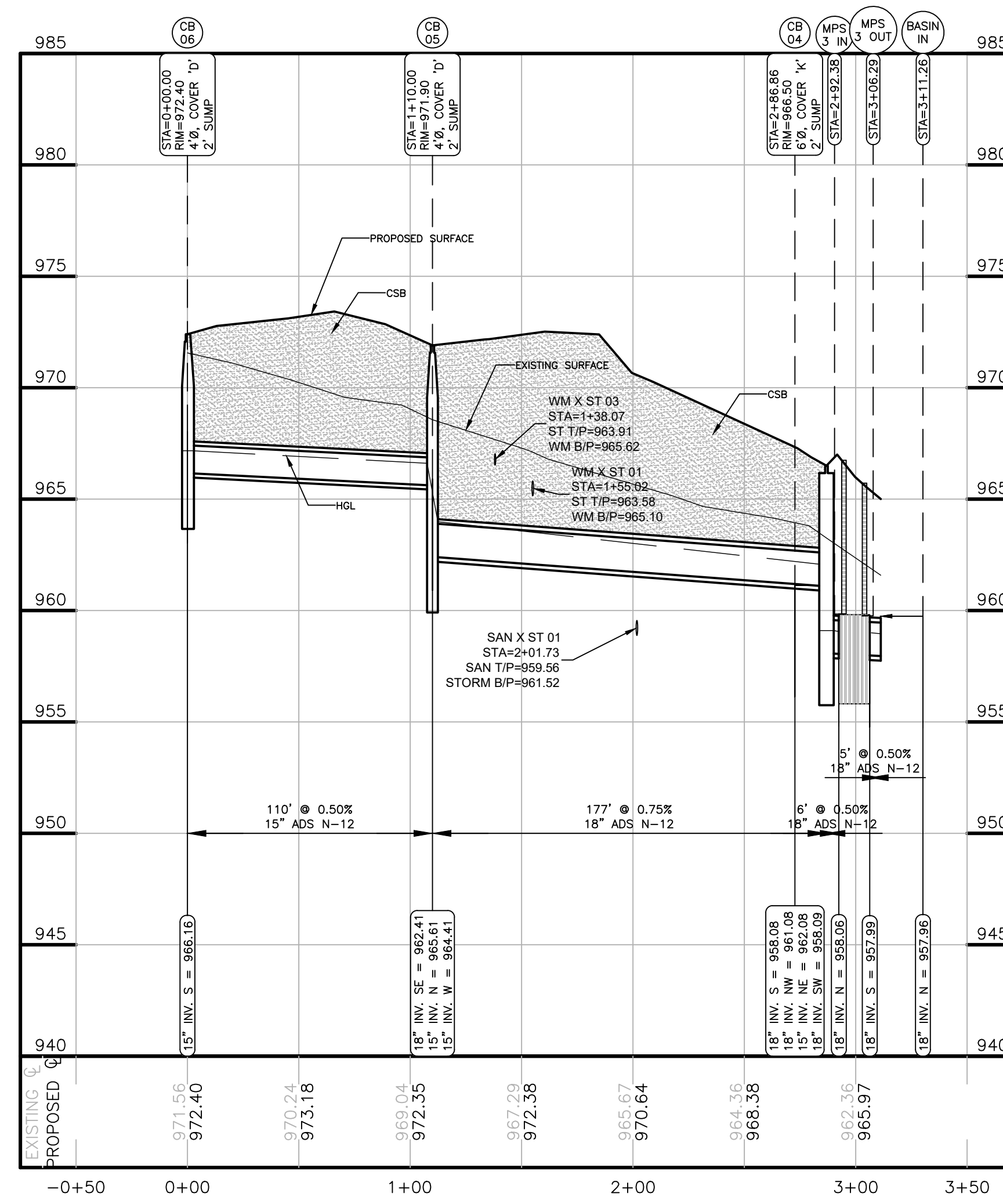
NO	BY	DATE	REVISION PER
1	PLC	6/XX/24	TOWNSHIP REVIEW COMMENTS
1	IMD	7/8/24	MDOT COMMENTS

DESIGNED BY: TC
 DRAWN BY: PC
 CHECKED BY:
 SCALE: 1" = 40'
 JOB NO: 22-029
 DATE: 6/17/24
 SHEET NO. 9



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

SCALE: 1" = 5' (VERT)
1" = 50' (HORIZ)



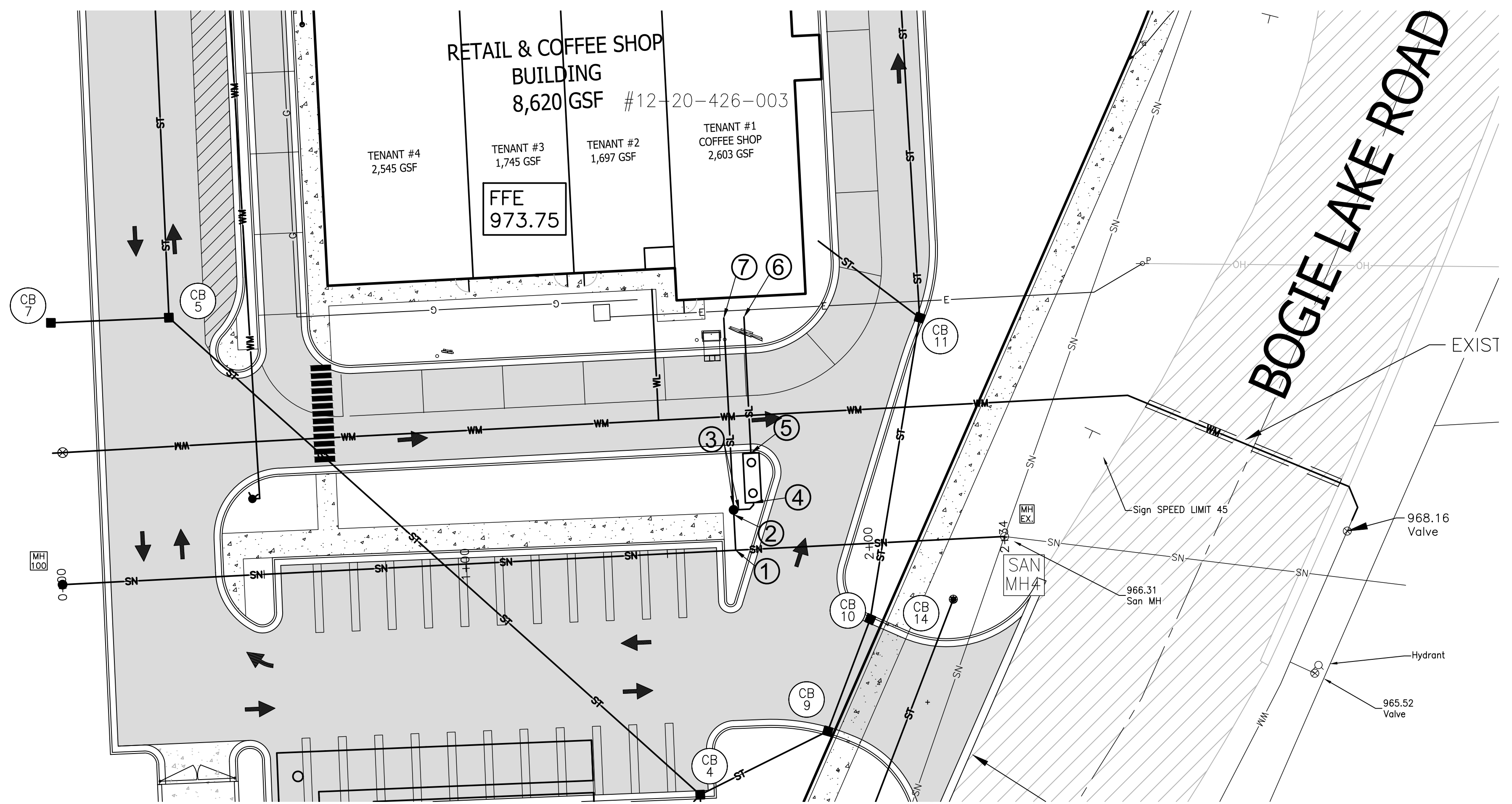
BEBOSS Engineering
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GATEWAY CROSSING
GATEWAY CROSSING, LLC
600 NORTH OLD WOODWARD, SUITE 101
BIRMINGHAM, MI. 48009
248-437-7000

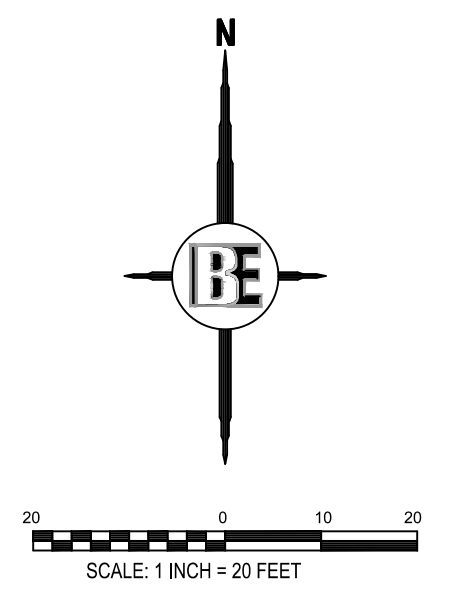
PROJECT: GATEWAY CROSSING
PREPARED FOR: GATEWAY CROSSING, LLC
TITLE: STORM PROFILES

DESIGNED BY:	ST
DRAWN BY:	DH
CHECKED BY:	
SCALE:	1" = 50'
JOB NO:	22-029-1
DATE:	05/30/24
SHEET NO.	10

TOWNSHIP COMMENTS: 8/6/24
MDOT COMMENTS: 7/9/24
REVISION PER: NO BY



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



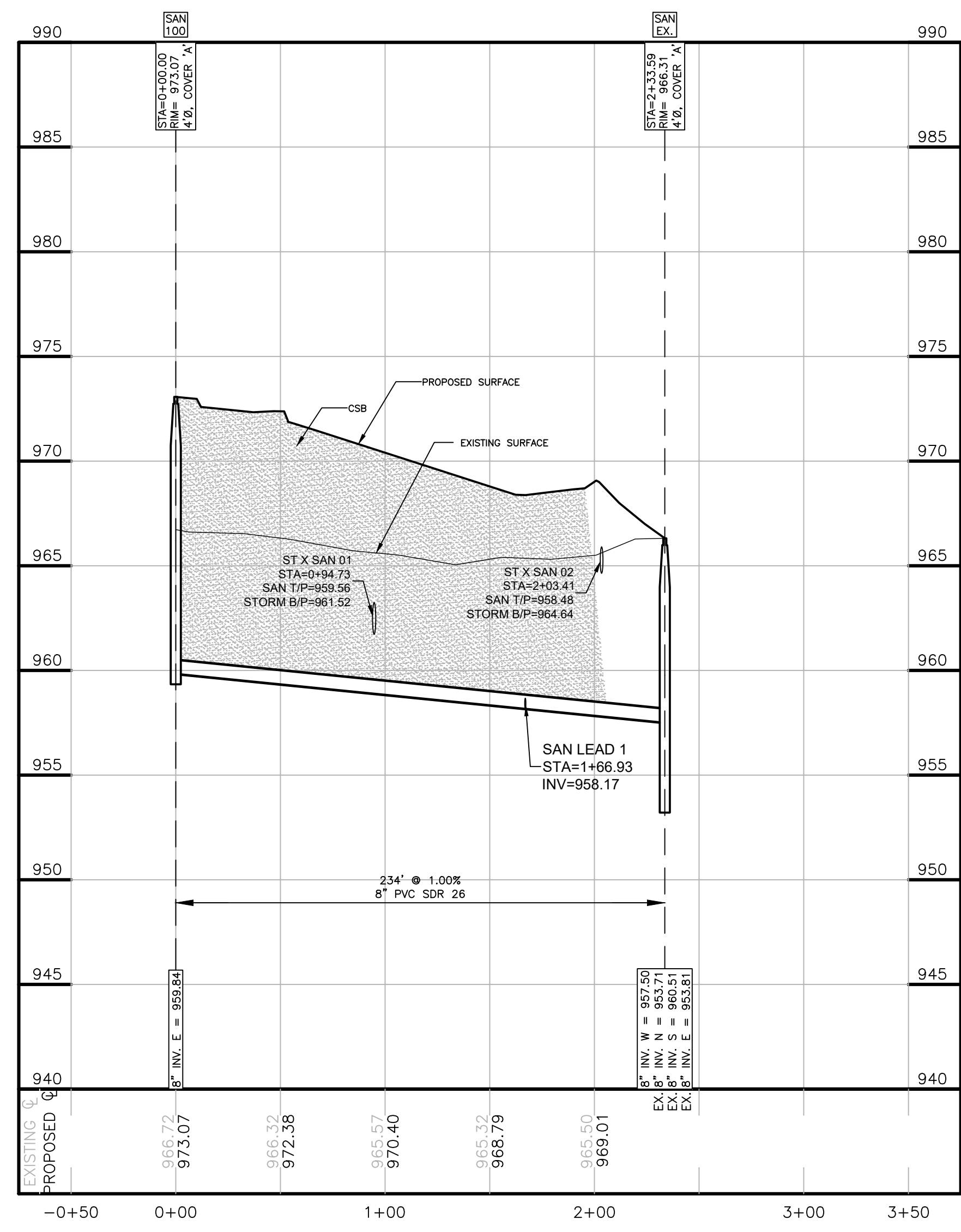
THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO WARRANTY IS MADE BY THE ENGINEER AS TO THE ACCURACY, COMPLETENESS OR ADEQUACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES APPARENT OR IF THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

BE ENGINEERING, INC.
CALL MSS DIG
1-800-462-7171
www.be-engineering.com

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HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

LOCATION/DESCRIPTION	ELEVATION
1 SANITARY WYE	958.17
SANITARY RISER	966.35
2 SANITARY LEAD MONITORING MANHOLE OUT	966.55
3 SANITARY LEAD MONITORING MANHOLE IN	967.27
4 GREASE TRAP OUT	967.41
5 GREASE TRAP IN	967.66
6 GREASE TRAP STUB LOCATION	968.00
7 DOMESTIC STUB LOCATION	968.00

*CONTRACTOR TO VERIFY DEPTH AND LOCATION OF EXISTING UNDERGROUND UTILITIES BEFORE CONSTRUCTION



SCALE: 1" = 5' (VERT)
1" = 50' (HORIZ)

PROJECT: GATEWAY CROSSING
PREPARED FOR: GATEWAY CROSSING, LLC
600 NORTH OLD WOODWARD, SUITE 101
BIRMINGHAM, MI 48009
248-437-7000

TITLE: SANITARY PROFILES

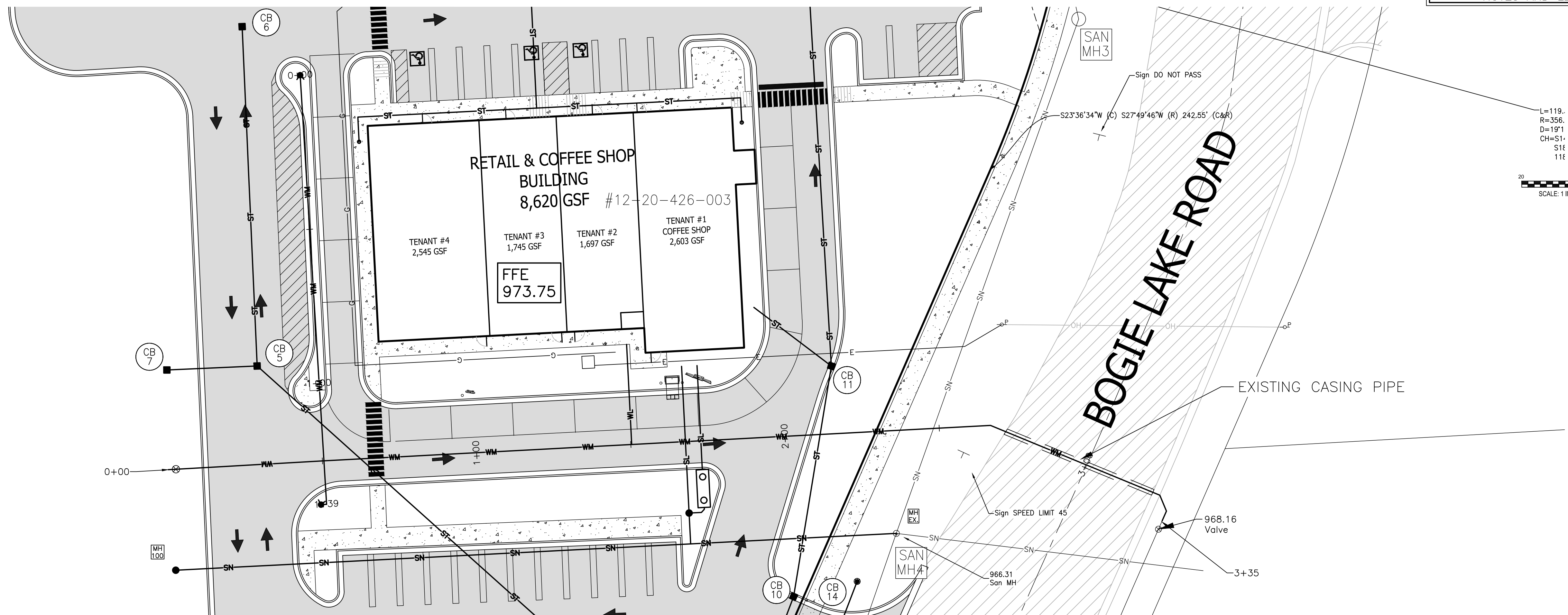
NO	BY	DATE	REVISION PER	TOWNSHIP COMMENTS	MDOT COMMENTS
2	JMD	8/6/24			
1	JMD	7/9/24			
NO	BY				

DESIGNED BY: ST
DRAWN BY: DH
CHECKED BY:
SCALE: 1" = 20'
JOB NO: 22-029-1
DATE: 05/30/24

SHEET NO. 11

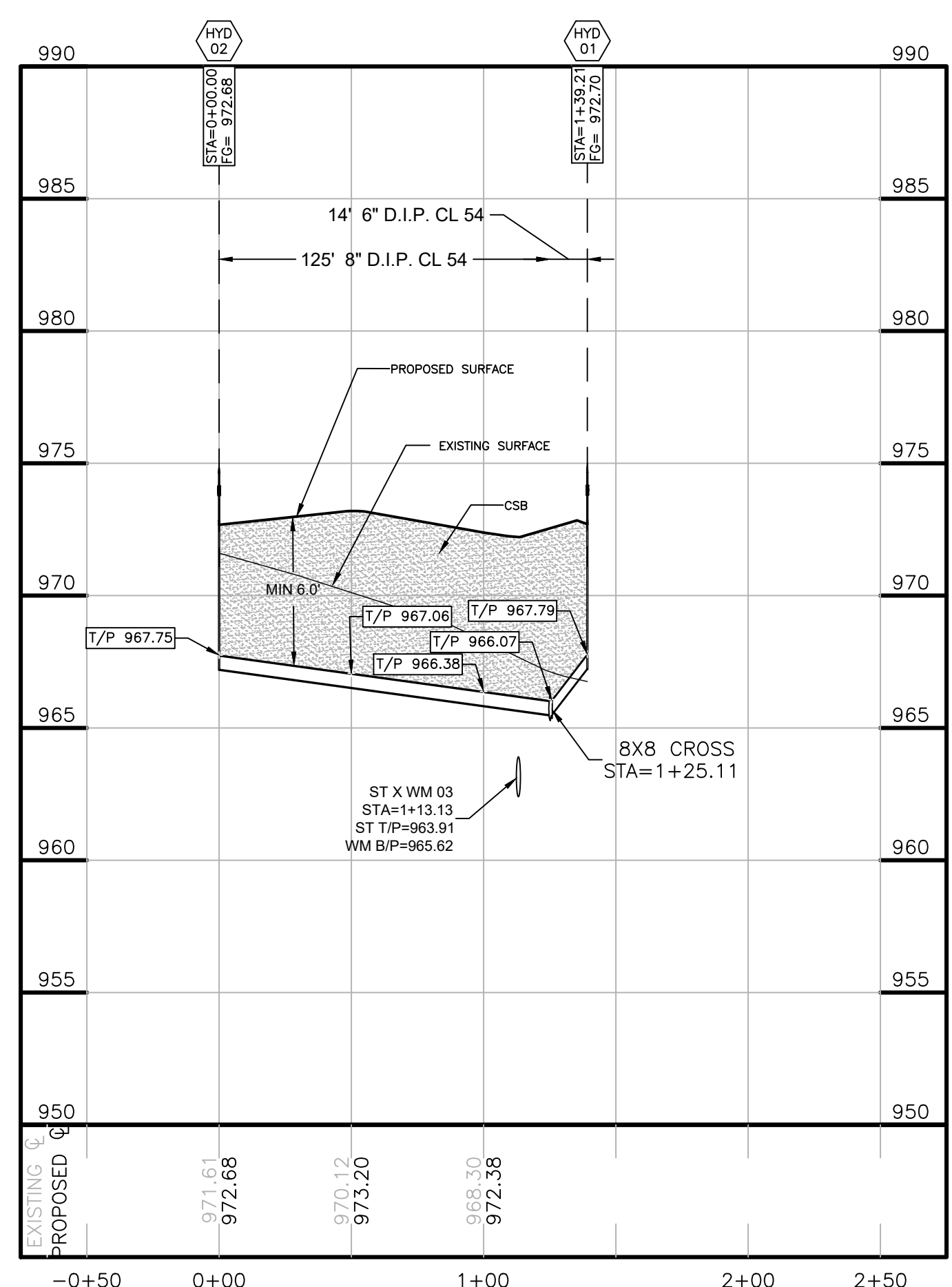
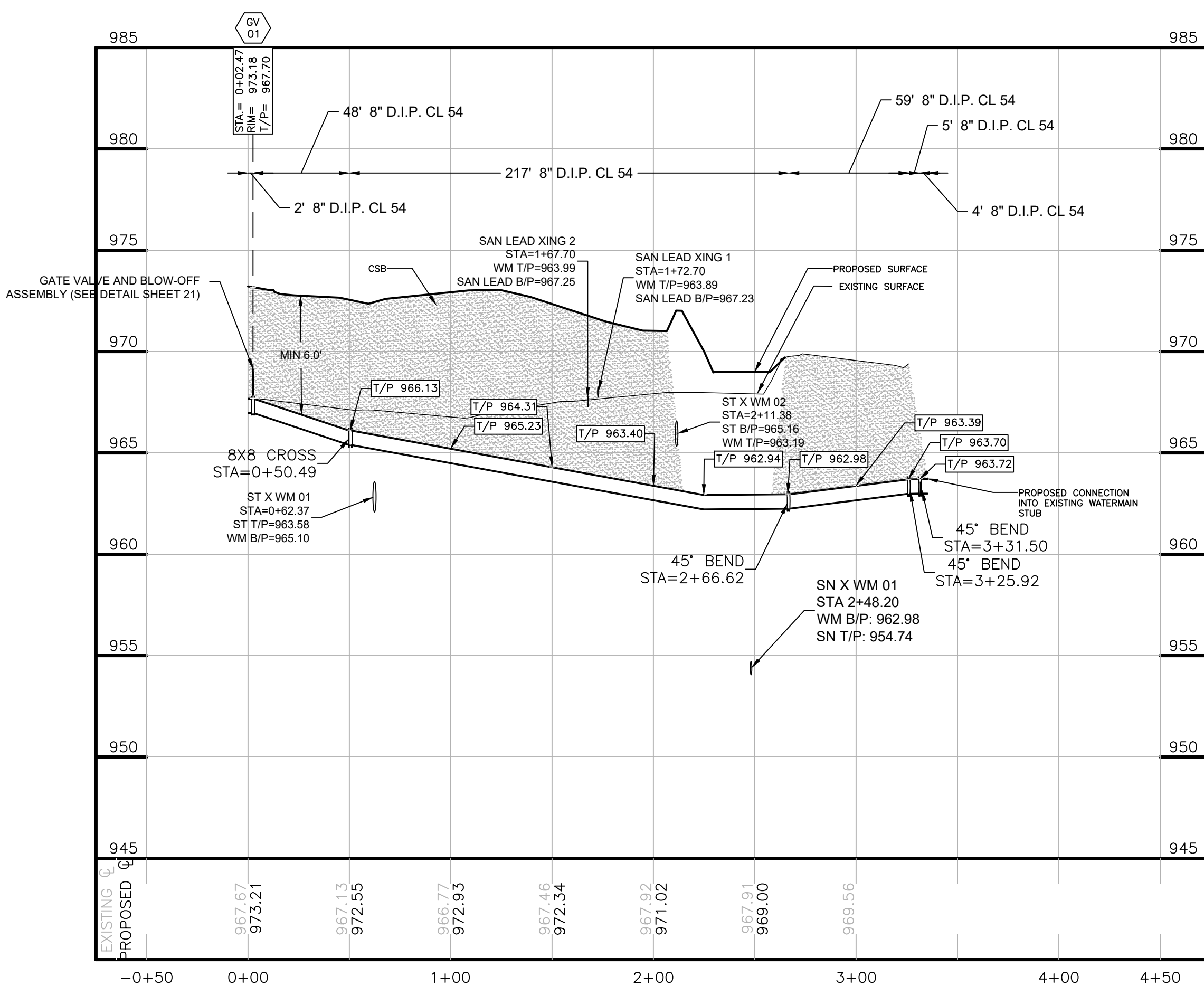


SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO WARRANTY IS MADE BY THE ENGINEER FOR THE ACCURACY OF THE UTILITIES SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF ALL UTILITIES CROSSING IN THE FIELD PRIOR TO CONSTRUCTION. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE TO UTILITIES APPARENT OR IF THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

BE ENGINEERING
 BE ENGINEERING, LLC
 3121 E. GRAND RIVER AVE.
 HOWELL, MI. 48843
 517.546.4836 FAX 517.548.1670



SCALE: 1" = 5' (VERT)
 1" = 50' (HORIZ)

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 HOWELL, MI. 48843
 517.546.4836 FAX 517.548.1670

PROJECT: GATEWAY CROSSING
 PREPARED FOR: GATEWAY CROSSING, LLC
 600 NORTH OLD WOODWARD, SUITE 101
 BIRMINGHAM, MI. 48009
 248-437-7000

TITLE	DATE	REVISION PER
WATERMAIN PROFILES	7/9/24	NO BY
TOWNSHIP COMMENTS	8/6/24	NO BY
MDOT COMMENTS	7/9/24	NO BY

DESIGNED BY: ST
 DRAWN BY: DH
 CHECKED BY:
 SCALE: 1" = 20'
 JOB NO: 22-029-1
 DATE: 05/30/24

SHEET NO. 12

OAKLAND COUNTY DETENTION BASIN CALCULATIONS

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
2.11	0.95	2.00
0.00	0.7	0.00
0.46	0.2	0.09

COMPOUND C: 0.82
TOTAL DRAINAGE AREA: 2.56 ACRES

WATER QUALITY VOLUME V_{WQ}
 $V_{WQ} = 3.630(C)/A = 7620 \text{ FT}^3$
 $V_{WQ} = 0.15(V_{WQ}) = 1143 \text{ FT}^3$

WATER QUALITY RATE FOR MECHANICAL STRUCTURE
 $T_C = \text{MAX TIME OF CONCENTRATION} = 16.42 \text{ MIN}$
 $Q_{WQ} = (C)/A(30.2(T_C + 9.17))^{0.81} = 4.59 \text{ CFS}$

CHANNEL PROTECTION VOLUME CONTROL - REQUIRED
 $V_{CP,R} = 4.719(C)/A = 9906 \text{ FT}^3$

CHANNEL PROTECTION VOLUME CONTROL - PROVIDED
 In-Situ Infiltration rate = 0 IN/HR
 Are upstream infiltration BMPs provided? NO
 Basin Footprint Infiltration Area Required = NO INFILTRATION FT²
 $V_{CP,P} = 0 \text{ FT}^3$

CHANNEL PROTECTION RATE CONTROL (EXTENDED DETENTION VOLUME)
 $V_{ED} = 6.897(C)/A = 14478 \text{ FT}^3$

EXTENDED DETENTION OUTLET RATE
 $Q_{ED} = V_{ED}/(48 \text{ hr}) = 0.084 \text{ CFS}$
 $H_{ED} = V_{ED}/(4.666 \text{ (H)}^2) = 1.0 \text{ 1" HOLES}$
 $H = 8.00 \text{ FT}$
 $ELEV_{ED} = 957.69$

100-YEAR ALLOWABLE OUTLET RATE
 $Q_{DRAIN} = \text{Restricted Drain Rate} = 0.2 \text{ CFS/ACRE}$
 $Q_{URR} = 1.1055 - 0.206LN(A) = 0.912 \text{ CFS/ACRE}$
 $Q_{100P} = (\text{LESSER OF } Q_{DRAIN} \text{ \& } Q_{URR})^A = 0.512 \text{ CFS}$

100-YEAR DETENTION VOLUME
 $V_{100P} = 18985(C)/A = 39853 \text{ FT}^3$
 $Q_{100IN} = (C)/A(83.3(T_C + 9.17))^{0.81} = 12.65 \text{ CFS}$
 $R = 0.206 - 15 \ln(Q_{100P}/Q_{100IN}) = 0.6871$
 $V_{100ED} = V_{100P} \cdot R \cdot V_{CP,R} = 27382 \text{ FT}^3$
 Is $V_{100ED} \geq V_{ED}$? YES
 $V_{100ED} = 27,382 \text{ FT}^3$

BASIN STORAGE PROVIDED
 LINEAL FOOTAGE OF PIPE IN SYSTEM: 352 LFT

ELEVATION	INCREMENTAL VOLUME / LFT	VOLUME (FT ³)	TOTAL VOLUME (FT ³)	DHWL
962.5	4.0875	1,439	27,846	
961.5	7.0949	2,497	26,207	
960.5	8.6345	3,039	23,710	
959.5	8.5201	3,351	20,670	
958.5	9.9329	3,496	17,319	
957.5	9.9329	3,496	13,823	
956.5	9.5201	3,351	10,327	
955.5	8.6345	3,039	6,976	
954.5	7.0949	2,497	3,936	
953.5	4.0875	1,439	1,439	
952.5	0.0000			

PROVIDED FOOTPRINT OF BASIN BOTTOM AREA: 4108 FT²

OUTLET CONTROL STRUCTURE
 $Q_{ED,ACTUAL} = 1 \text{ (1" HOLES)}$
 $A_{ED} = 0.0055 \text{ FT}^2$
 $Q_{ED,ACTUAL} = (A_{ED})/0.62 \times (2 \times 32.2 \times h)^{0.5} = 0.077 \text{ CFS}$

OVERFLOW SPILLWAY DESIGN
 Design Flow Rate: $Q_{100IN} = 12.65 \text{ CFS}$
 Depth of Spillway: $H_{WEIR} = 9 \text{ INCHES}$
 Width of Spillway: $L_{WEIR} = Q_{100IN}/3.33H_{WEIR}^{1.485} = 5.8 \text{ FT}$

BASIN DESIGN SUMMARY

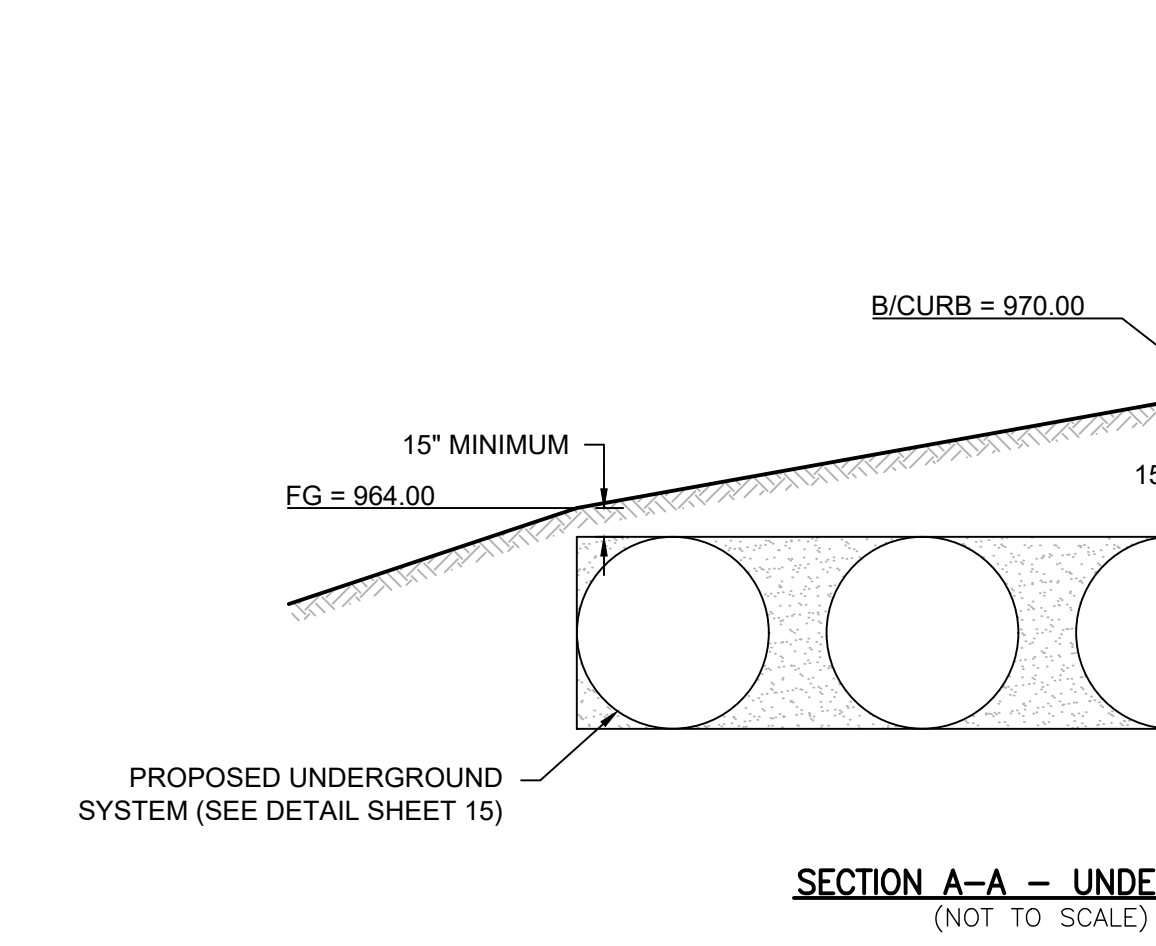
BASIN SIZE REQUIRED =	27,382 FT ³
BASIN SIZE PROVIDED =	27,846 FT ³

ORIFICE DESIGN SUMMARY

ELEVATION	# OF HOLES	DIAMETER OF HOLES
952.50	1.0	1-INCH
957.69	2.0	2-INCH

OVERFLOW SPILLWAY SUMMARY

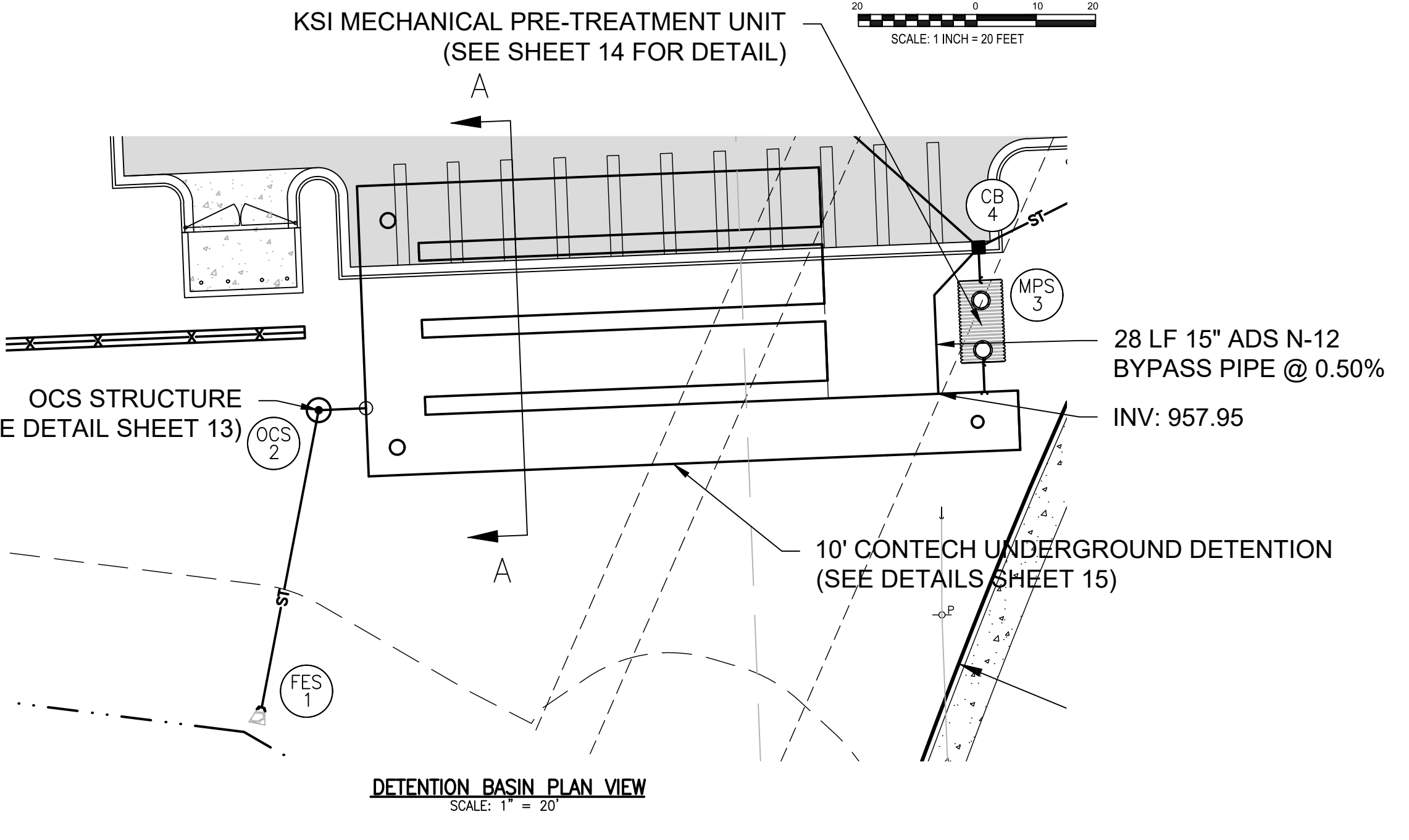
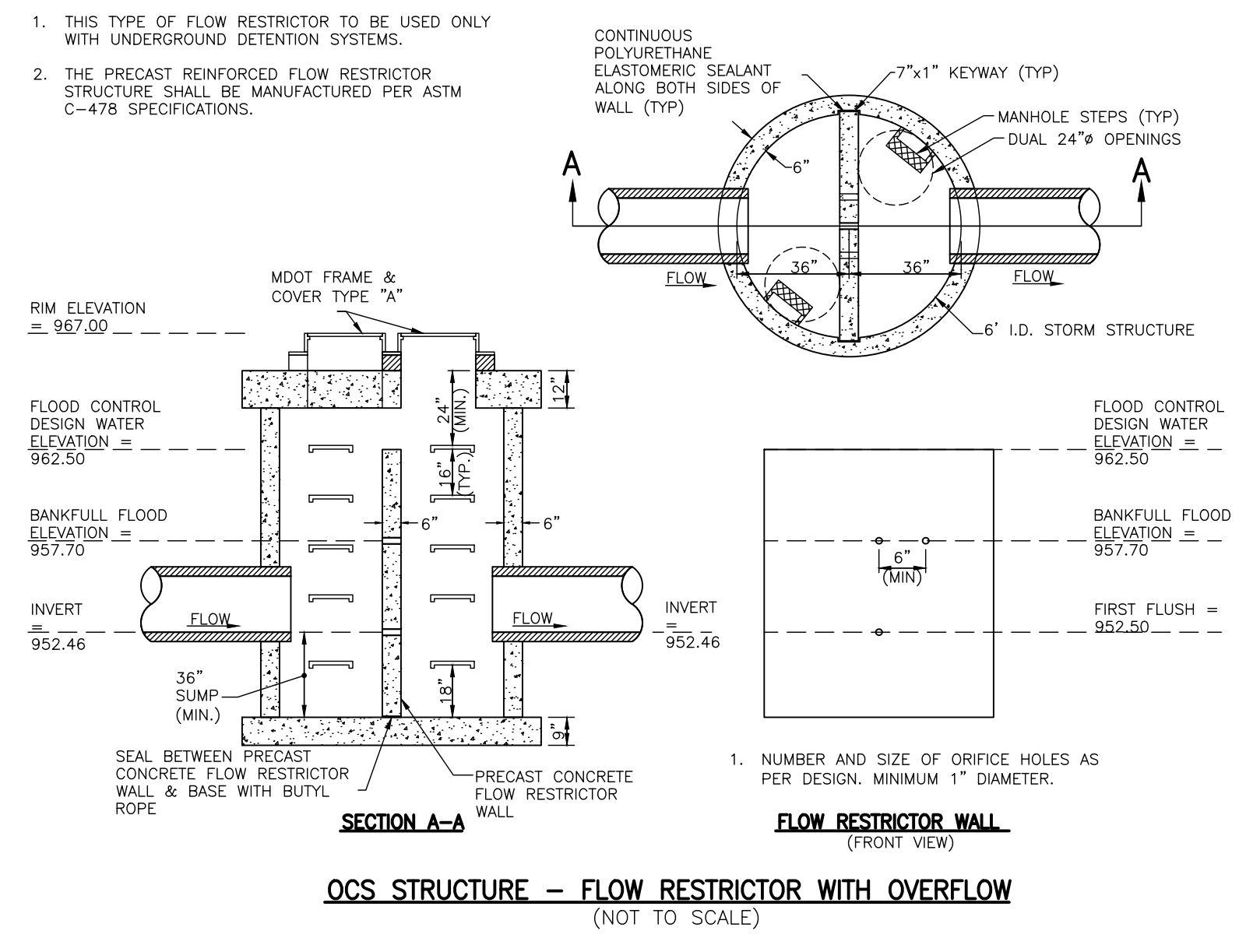
WIDTH OF OVERFLOW SPILLWAY =	6 FT
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FROM	TO	DRAIN AREA	ACRES A	RUNOFF COEFF C	EQUIV. AREA A * C	INTENSITY I	TIME OF CONC. Tc	ADDL. RUNOFF Q	RUNOFF (CFS) Q	PIPE LENGTH (LF)	PIPE DIA. (IN)	VELOCITY FLOWING FULL (FPS)	HYDRAULIC GRADELINE SLOPE %	ACTUAL SLOPE USED	MANNING COEFFICIENT	MANNING FLOW CAPACITY	MANNING'S VELOCITY (FT/SEC)	TIME (MIN)	HG ELEV UPPER END	HG ELEV LOWER END	RIM ELEV UPPER END	RIM ELEV LOWER END	INVERT UPPER END	INVERT LOWER END	DROP DISTANCE (FT)
6	5	6	0.35	0.81	0.28	4.38	15.00	1.23	110	15	2.61	0.24%	0.50%	0.013	4.58	3.73	0.49	967.16	966.61	972.40	971.90	966.16	965.61	3.20	
5	4	5	0.17	0.85	0.14	4.32	15.49	3.21	5.06	177	15	5.49	1.08%	0.75%	0.013	5.61	4.57	0.65	963.99	962.08	971.90	966.50	962.41	961.08	3.00
7	5	7	0.81	0.91	0.73	4.38	15.00	3.21	279	15	3.55	0.45%	0.50%	0.013	4.58	3.73	0.13	965.55	965.41	973.00	971.90	964.55	964.41	2.00	
13C	13A	13C	0.00	0.95	0.00	4.38	15.00	0.02	35	4	1.20	0.30%	1.00%	0.013	0.19	2.19	0.27	969.71	969.36	-	-	969.45	969.10		
13B	13A	13B	0.00	0.95	0.00	4.38	15.00	0.02	34	4	1.20	0.30%	1.00%	0.013	0.19	2.19	0.26	969.70	969.36	-	-	969.44	969.10		
13A	13	-	-	-	-	-	15.26	0.02	0.04	35	4	1.46	0.44%	1.00%	0.013	0.19	2.19	0.27	969.36	969.01	-	972.40	969.10	968.75	
13	12	13	0.24	0.69	0.17	4.38	15.00	0.04	0.77	90	12	2.41	0.28%	0.50%	0.013	2.53	3.22	0.47	969.01	968.56	972.40	972.41	968.21	967.76	
12	11	12	0.31	0.55	0.17	4.32	15.47	1.51	124	12	2.93	0.41%	0.50%	0.013	2.53	3.22	0.64	968.56	967.94	972.41	971.84	967.76	967.14	1.03	
11	10	11	0.05	0.85	0.04	4.26	16.11	0.82	2.50	76	15	5.85	1.23%	2.51%	0.013	10.26	8.36	0.15	966.91	965.01	971.84	967.15	965.91	964.01	1.60
10	9	10	0.11	0.79	0.09	4.24	16.26	2.88	30	15	3.45	0.43%	0.50%	0.013	4.58	3.73	0.13	963.41	963.26	967.15	966.15	962.41	962.26		
9	4	9	0.02	0.95	0.02	4.23	16.39	2.97	35	15	3.45	0.43%	0.50%	0.013	4.58	3.73	0.16	963.26	963.08	966.15	966.50	962.26	962.08	4.00	
4	3	4	0.30	0.83	0.25	4.21	16.55	5.06	9.08	5	15	4.85	0.84%	0.50%	0.013	4.58	3.73	0.02	959.10	959.06	966.50	968.15	958.08	958.06	0.07
3	BASIN	-	-	-	-	-	16.57	9.08	5	15	4.85	0.84%	0.50%	0.013	4.58	3.73	0.02	959.00	958.96	968.15	-	957.99	957.96	5.46	
4	BASIN	-	-	-	-	-	16.51	9.08	9.08	28	18	5.48	0.84%	0.50%	0.013	7.45	4.21	0.11	959.39	959.15	966.50	-	958.09	957.95	5.45
11A	11	11A	0.20	0.95	0.19	4.38	15.00	0.82	31	8	3.30	0.90%	1.00%	0.013	1.21	3.47	0.15	970.22	969.91	-	971.84	969.69	969.38	3.00	
14	15	14	0.47	0.50	0.24	4.38	15.00	1.03	77	15	2.61	0.24%	0.50%	0.013	4.58	3.73	0.34	963.39	963.00	966.00	-	962.39	962.00	1.92	
BASIN	2	ALL	-	-	-	-	15.00	9.08	8	24	4.22	0.34%	0.40%	0.013	14.35	4.57	0.03	954.10	954.07	-	967.00	952.50	952.47	0.01	
2	1	-	-	-	-	-	15.03	9.08	51	24	4.22	0.34%	0.40%	0.013	14.35	4.57	0.19	954.06	953.86	967.00	-	952.46	952.26		
18	16	18	0.40	0.53	0.21	4.38	15.00	1.03	1.95	45	18	5.99	1.01%	3.34%	0.013	19.25	10.89	0.07	952.70	951.20	-	953.50	951.50	950.00	
BASIN	2	ALL	2.56	0.81	2.08	6.00	16.57	12.50	8	24	5.02	0.48%	0.40%	0.013	14.35	4.57	0.03	954.15	954.11	-	967.00	952.50	952.47	0.01	
2	1	-	-	-	-	-	16.60	12.50	51	24	5.02	0.48%	0.40%	0.013	14.35	4.57	0.19	954.11	953.86	967.00	-	952.46	952.26		

100-YEAR PIPE FLOW CALCULATION FOR OCS

FROM	TO	DRAIN AREA	ACRES A	RUNOFF COEFF C	EQUIV. AREA A * C	INTENSITY I	TIME OF CONC. Tc	ADDL. RUNOFF Q	RUNOFF (CFS) Q	PIPE LENGTH (LF)	PIPE DIA. (IN)	VELOCITY FLOWING FULL (FPS)	HYDRAULIC GRADELINE SLOPE %	ACTUAL SLOPE USED	MANNING COEFFICIENT	MANNING FLOW CAPACITY	MANNING'S VELOCITY (FT/SEC)	TIME (MIN)	HG ELEV UPPER END	HG ELEV LOWER END	RIM ELEV UPPER END	RIM ELEV LOWER END	INVERT UPPER END	INVERT LOWER END	DROP DISTANCE (FT)
BASIN	2	ALL	2.56	0.81	2.08	6.00	16.57	12.50	8	24	5.02	0.48%	0.40%	0.013	14.35	4.57	0.03	954.15	954.11	-	967.00	952.50	952.47	0.01	
2	1	-	-	-	-	-	16.60	12.50	51	24	5.02	0.48%	0.40%	0.013	14.35	4.57	0.19	954.11	953.86	967.00	-	952.46	952.26		



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
BASIN IN	18" INV N = 957.96
BASIN OUT	24" INV W = 952.50
CB 04	RIM = 966.50 18" INV S = 958.08 18" INV NW = 961.08 15" INV NE = 962.08 18" INV SE = 958.09
CB 05	RIM = 971.90 18" INV SE = 962.41 15" INV N = 965.61 15" INV W = 964.41
CB 06	RIM = 972.40 15" INV S = 966.16
CB 07	RIM = 973.00 15" INV E = 964.56
CB 09	RIM = 966.15 15" INV SW = 962.26 15" INV N = 962.26
CB 10	RIM = 967.15 15" INV S = 962.41 15" INV N = 964.01
CB 11	RIM = 971.84 15" INV S = 965.91 12" INV N = 967.14 8" INV NW = 966.41
CB 12	RIM = 972.41 12" INV S = 967.76 12" INV W = 967.76
CB 13	RIM = 972.40 12" INV E = 968.21 4" INV S = 968.75
CB 14	RIM = 966.00 15" INV S = 962.39
FES 01	24" INV N = 952.26
FES 15	15" INV N = 962.00
FES 17	30" INV SE = 948.25
FES 18	18" INV S = 951.50

STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
FES A	30" INV NW = 946.94
FES B	30" INV N = 948.45
MH 16	RIM = 953.50 30" INV NW = 948.05 18" INV NW = 950.00 30" INV SW = 948.05 30" INV SE = 948.03
MH 19	RIM = 953.50 30" INV SE = 948.61 30" INV NE = 948.60
MPS 3 IN	18" INV N = 958.06
MPS 3 OUT	18" INV S = 957.99
OCS 2	RIM = 967.00 24" INV E = 952.47 24" INV S = 952.46

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 GATEWAY CROSSING, LLC
 600 NORTH OLD WOODWARD, SUITE 101
 BIRMINGHAM, MI. 48009
 248-437-7000

DETENTION BASIN DETAILS

NO.	DATE	BY	REVISION
1	7/9/24	MD	NO BY
2	8/6/24	MD	TOWNSHIP COMMENTS

DESIGNED BY: ST
 DRAWN BY: DH
 CHECKED BY:
 SCALE: 1" = 20'
 JOB NO: 22-029-1
 DATE: 05/30/24
 SHEET NO. 13

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

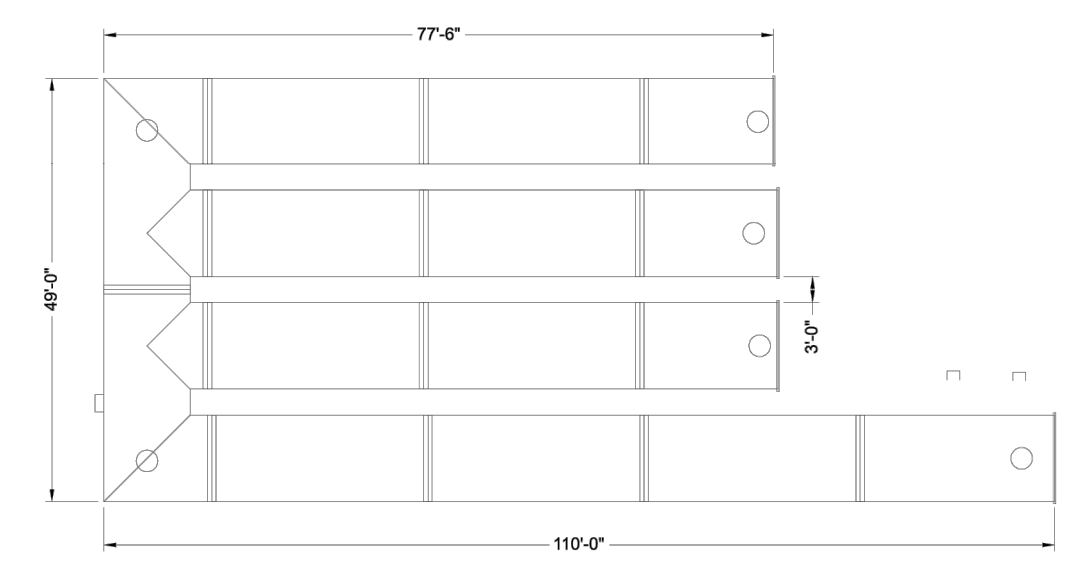
PROJECT SUMMARY

CALCULATION DETAILS
LOADING = H20S18.25
APPROX. LINEAR FOOTAGE = 352 LF

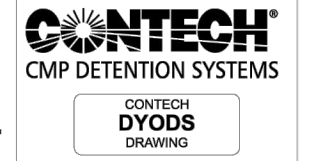
STORAGE SUMMARY
STORAGE VOLUME REQUIRED = 27,334 CF
PIPE STORAGE VOLUME = 27,607 CF
BACKFILL STORAGE VOLUME = 0 CF
TOTAL STORAGE PROVIDED = 27,607 CF

PIPE DETAILS
DIAMETER = 120"
CORROSION = 5K1
GAGE = 14
COATING = ALT2
WALL TYPE = SOLID
BARRELS SPACING = 36"

BACKFILL DETAILS
WIDTH AT ENDS = 12"
ABOVE PIPE = 0"
WIDTH AT SIDES = 12"
BELOW PIPE = 0"



- NOTES
ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE...
ALL RISERS AND STUBS ARE 2 1/2" x 1/2" CORRUGATION...
QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES...

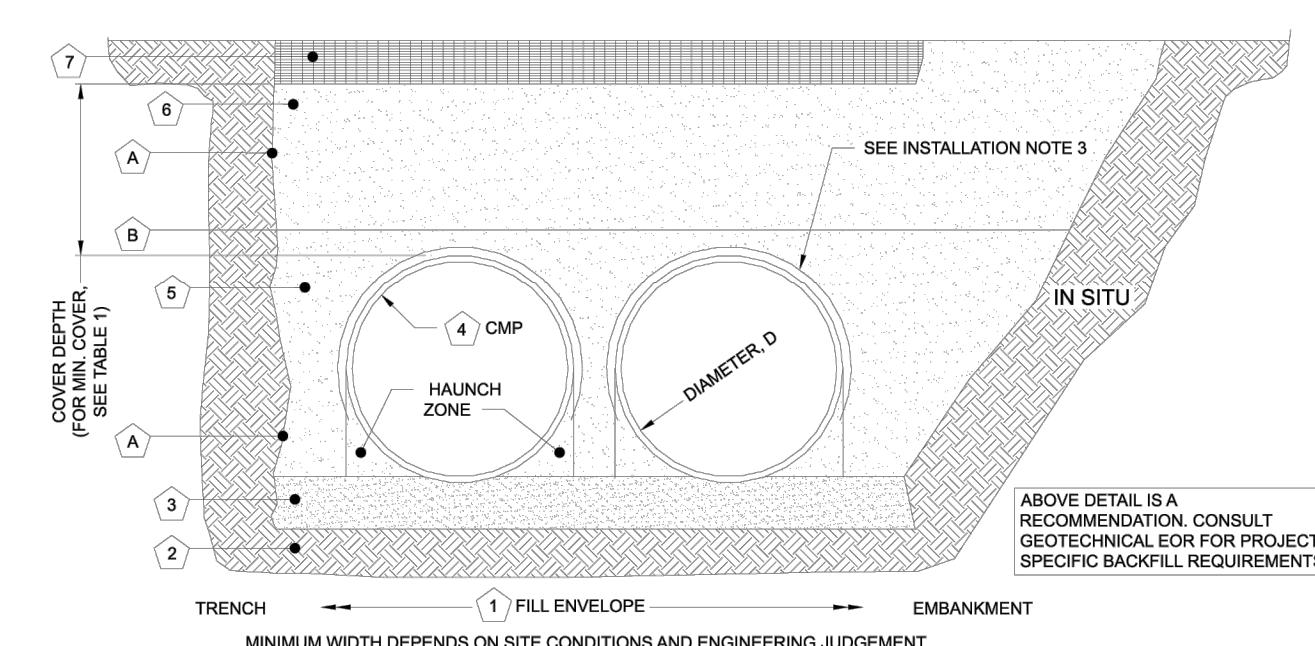


ASSEMBLY SCALE: 1" = 20'

DYO42257 Gateway Commons, LLC
Underground Detention
White Lake, MI
DETENTION SYSTEM

Table with columns: PROJECT NO., SEC. NO., DATE, DESIGNED, DRAWN, CHECKED, APPROVED, SHEET NO.

TABLE 1: DIAMETER, D MIN. COVER CORR. PROFILE
8'-10" 12" 1 1/2" x 14"
12'-48" 12" 2 2/3" x 12"
>48"-96" 12" 3" x 1", 5" x 1"
>96" 08 3" x 1", 5" x 1"



- INSTALLATION NOTES
1. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
2. OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
3. AN HOPE MEMBRANE LINER WILL BE PLACED ON THE CROWN OF EACH PIPE TO PROVIDE AN IMPERMEABLE BARRIER AGAINST ENVIRONMENTAL CHANGES THAT MAY ADVERSELY AFFECT THE SYSTEM OVER TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL TECHNICAL DETAILS.

TABLE 2: PERFORATED STANDARD

Table with columns: MATERIAL LOCATION, MATERIAL SPECIFICATION, DESCRIPTION. Rows include: FILL ENVELOPE WIDTH, FOUNDATION, BEDDING, BACKFILL, COVER MATERIAL, RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE), OPTIONAL SIDE GEOTEXTILE, GEOTEXTILE BETWEEN LAYERS.

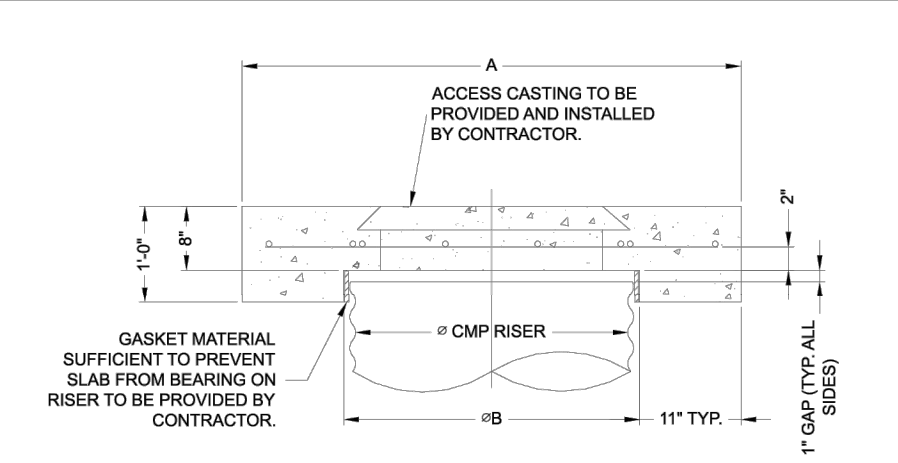
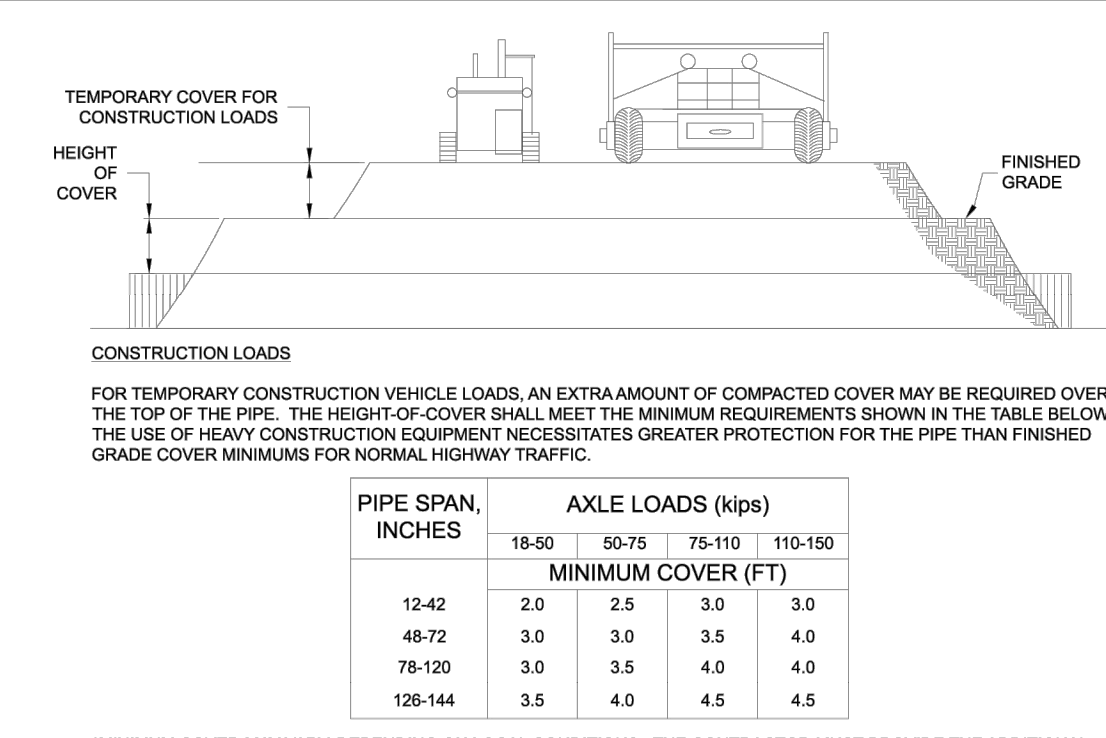
- NOTES
FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPES SHALL BE THE PIPE DIAMETER D BUT NOT LESS THAN 12" FOR DIAMETERS <12" FOR 12" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36" CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.
APPROVED REGIONAL EQUIVALENTS FOR SECTION 5 INCLUDE CA-7, MIDOT 6A, 6A, OR 5G, PROVIDED THEY MEET THE PARTICLE SIZES INDICATED.

MANUFACTURER RECOMMENDED BACKFILL

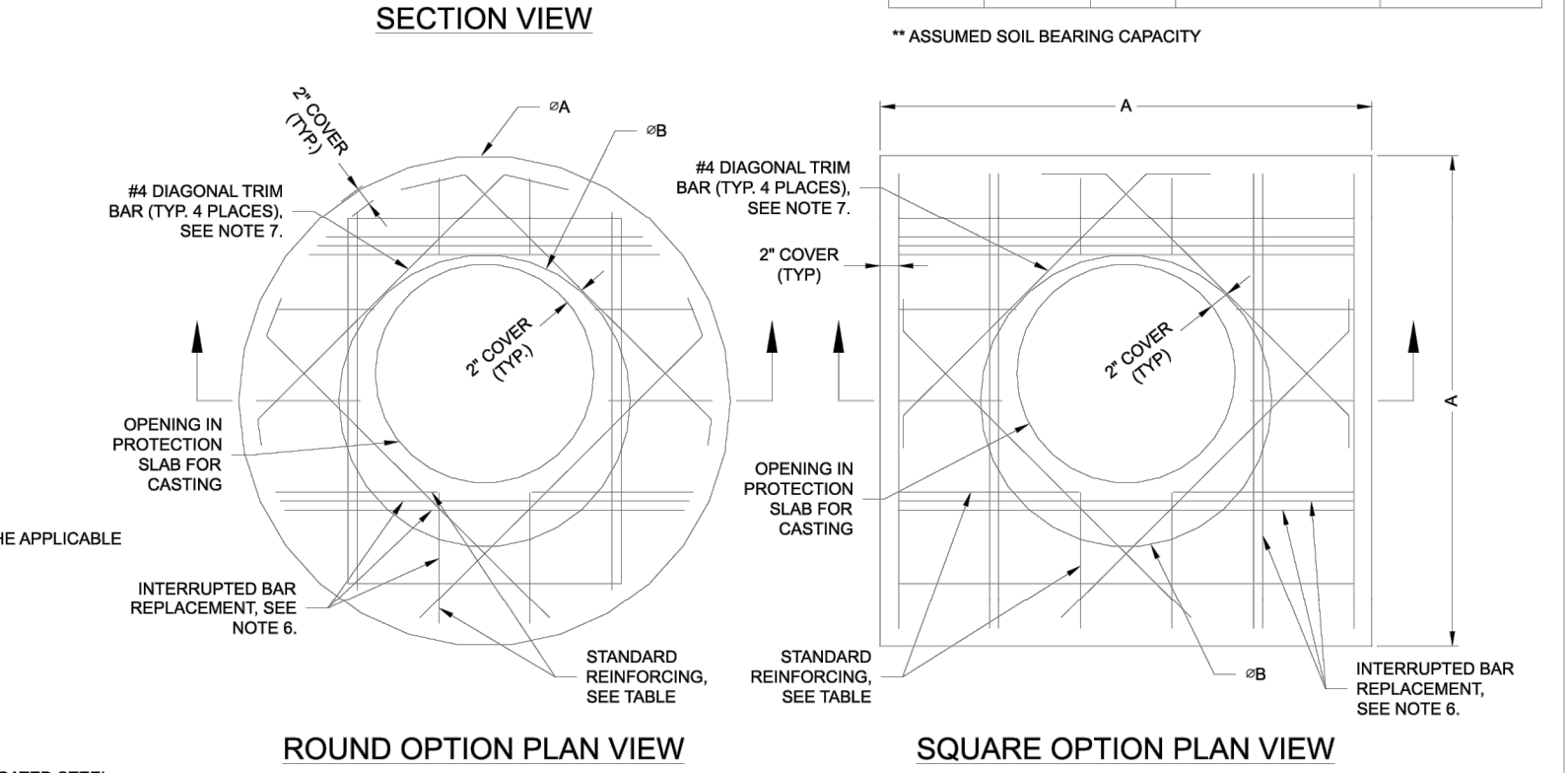


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Underground Detention
White Lake, MI
DETENTION SYSTEM

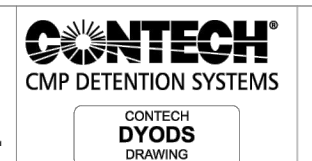
Table with columns: PROJECT NO., SEC. NO., DATE, DESIGNED, DRAWN, CHECKED, APPROVED, SHEET NO.



REINFORCING TABLE with columns: CMP RISER, A, B, REINFORCING, BEARING PRESSURE (PSF). Rows include: 24", 30", 36", 42", 48" diameters with various reinforcing bar sizes and spacings.



- MANHOLE CAP DETAIL SCALE: N.T.S.
1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAXIMUM.
4. CONCRETE STRENGTH = 3,500 psi.
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 10" BEYOND OPENING BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECT SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.



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Underground Detention
White Lake, MI
DETENTION SYSTEM

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CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION.

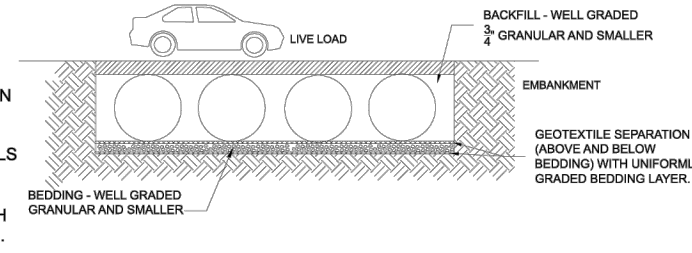
FOUNDATION
CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

BACKFILL PLACEMENT
MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL SLIDING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

GEOMEMBRANE BARRIER
A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED. SUCH AS ROAD AND SALTS FOR DEICING AGENTS.

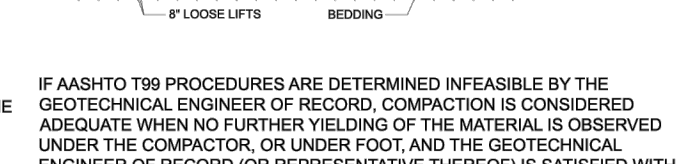
IN-SITU TRENCH WALL

IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE BEARS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.



CONSTRUCTION LOADING
TYPICALLY THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB.

ADDITIONAL CONSIDERATIONS
BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION, POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES.



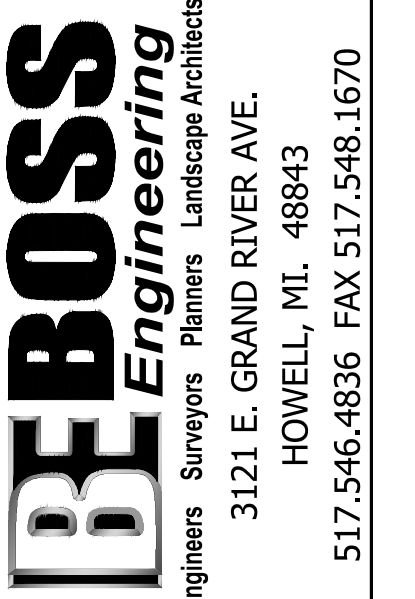
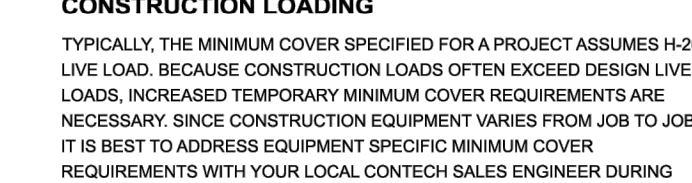
CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION
INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS.

MAINTENANCE
CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ADDITIONAL CONSIDERATIONS
THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO BE STRUCTURALLY SOUND AND FUNCTIONAL.



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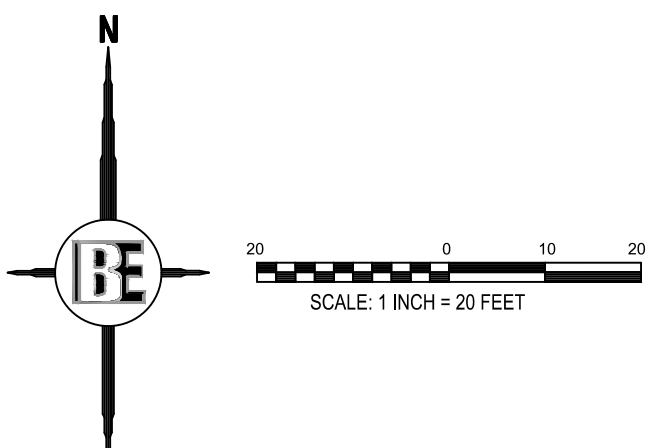
GATEWAY CROSSING
GATEWAY CROSSING, LLC
600 NORTH OLD WOODWARD, SUITE 103
BIRMINGHAM, MI 48209
248-937-7000

CONTECH UNDERGROUND DETAILS

Table with columns: PROJECT, PREPARED FOR, TITLE, DATE, TOWNSHIP COMMENTS, MDT COMMENTS, REVISION PER.

DESIGNED BY: ST
DRAWN BY: DH
CHECKED BY:
SCALE: 1" = 20'
JOB NO: 22-029-1
DATE: 05/30/24
SHEET NO. 15

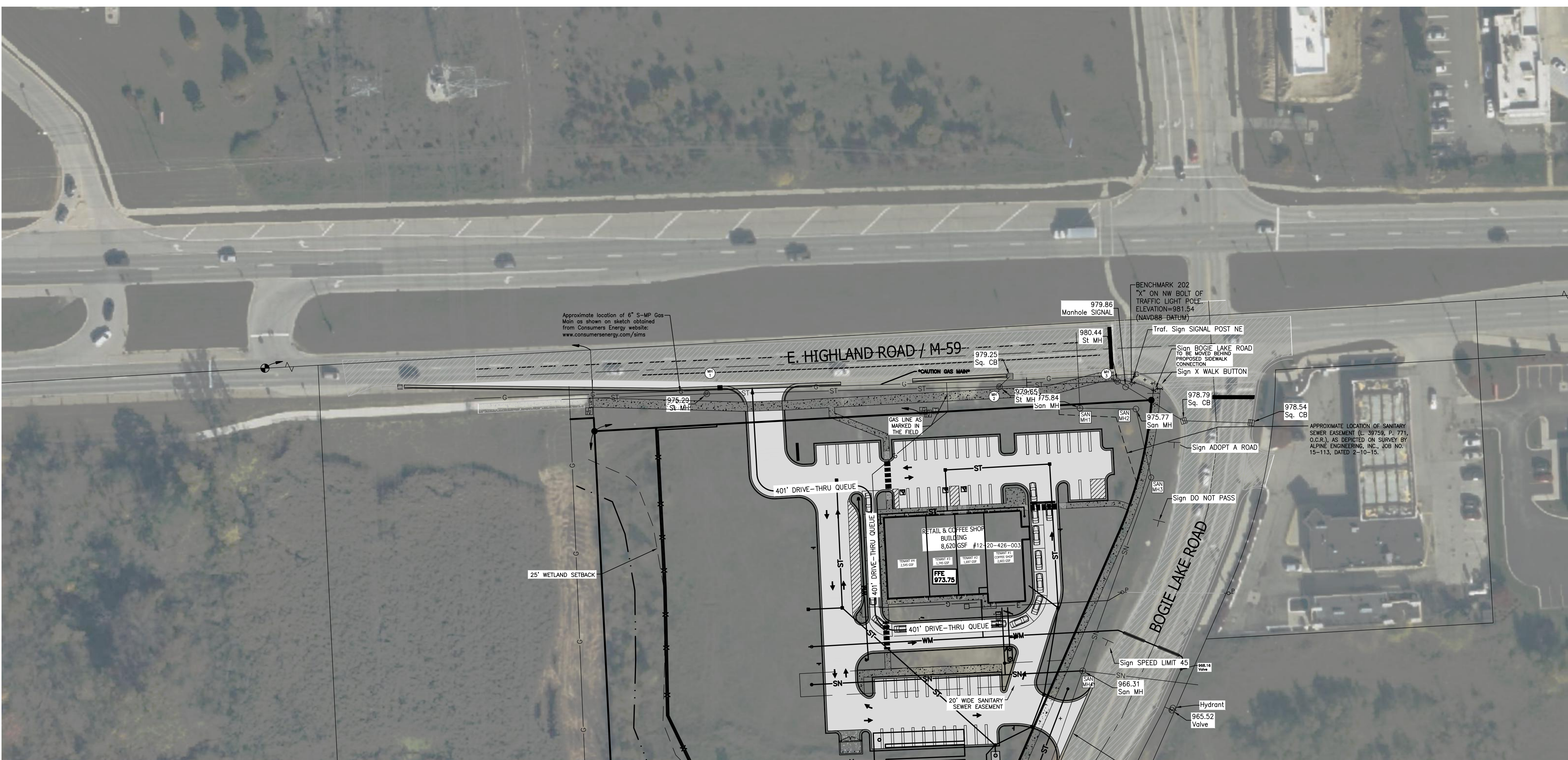
SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



PROPOSED (PR)	EXISTING (EX)	LEGEND
900	+ 922.08	CONTOUR
T/C		SPOT ELEVATION
FF		FINISHED FLOOR ELEVATION
FG		FINISHED GRADE ELEVATION
T/A		TOP OF ASPHALT
T/C		TOP OF CURB / CONCRETE
T/W		TOP OF WALK
F/L		FLOW LINE
T/P		TOP OF PIPE
B/P		BOTTOM OF PIPE
RM		RIM ELEVATION
INV		INVERT ELEVATION
MH		MANHOLE STRUCTURE
IN		INLET STRUCTURE
CB		CATCHBASIN STRUCTURE
RY		REARWARD STRUCTURE
ES		END-SECTION
GV		GATEVALVE STRUCTURE
HY		HYDRANT
UP		UTILITY POLE
SN		SANITARY SEWER
SL		SANITARY LEAD
FM		FORCE MAIN
PS		PRESSURE SEWER
ST		STORM SEWER
WM		WATER MAIN
WL		WATER LEAD
FO		FIBER OPTIC
OH		OVERHEAD WIRE
C		CABLE
E		ELECTRIC
G		GAS
T		TELEPHONE
X		FENCE
		SILT FENCE
		WETLAND BOUNDARY
		LIMITS OF GRADING/CLEARING
		MANHOLE
		INLET / CATCHBASIN
		FLARED END-SECTION
		GATE VALVE
		HYDRANT
		UTILITY POLE
		SIGN
		NOT FIELD VERIFIED TO BE REMOVED
		SANITARY SEWER LABEL
		STORM SEWER LABEL
		WATER MAIN LABEL
		SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)
		CONCRETE
		ASPHALT
		MODIFIED CURB

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

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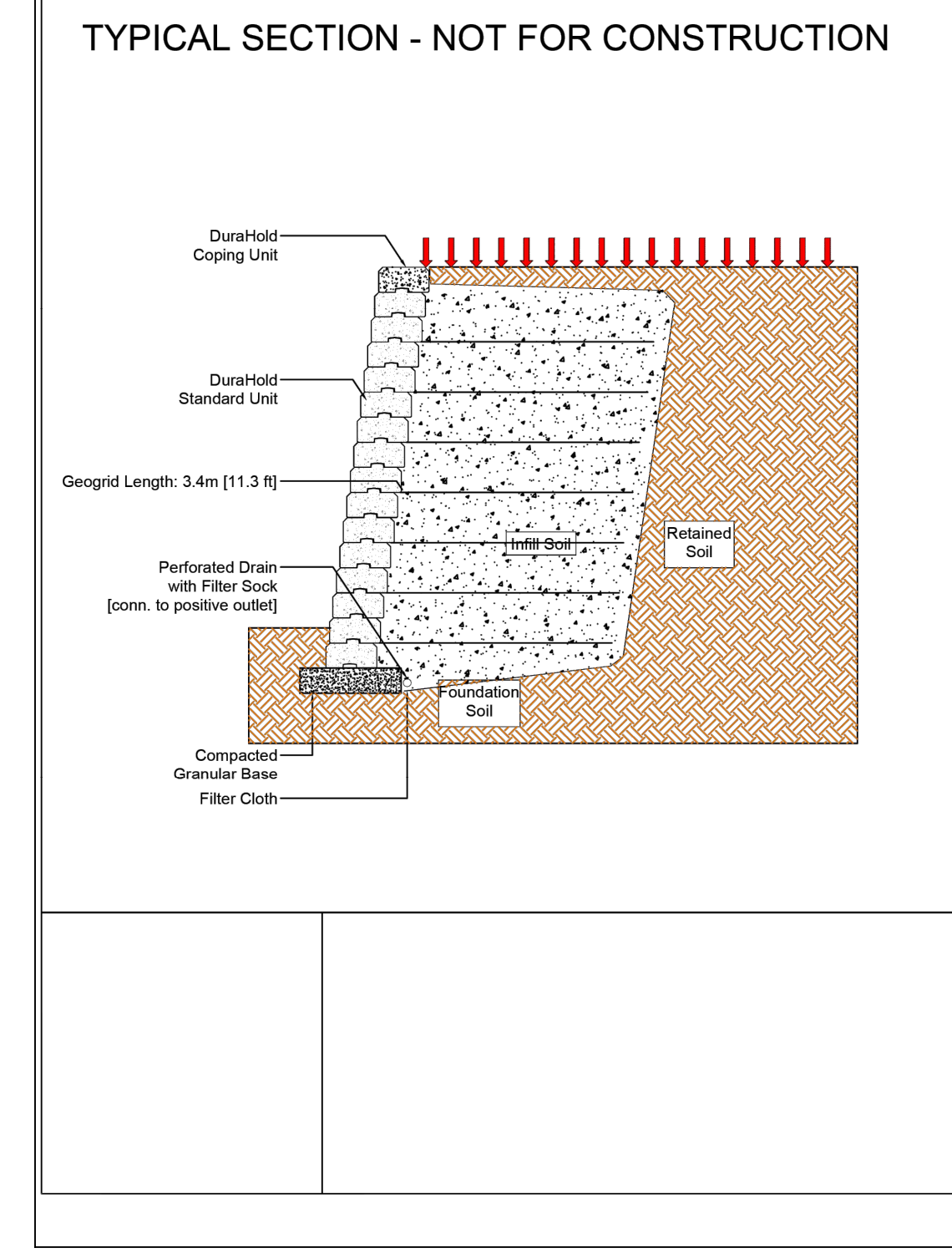
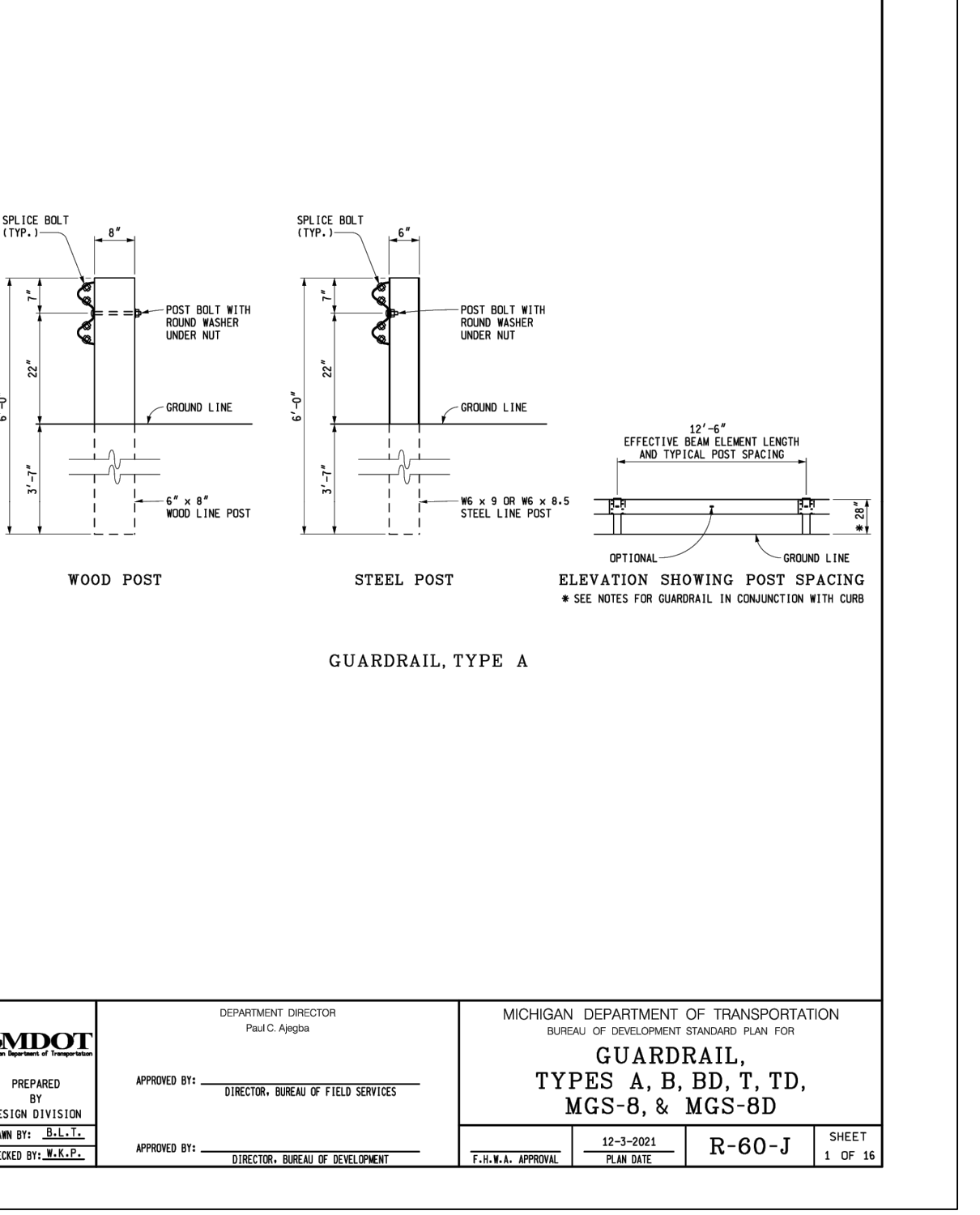
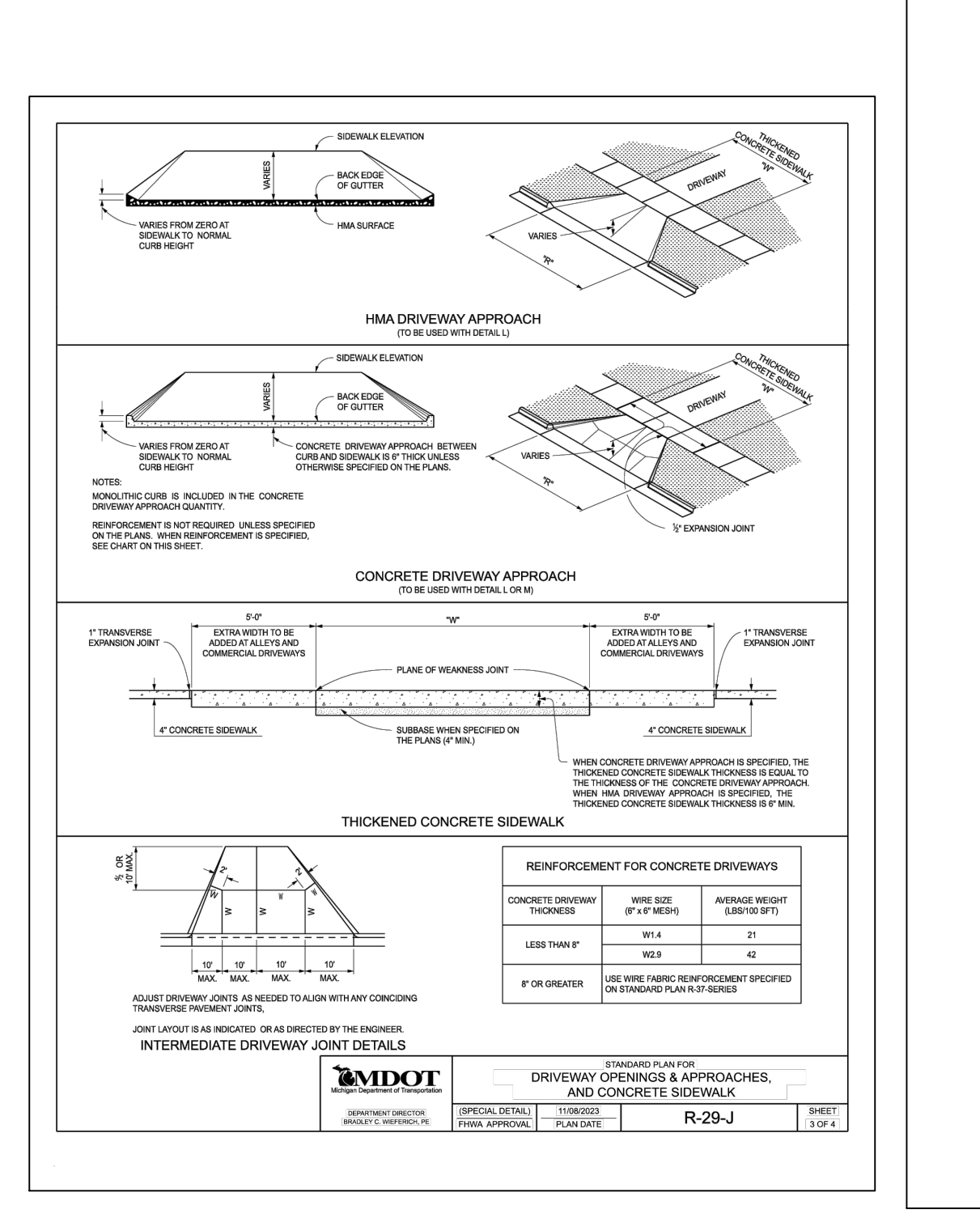
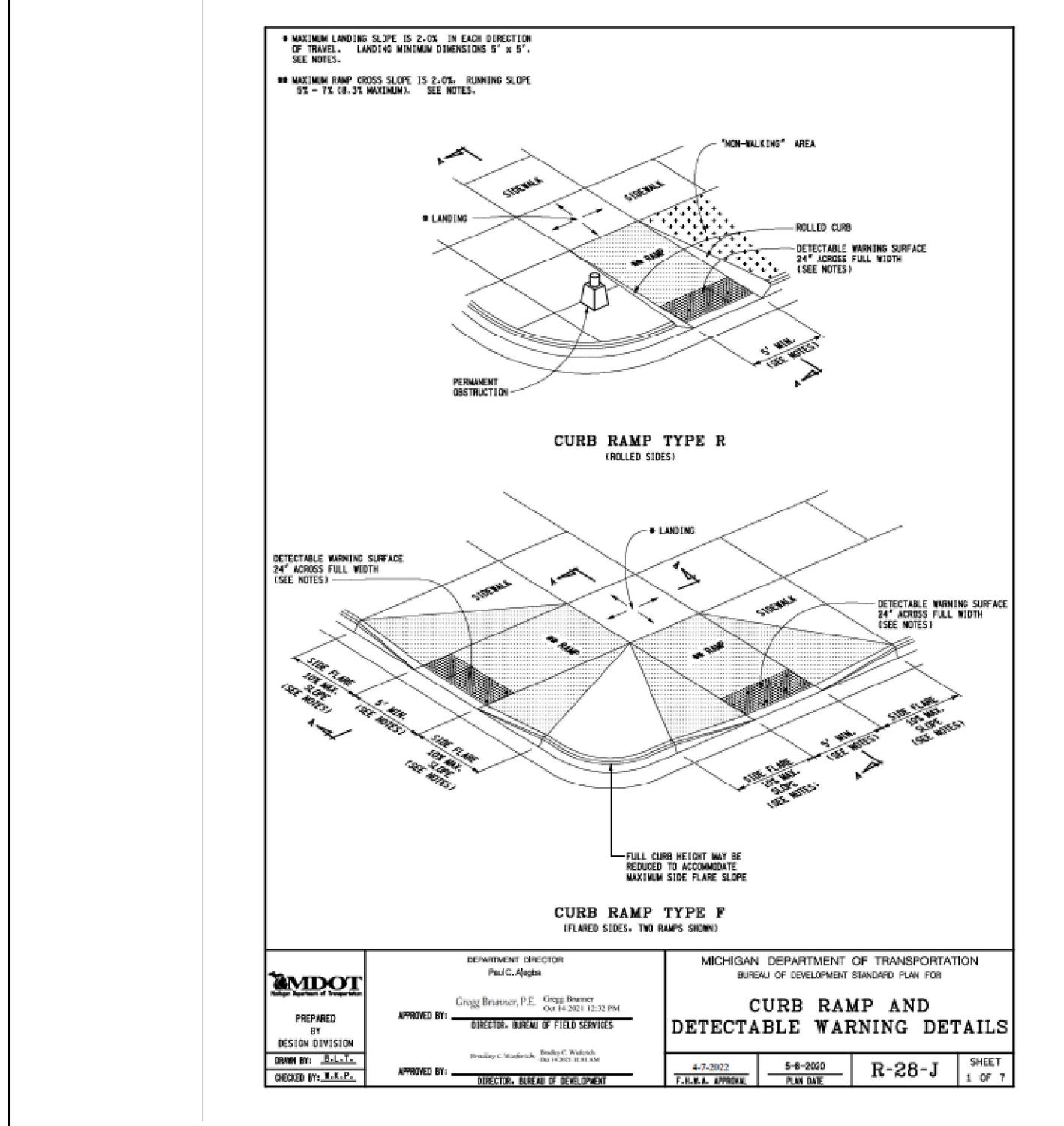
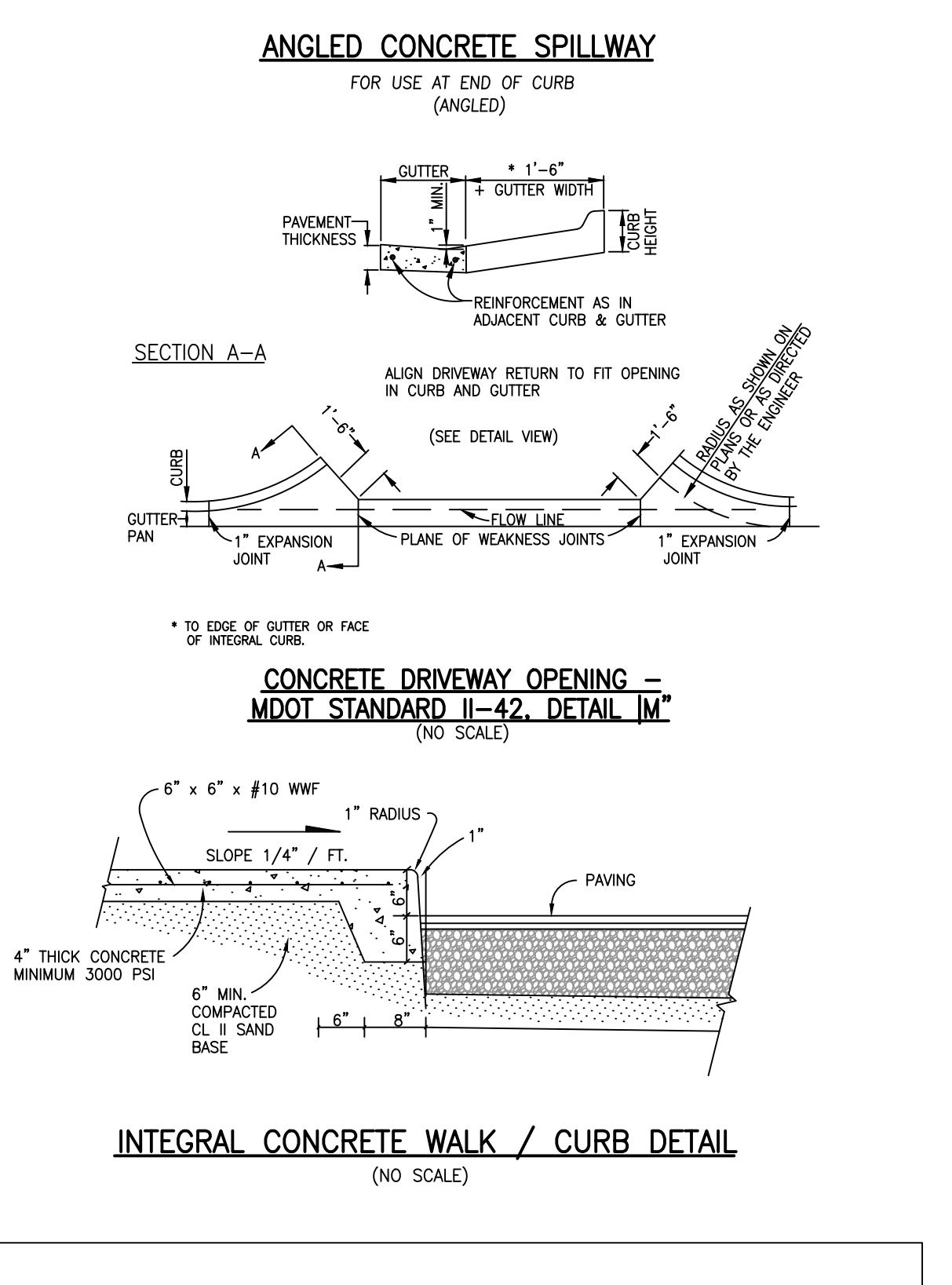
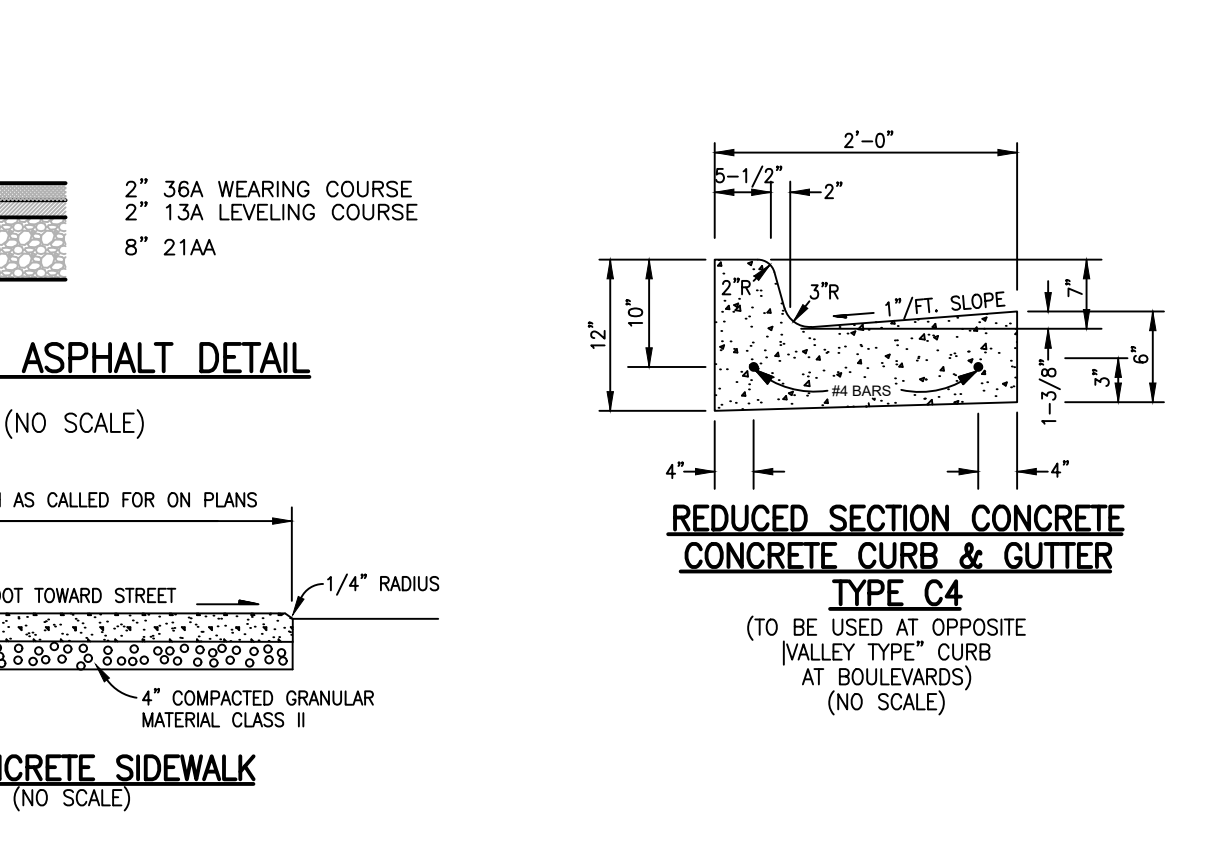
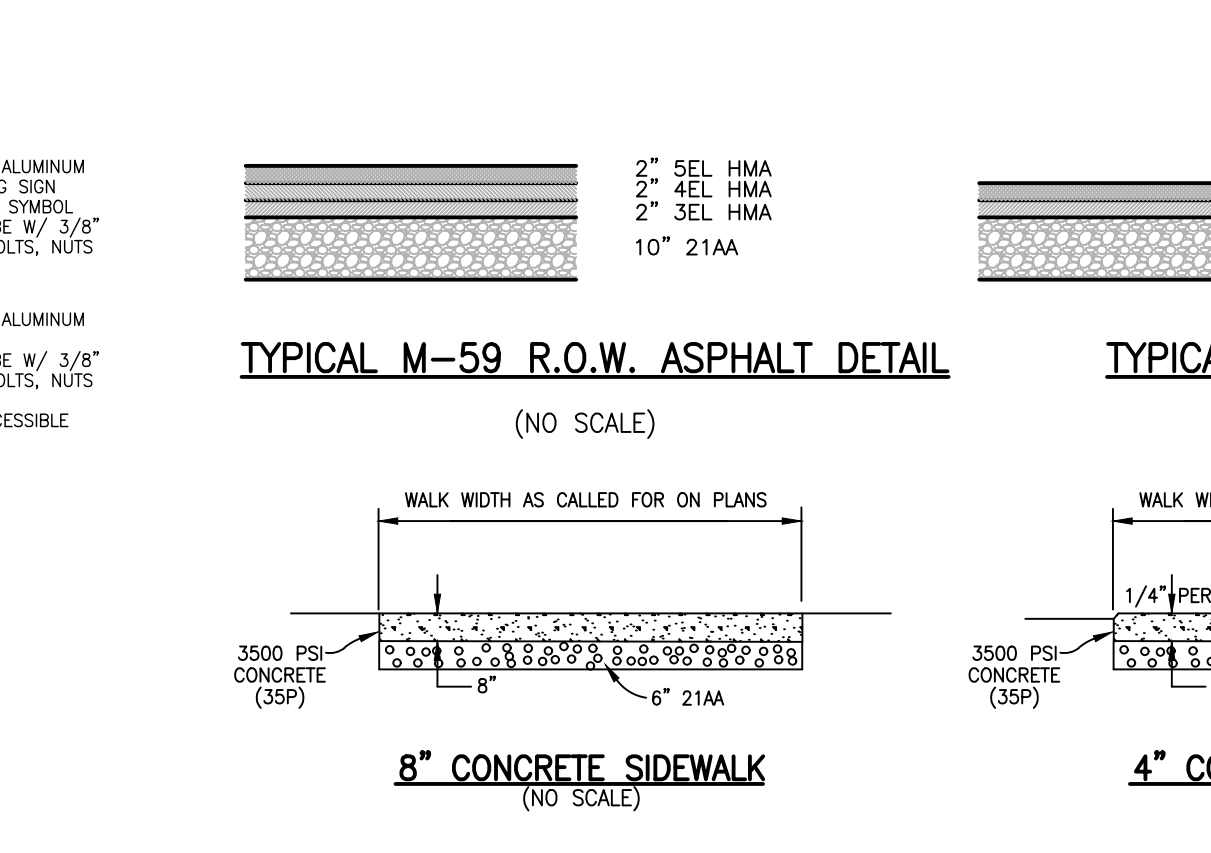
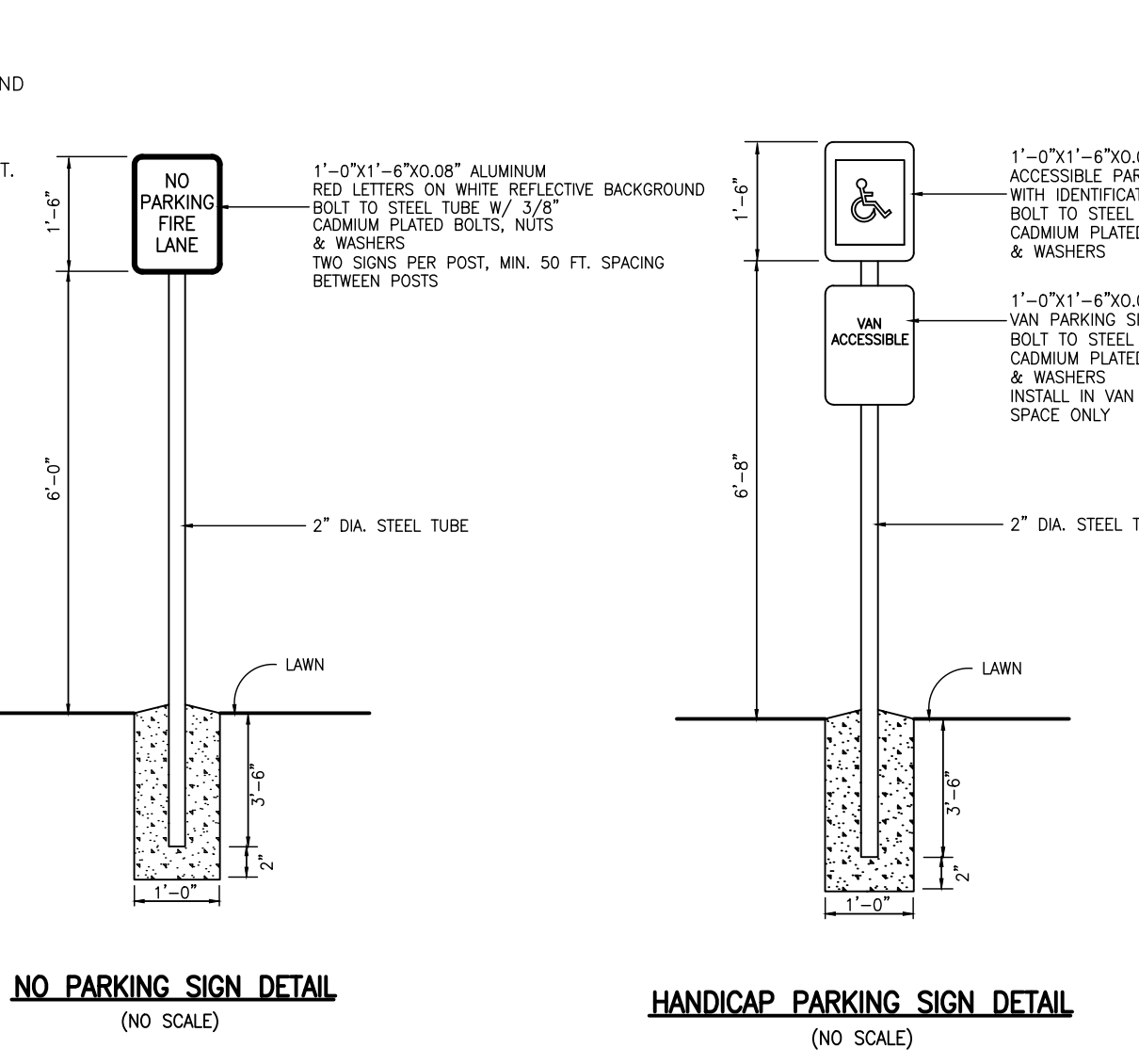
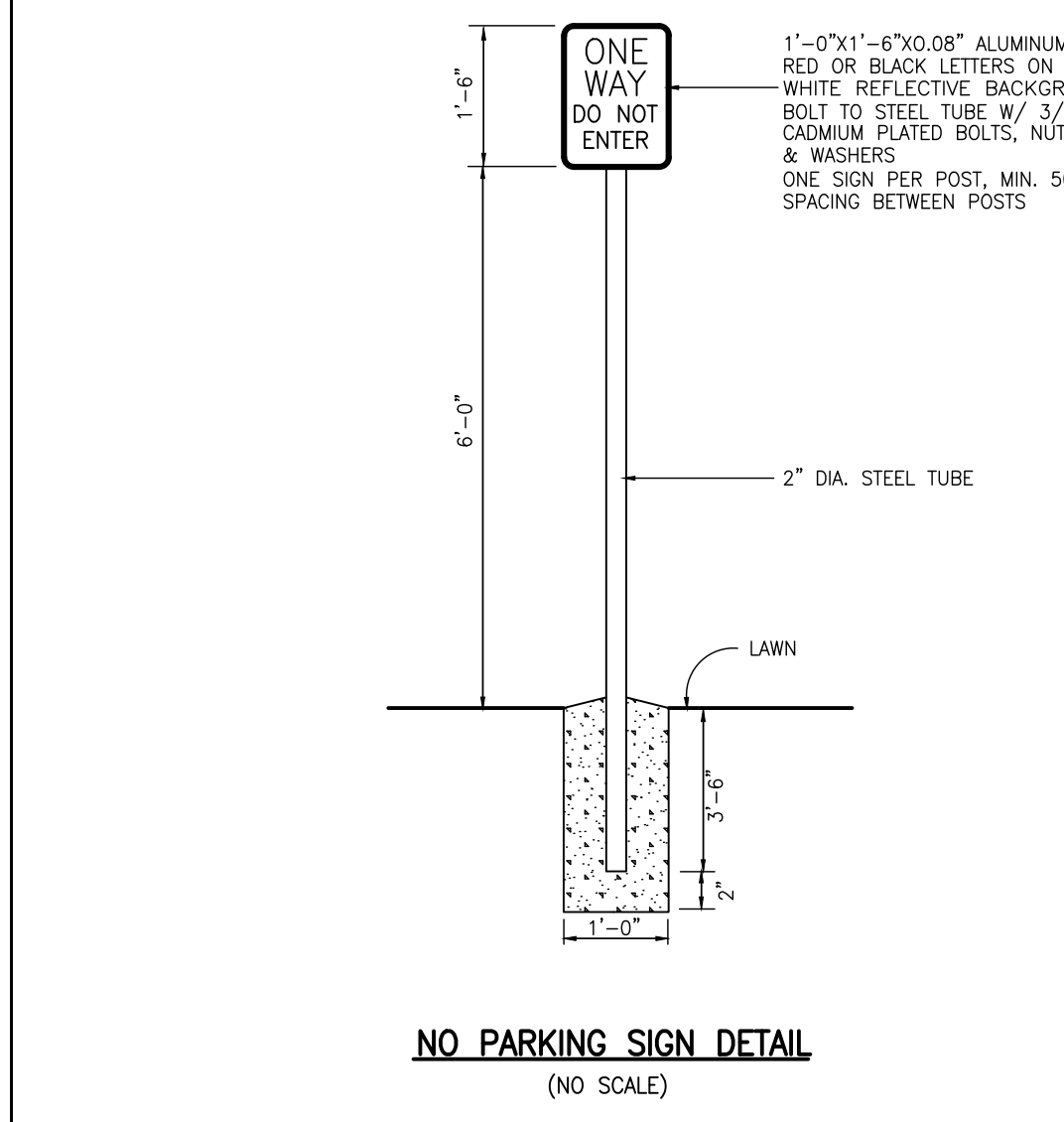
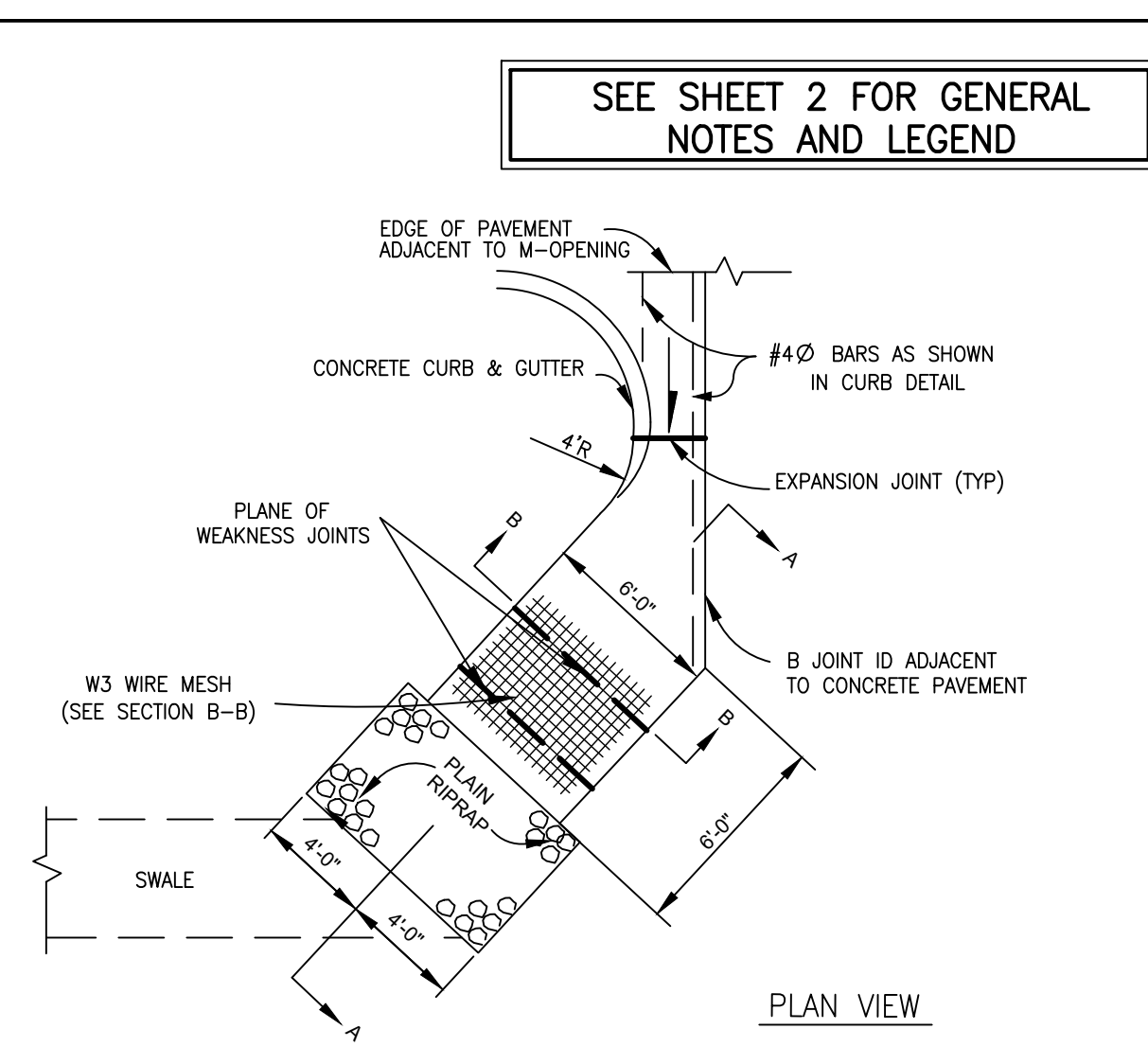
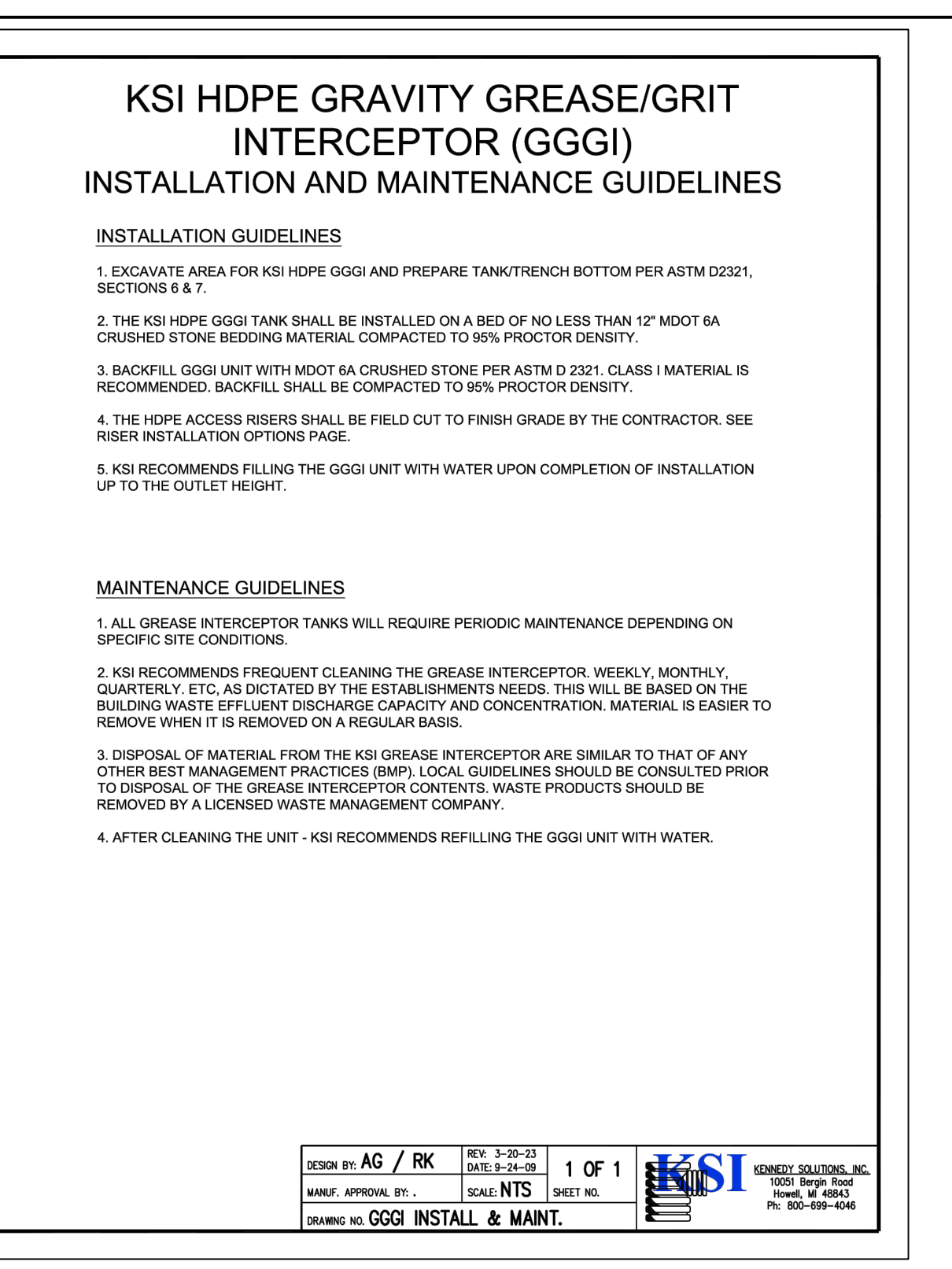
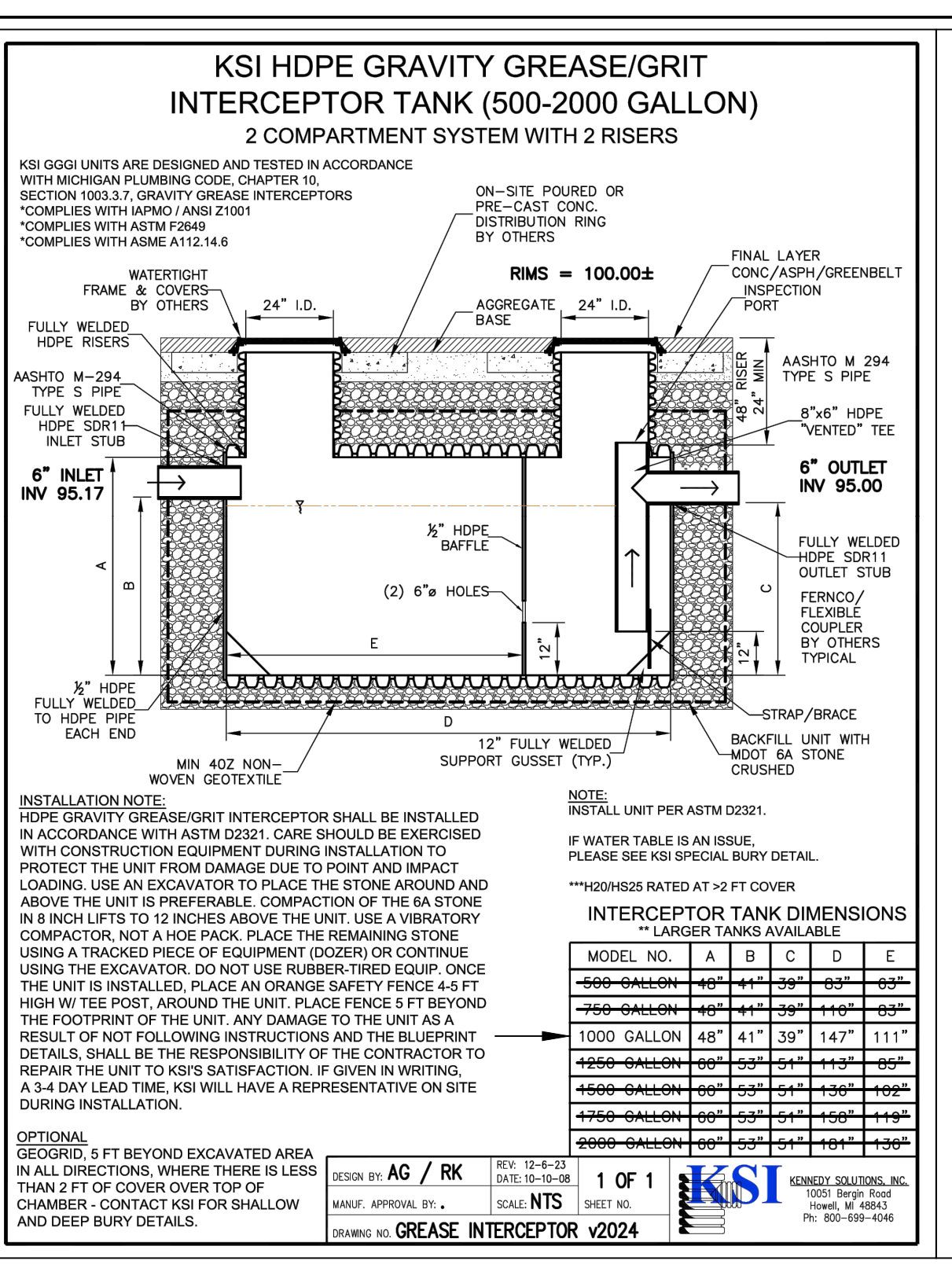
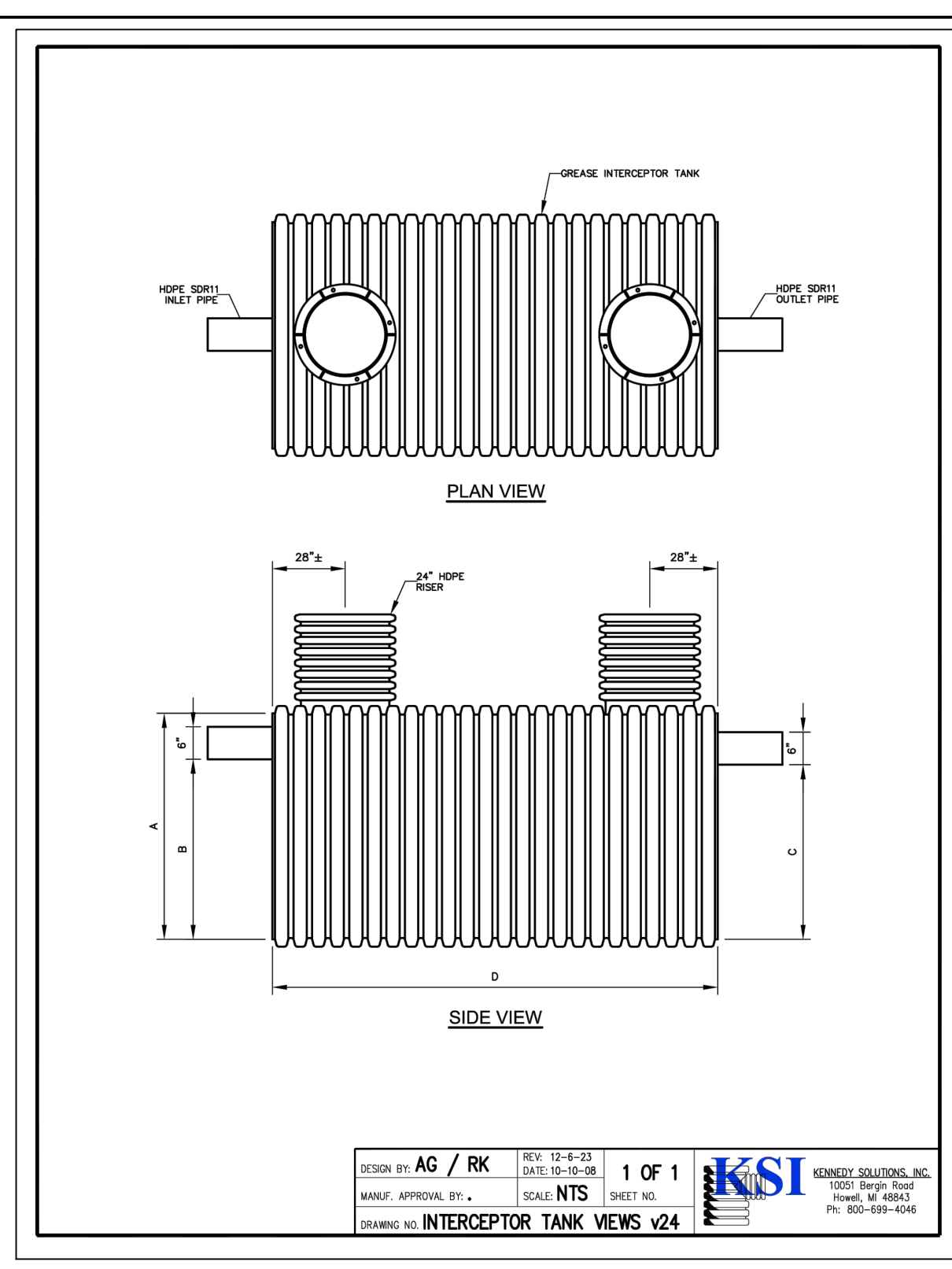
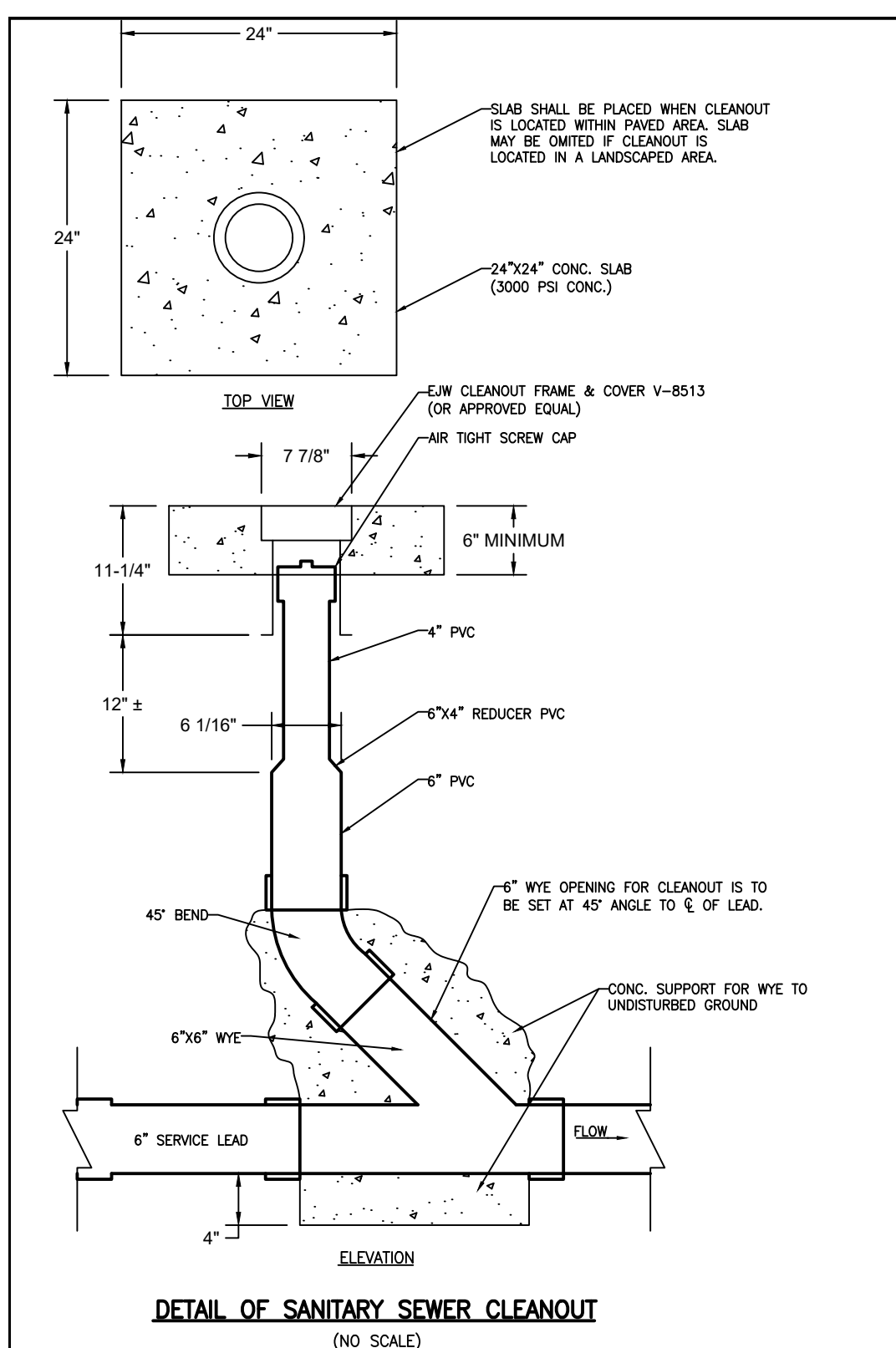
E. HIGHLAND ROAD/M-59 MDOT PLAN
(1"=50' SCALE)

PROJECT	GATEWAY CROSSING
PREPARED FOR	GATEWAY CROSSING, LLC 600 NORTH OLD WOODWARD, SUITE 101 BIRMINGHAM, MI. 38209 248-437-7000
TITLE	M-59 MDOT LAYOUT PLAN

NO	BY	DATE	REVISION PER	COMMENTS
2	MLD	8/6/24		TOWNSHIP COMMENTS
1	MLD	7/9/24		MDOT COMMENTS
NO	BY			REVISION PER

DESIGNED BY:	ST
DRAWN BY:	NL
CHECKED BY:	
SCALE:	1" = 20'
JOB NO:	22-029-1
DATE:	05/30/24
SHEET NO.	17





Design Specific Geometric Information		Geogrid Type and Manufacturer		See Notes
Retaining Wall System	DuraHold w/ Geogrid	Geogrid Type	Infinite Clays Low Plasticity	See Notes
Maximum Height (m)	4.88 (162)	Minimum Geogrid Length (m)	1.52 (5)	See Notes
Maximum Slope Above Wall	Horizontal	Maximum Slope Below Wall	None	
Max. Surcharge Above Wall (kPa)	Traffic Surcharge 12 kPa (250 lb/sq ft)	Depth of Embankment (m)	4.88 (16)	
Factor of Safety	7.12	Compacted Base Dimension (mm)	1228 x 305 (48 x 12)	

Design Specific Soil Information		Soil Region		
Description	City (istics)	Intill	Retained	Foundation
Effective Internal Friction Angle	35	28	28	30
Moist Unit Weight (kN/m ³)	22 (140)	20 (127)	20 (127)	22 (140)
Effective Cohesion (kPa)	NR	NR	NR	NR
Soil Notes	Placed in 150mm (6") lifts and well compacted to 95% SPD.	Undisturbed dense soil or well compacted Eng. fill.	Allowable bearing cap must exceed 150kPa (3.25 psi), compared to 95% SPD.	Crushed Gravel cap must exceed three straining) angular, see drain within, 6% fines.

Design Specific Soil Information		Soil Region		
Description	City (istics)	Intill	Retained	Foundation
Effective Internal Friction Angle	35	28	28	30
Moist Unit Weight (kN/m ³)	22 (140)	20 (127)	20 (127)	22 (140)
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GATEWAY CROSSING
 GATEWAY CROSSING, LLC
 600 NORTH OLD WOODWARD, SUITE 101
 BIRMINGHAM, MI 48009
 248-937-7000

CONSTRUCTION DETAILS

PROJECT	TITLE	TOWNSHIP COMMENTS	DATE
			8/6/24
			7/9/24

DESIGNED BY: ST
 DRAWN BY: DH
 CHECKED BY:
 SCALE: NO SCALE
 JOB NO: 22-029-1
 DATE: 05/30/24
 SHEET NO. 18

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

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GATEWAY CROSSING
GATEWAY CROSSING, LLC
600 NORTH OLD WOODWARD, SUITE 101
BIRMINGHAM, MI 48209
248-937-7000

TOWNSHIP STORM DETAILS

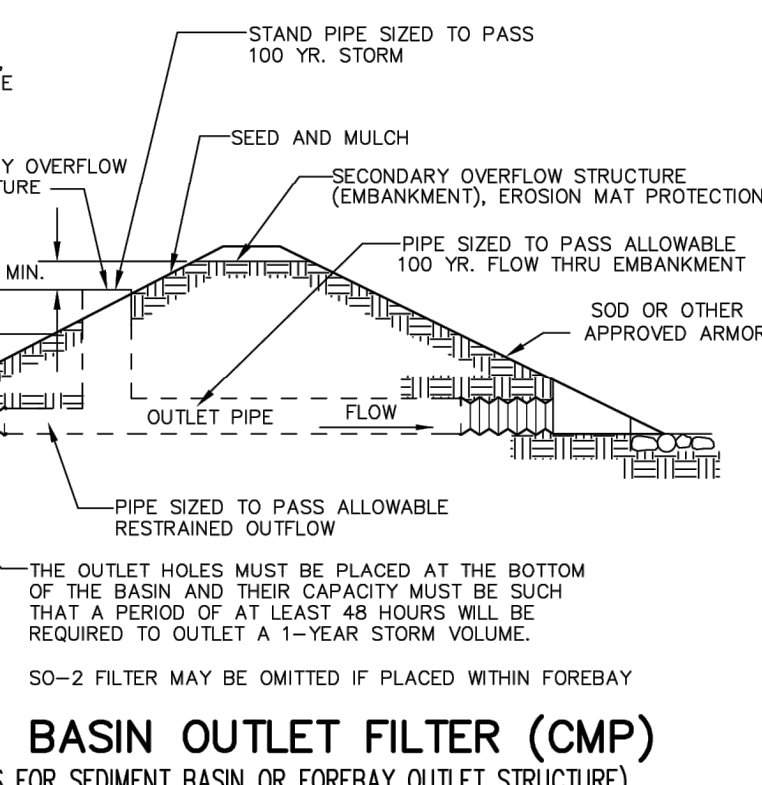
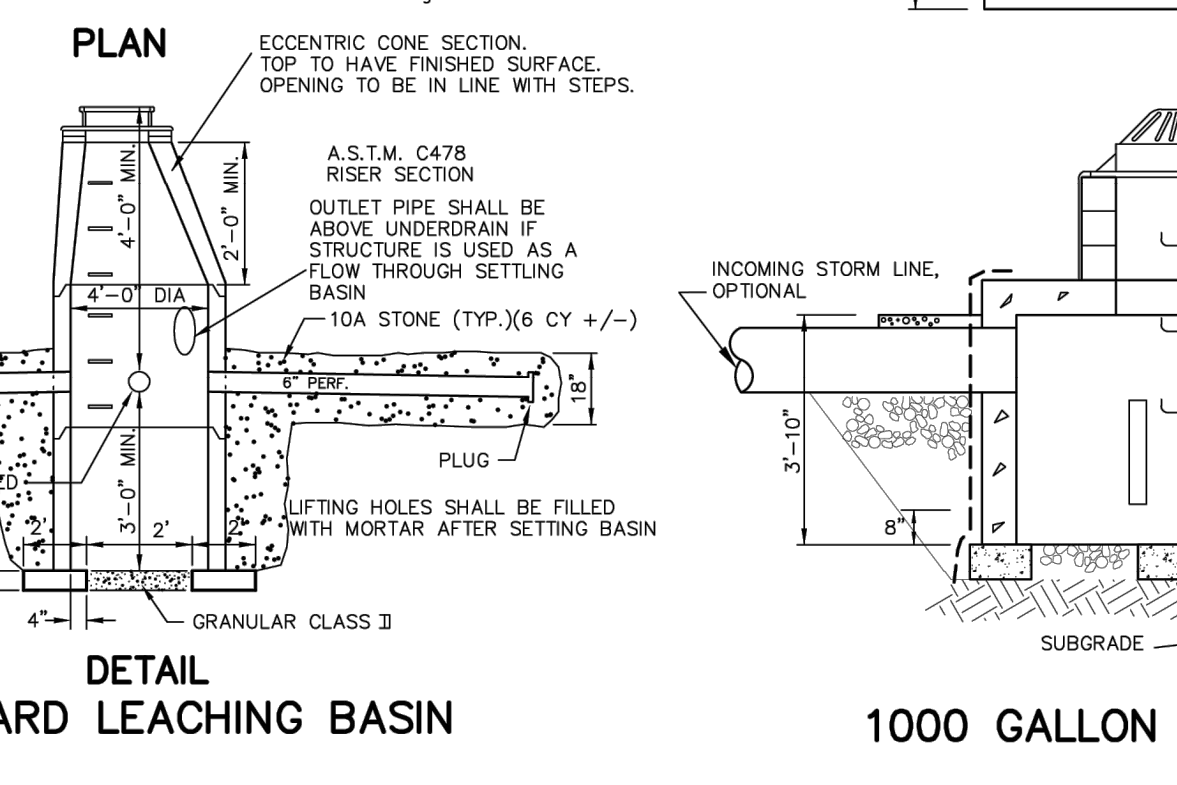
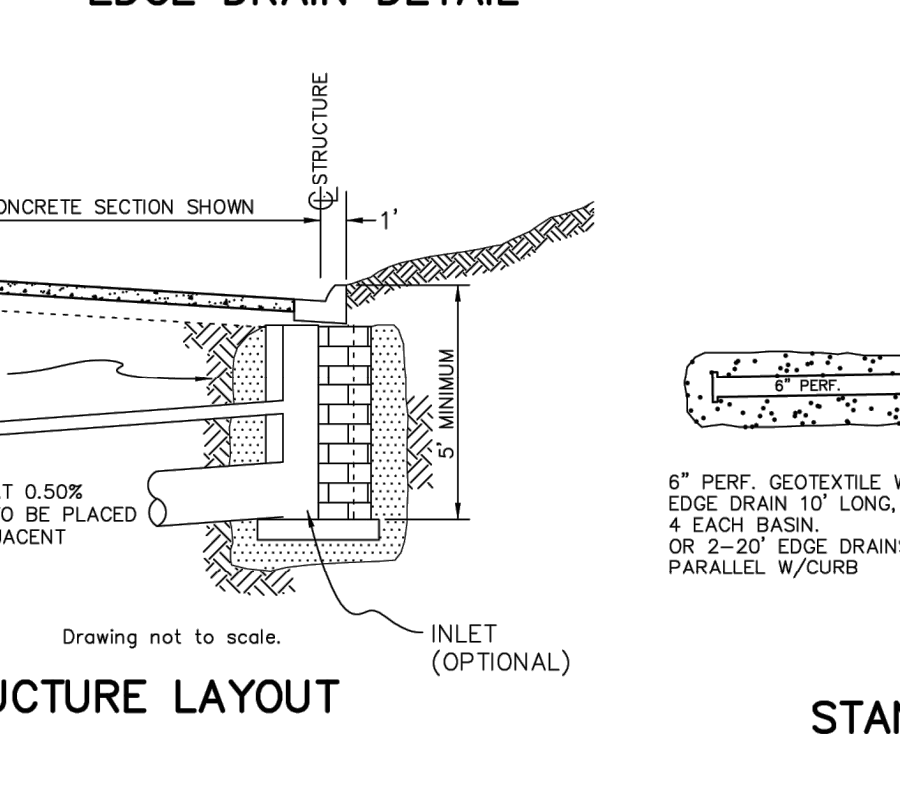
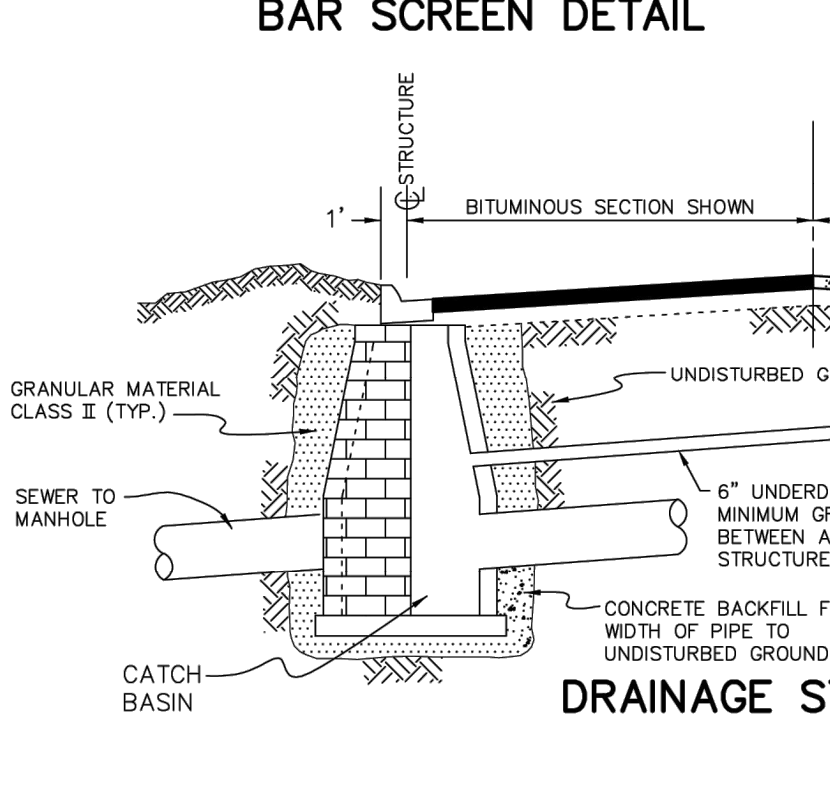
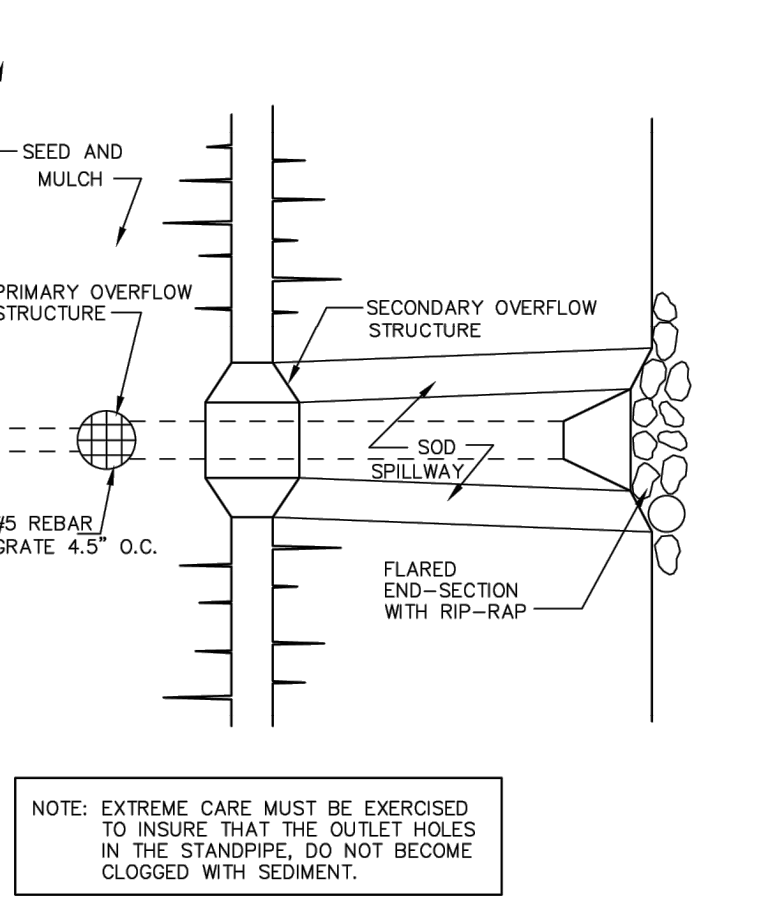
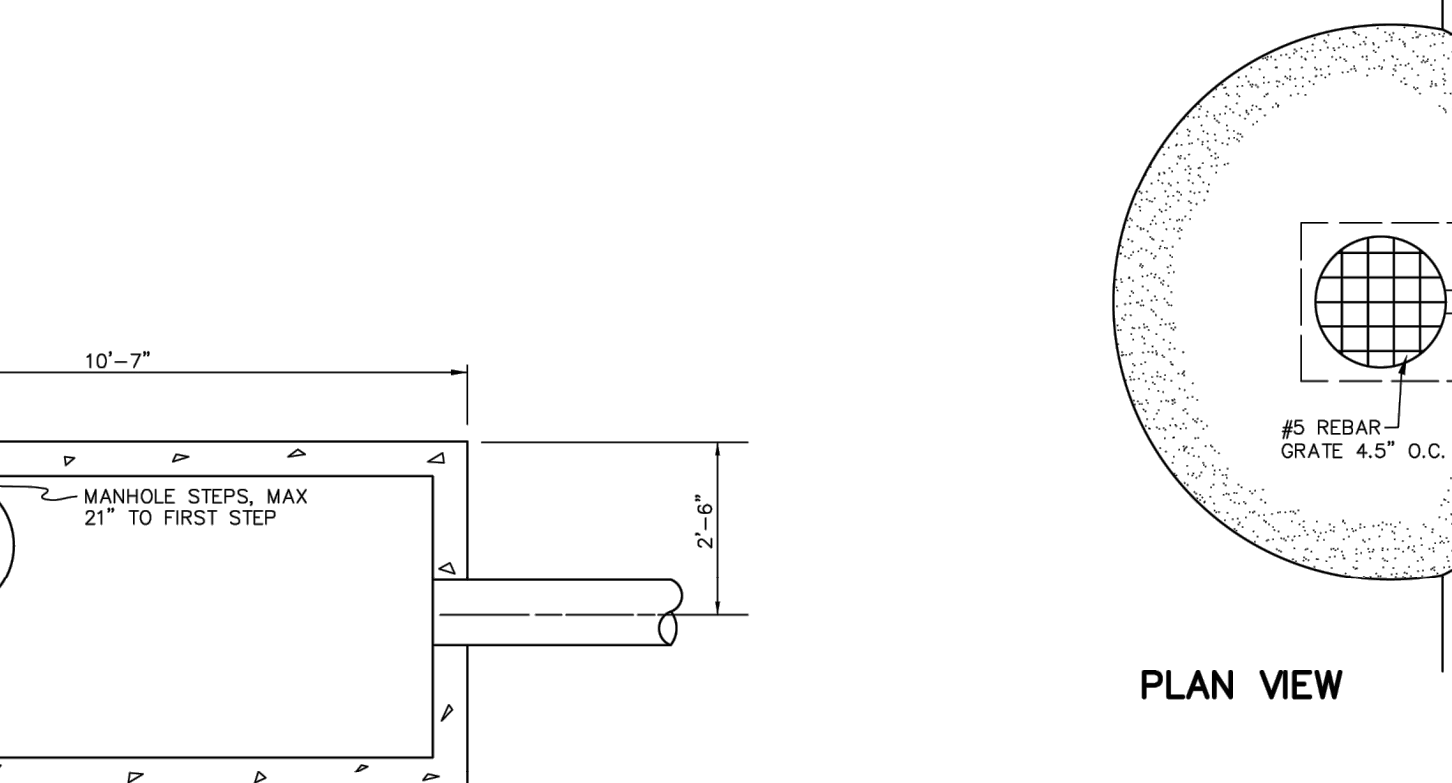
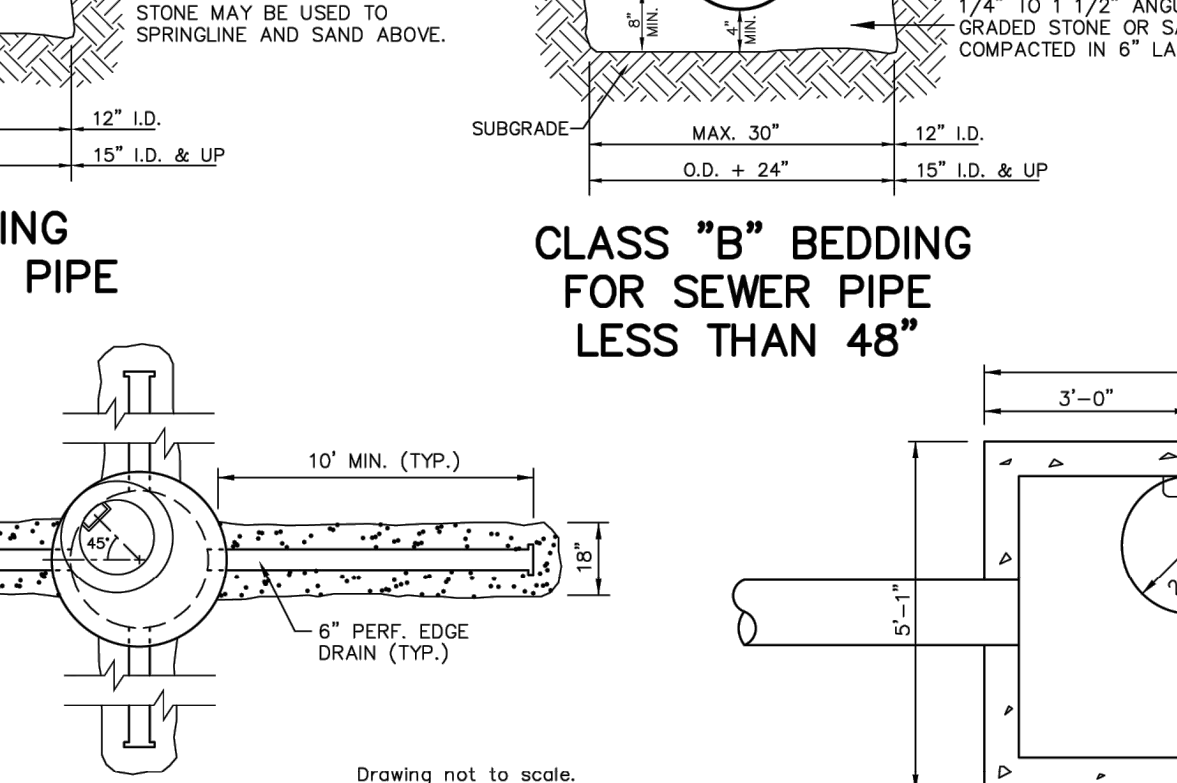
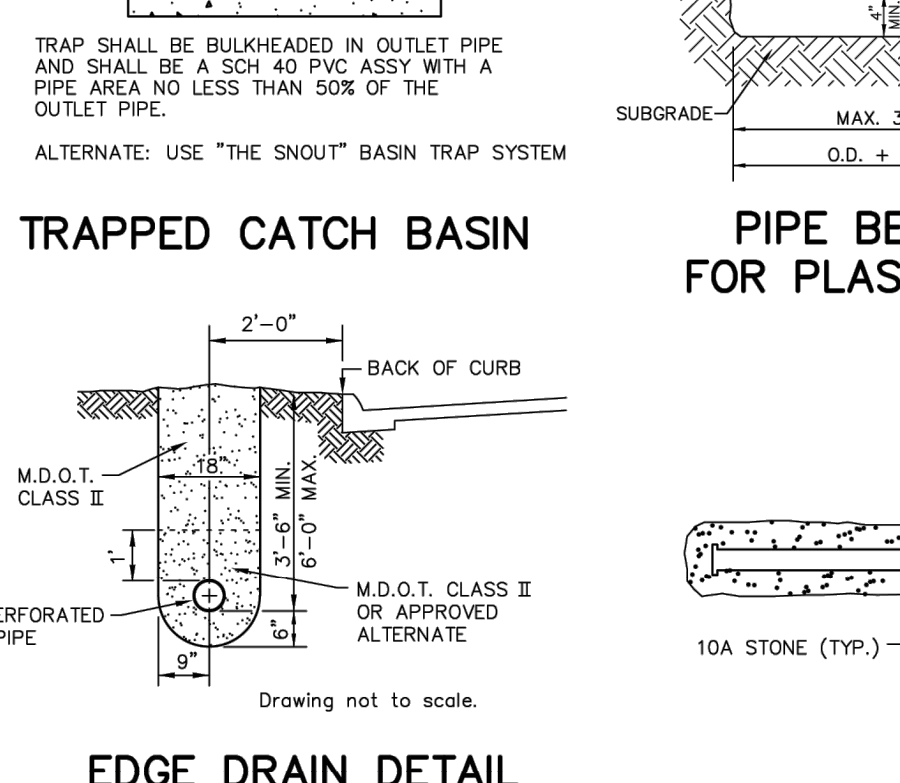
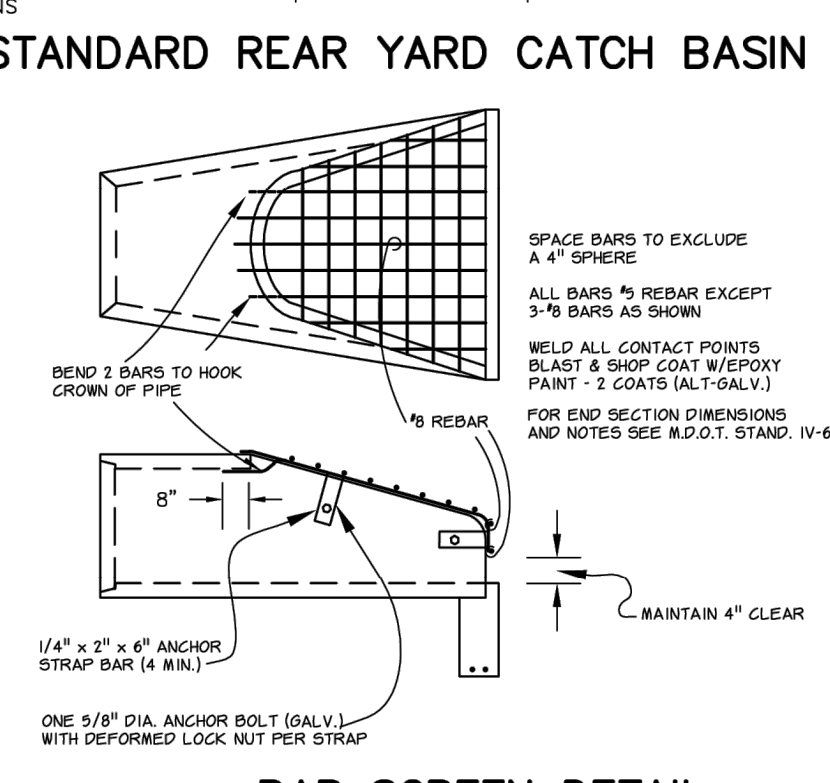
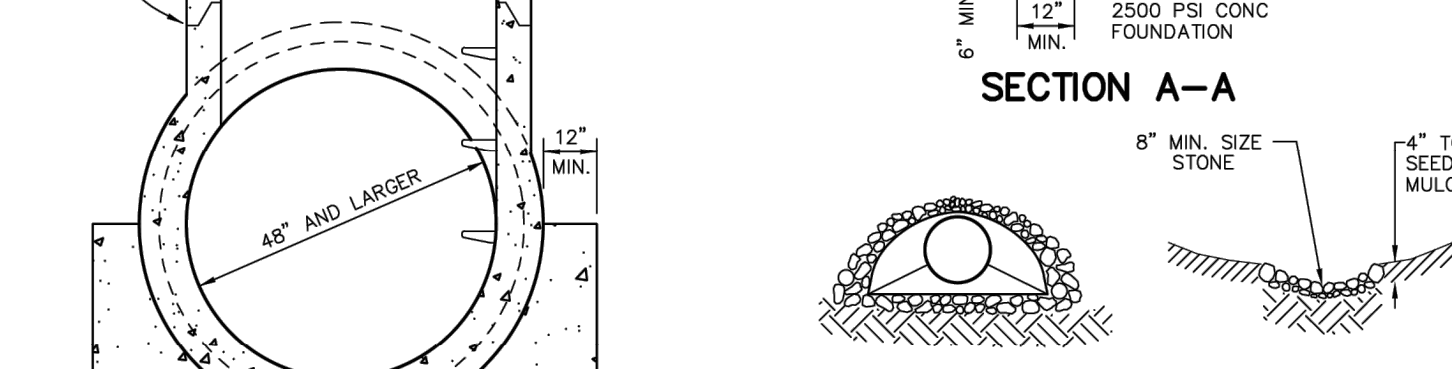
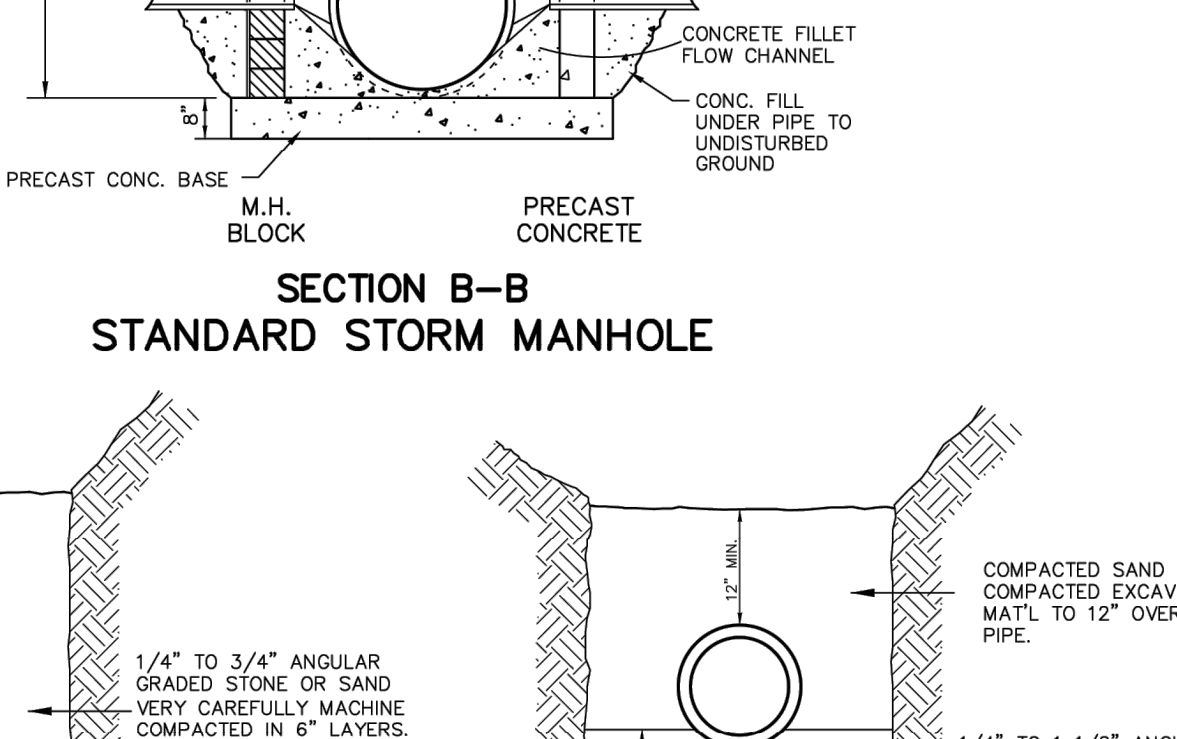
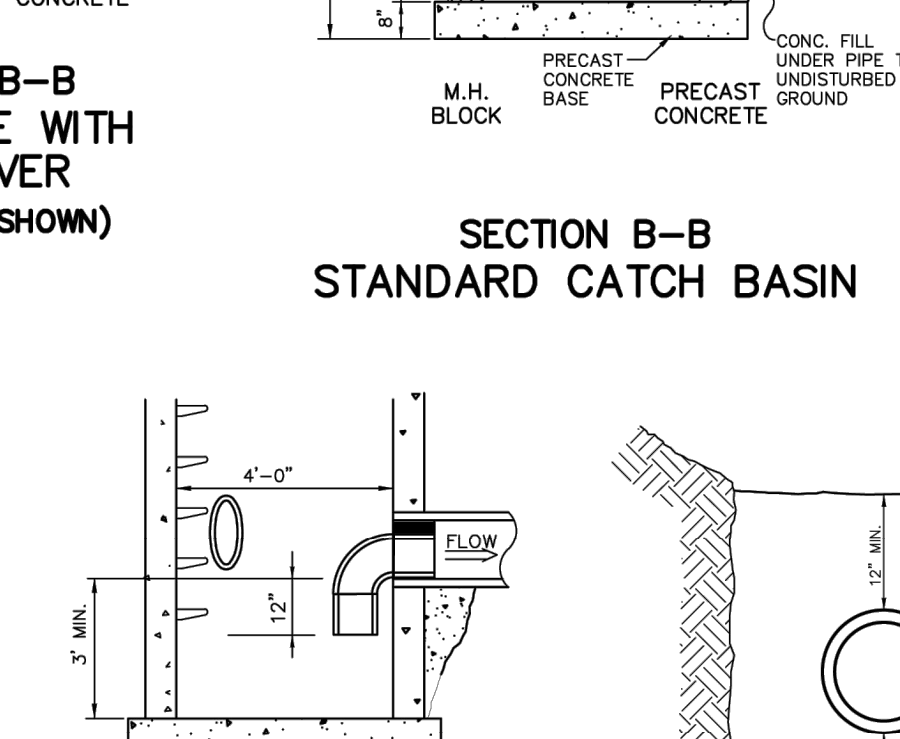
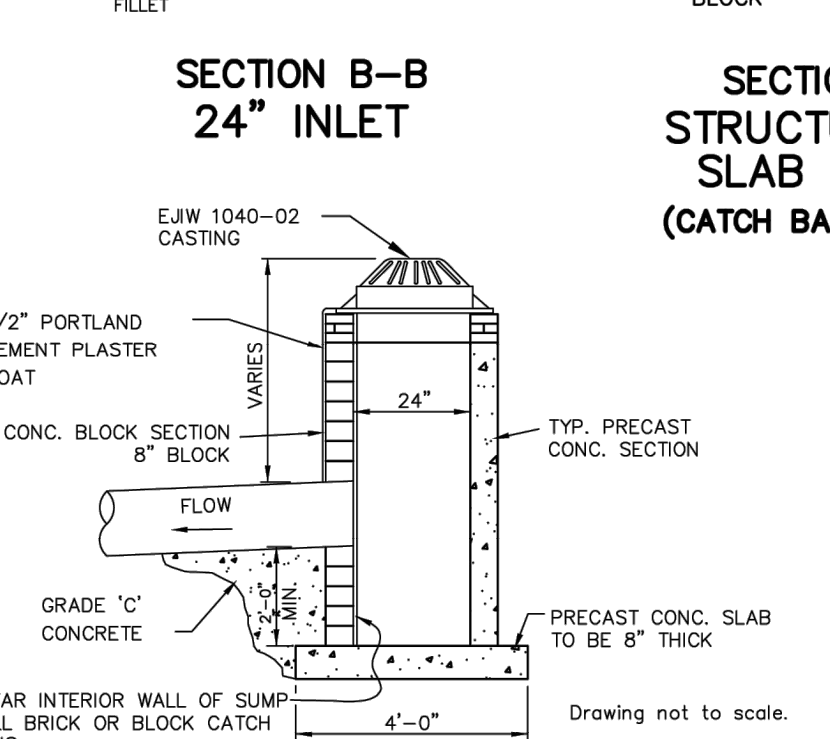
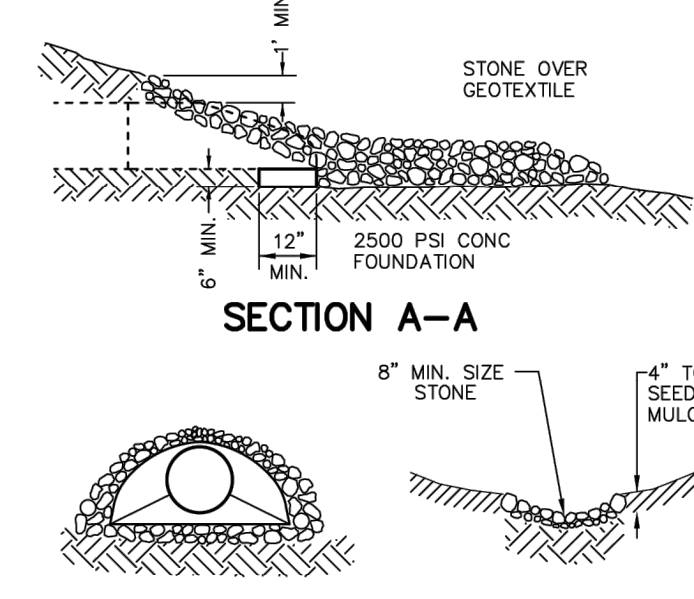
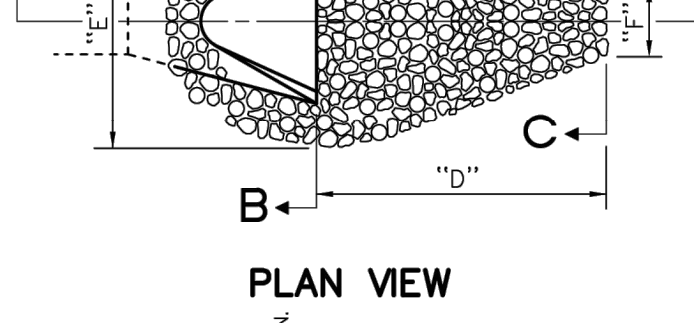
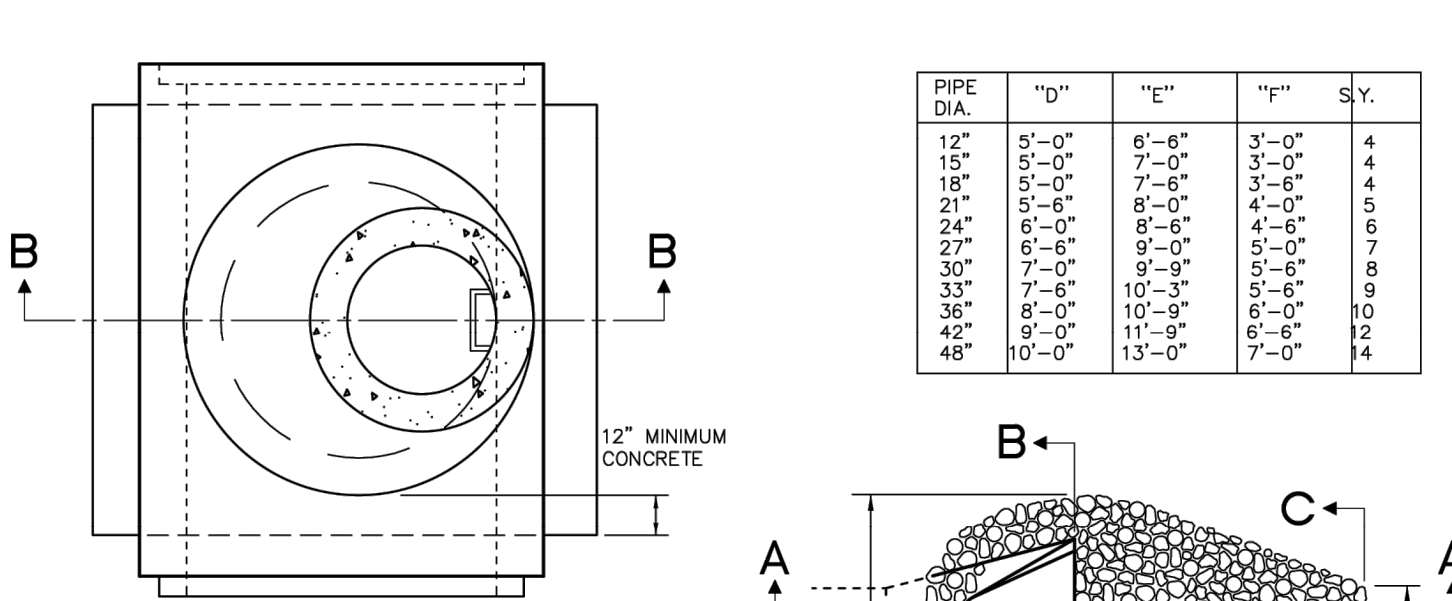
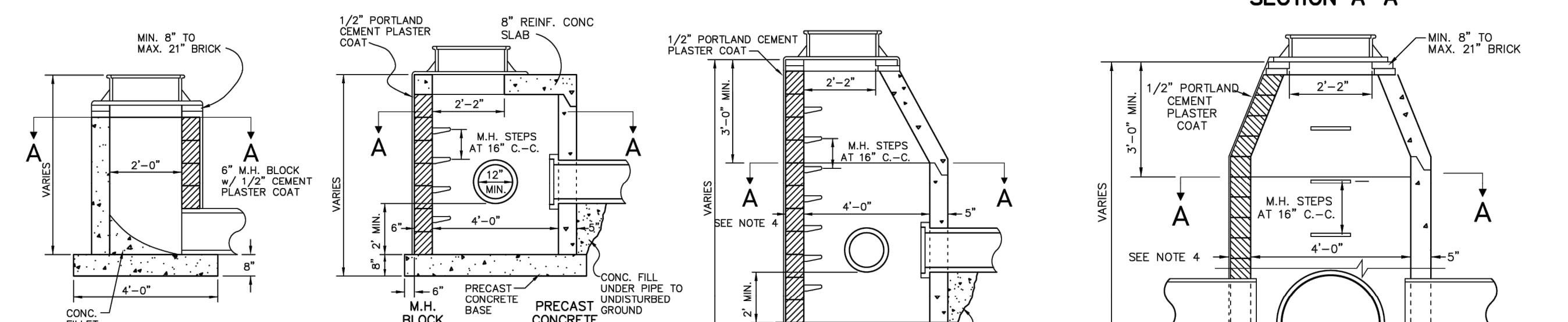
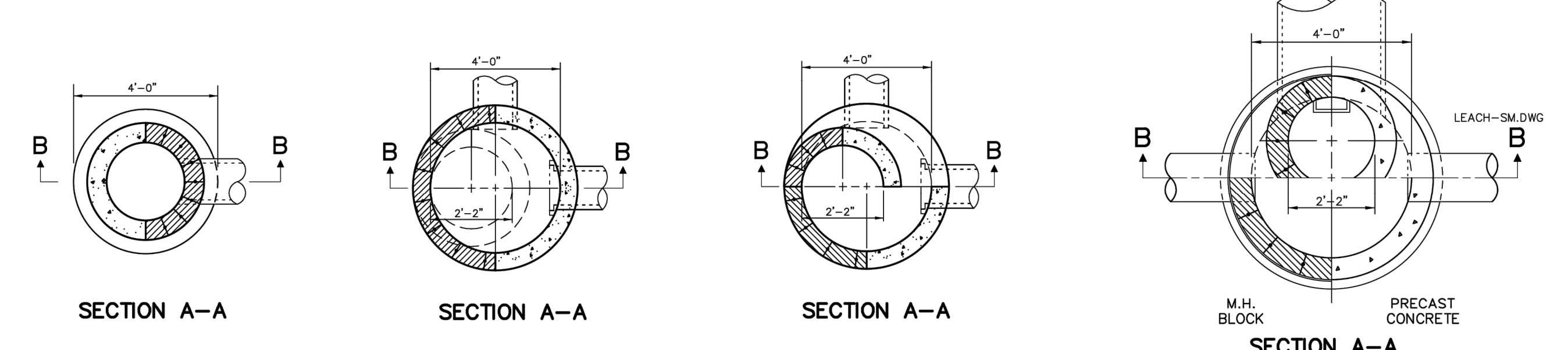
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1	7/9/24	MD	MDOT COMMENTS
1	NO BY	NO	REVISION PER

DESIGNED BY: []
DRAWN BY: []
CHECKED BY: []
SCALE: NO SCALE
JOB NO: 22-029-1
DATE: 05/30/24
SHEET NO. 19

STORM SEWER NOTES

- PRECAST CONC. RISERS SHALL MEET A.S.T.M. C478
- DIAMETER OF CONC. BASE: I.D. + 2(WALL) + 8"
- MANHOLE STEP SPACING SHALL MEET MISHA REQUIREMENTS. NO MORE THAN 21" FROM RIM TO FIRST STEP. MAX 16" O.C. STEPS SHALL BE CAST POLYPROPYLENE REINFORCED WITH #1/2" STEEL ROD.
- WALL THICKNESS OF BLOCK STRUCTURES SHALL BE: DEPTH 0-8" THICKNESS 8-15" OVER 15" 12"
- MINIMUM I.D. OF STRUCTURE FOR: 36" to 42" = 5'-0" LARGER DIAMETER STRUCTURES MAY 48" to 54" = 6'-0" DEPENDING ON PIPING CONFIGURATION.
- ALL LIFTING HOLES AND VOIDS IN INTERIOR JOINTS SHALL BE FILLED BY MORTAR.
- THE FINGER DRAIN DETAIL SHALL BE USED AT ALL LOW POINT CATCH BASINS IN PAVEMENT AREAS. THE DETAIL MAY BE OMITTED WITH THE APPROVAL OF THE TOWNSHIP ENGINEER IN AREAS WITH VERY POROUS SOILS AND NO GROUNDWATER PROBLEMS.
- PRECAST ONE PIECE BASES AND RISERS ARE ACCEPTABLE FOR INLETS, CATCH BASINS AND MANHOLES
- FRAMES & COVERS WITH INLET CAPACITY (1.0 CFS/90 SQ IN) -TRAFFIC AND PARKING AREAS: MDOT "10" (EJW 5105) 1.9 CFS* -REAR YARD AND DITCH INLETS: (EJW 1040-02) 2.1 CFS* -MANHOLES: MDOT "A" (EJW 1065) -CURB AND GUTTER INLETS: MDOT "C" (EJW 7045) 1.8 CFS* -MOUNTABLE CURB & GUTTER: (EJW 7065) 2.2 CFS* -MAY VARY DUE TO MANUFACTURER CHANGES
- CONTACT THE TOWNSHIP ENGINEER 48 HOURS PRIOR TO CONSTRUCTION TO SCHEDULE INSPECTION. FULL TIME INSPECTION WILL BE REQUIRED FOR ALL UNDERGROUND STORM SEWER CONSTRUCTION. PHONE (248) 334-9901
- THE CONTRACTOR SHALL CONTACT MISS DG 72 HOURS BEFORE CONSTRUCTION AT (800) 482-7171 TO LOCATE EXISTING UNDERGROUND UTILITIES.
- PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL HAVE IN HIS POSSESSION A CURRENT SOIL EROSION CONTROL PERMIT AS ISSUED BY WHITE LAKE TOWNSHIP.
- A 2' DEEP SUMP SHALL BE USED IN ANY STRUCTURE SUBJECT TO A WATER DROP GREATER THAN 2.0' FROM AN INLET PIPE.
- ALLOWABLE STORM SEWER PIPE TYPES: -12" AND UP: RCP ASTM C-76 MIN. CLASS 3, MIN CLASS 4 UNDER TRAFFIC AREAS, RUBBER JOINT -8" TO 15": SCH 40 PVC OR SDR 35.5 PVC WITH RUBBER OR GLEU JOINT -6" TO 48": SMOOTH BORE CORRUGATED HIGH DENSITY POLYETHYLENE WITH NEOPRENE LINED JOINTS OR BETTER
- THE MINIMUM PIPE SIZE IN PUBLIC RIGHT-OF-WAY OR EASEMENTS AND FOR PIPES CARRYING OFF-SITE STORM WATER SHALL BE 12"
- ALL PIPE ENDS NOT WITHIN A STRUCTURE SHALL HAVE A CONCRETE OR METAL FLARE END SECTION (FES) WITH A BAR SCREEN ON PIPES 18" AND LARGER EXCEPT THOSE WITHIN A SECURE FENCED AREA NEED NO BAR SCREEN.
- ALL DRAINAGE STRUCTURES WITHIN THE ROAD SHALL BE SEALED WITH WRAPPED GEOTEXTILE PER ROAD STANDARDS

PIPE DIA.	"D"	"E"	"F"	S.Y.
12"	5'-0"	6'-6"	3'-0"	4
18"	5'-0"	7'-0"	3'-0"	4
24"	5'-0"	8'-0"	4'-0"	5
30"	6'-6"	9'-0"	4'-0"	6
36"	7'-0"	10'-0"	5'-0"	8
42"	8'-0"	11'-0"	6'-0"	10
48"	10'-0"	13'-0"	7'-0"	14



REVISIONS

NO.	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
1		FIRST ISSUE	08/16/95			10-03-02		REVISE	06-01-07
2		ADD SO-1	08-17-98			12-17-03		UPDATED TITLE BLOCK	04/30/13
3		NEW BAR GRATE	11-03-97			05-17-05		SEC. REFERENCE	

Johnson & Anderson
4494 Elizabeth Lake Road
Waterford, Michigan 48328
Tel (248) 681-7800 Fax (248) 681-2660

1060 W. Norton Avenue, Suite 7
Muskegon, Michigan 49441
Tel (231) 760-3100 Fax (231) 760-3115

3910 Lapeer Road
Port Huron, Michigan 48050
Tel (810) 987-7820 Fax (810) 987-7895

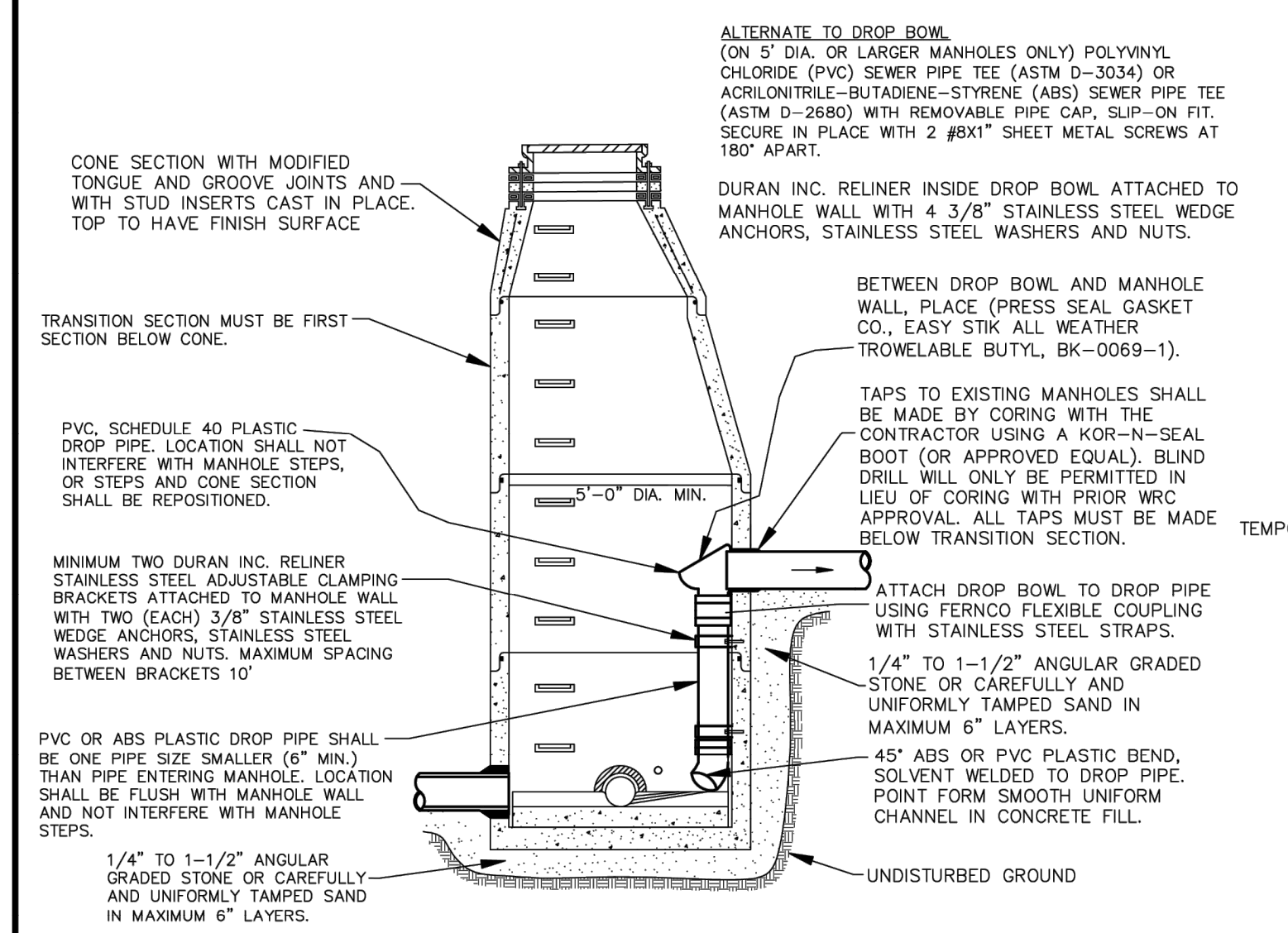
White Lake Township
7525 Highland Road (M-59)
White Lake, Michigan 48383
248-698-3300

STORM SEWER STANDARD DETAILS

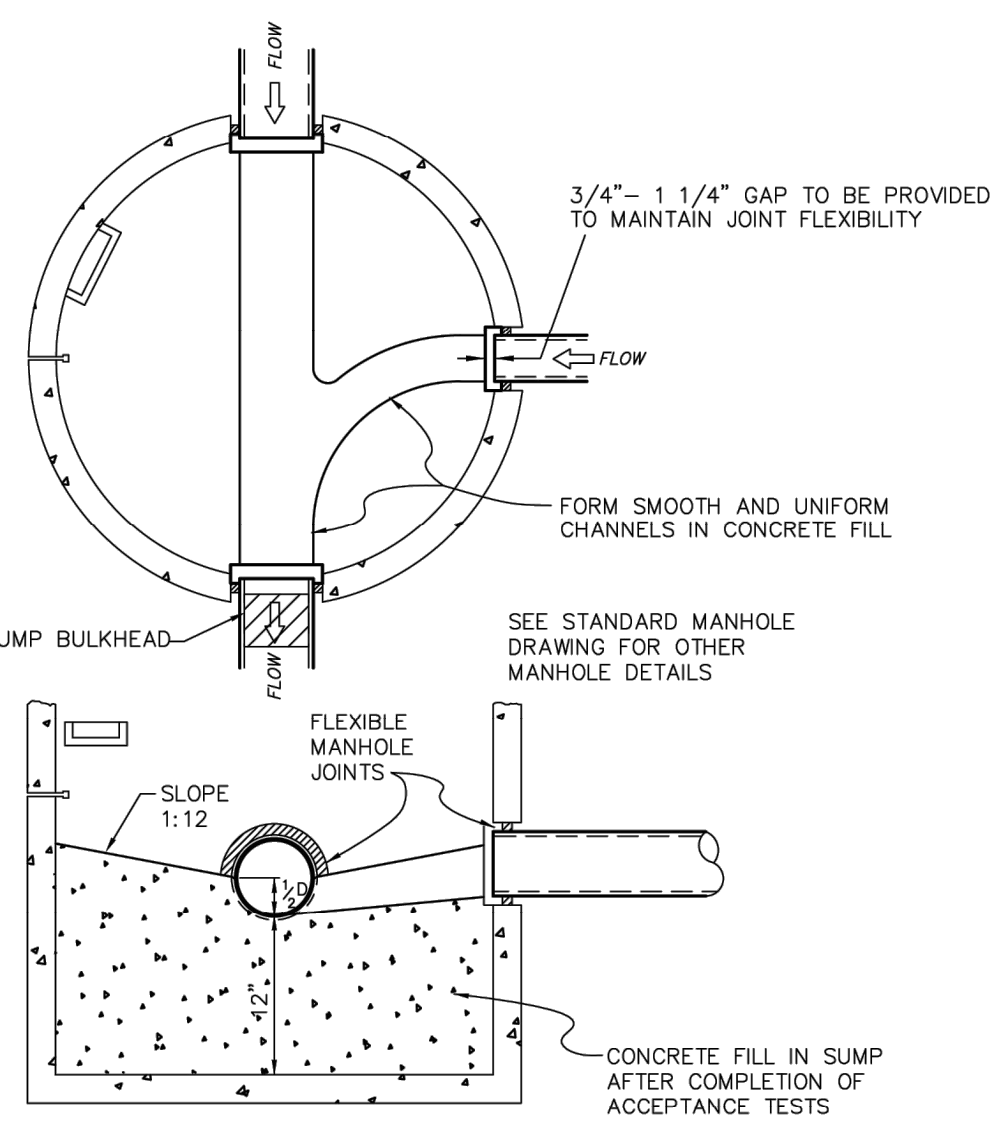
SCALE: VERT. -
HORZ. AS NOTED

JOB NO. []
DATE ISSUED 08/16/95
SHEET NO. []

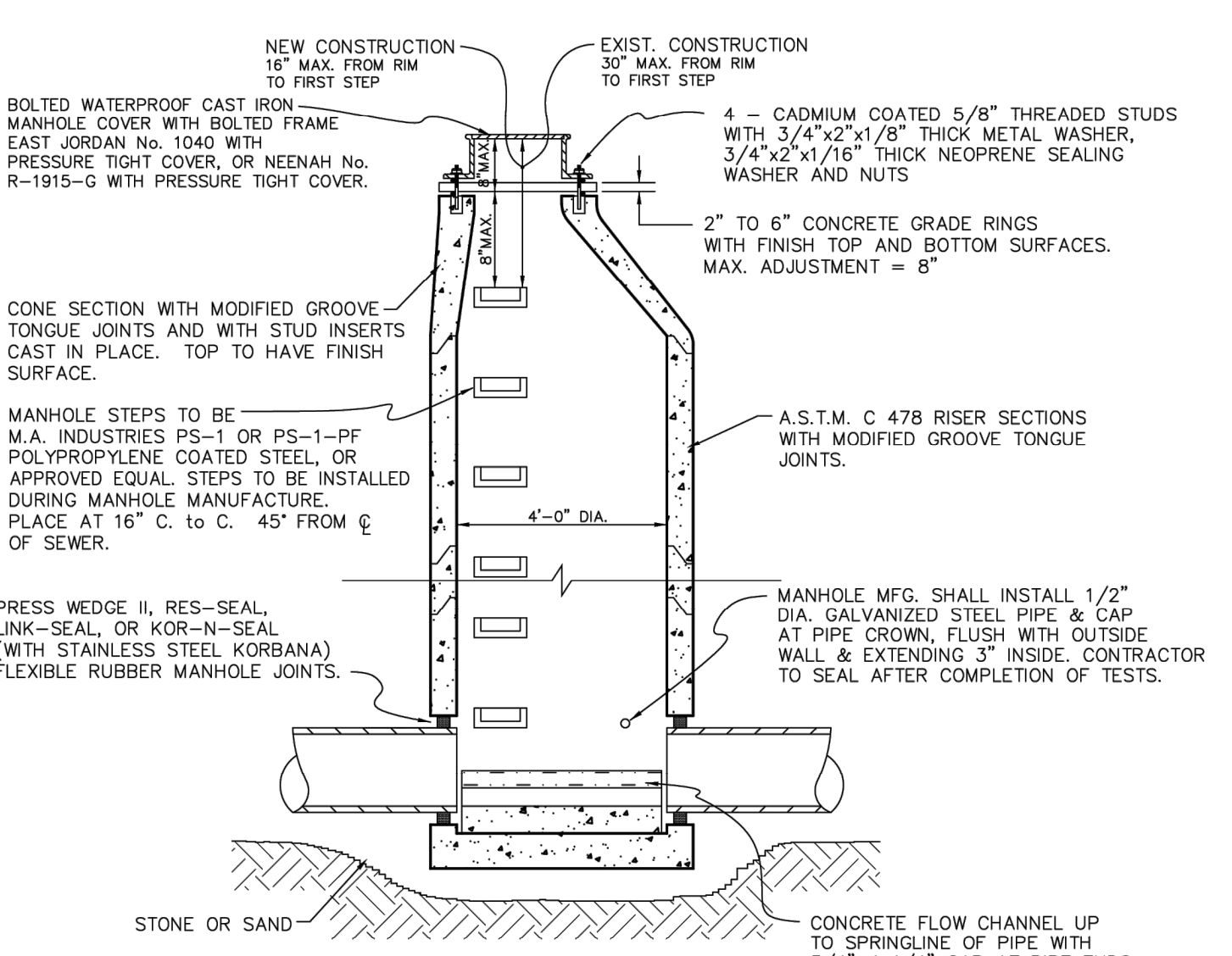
SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



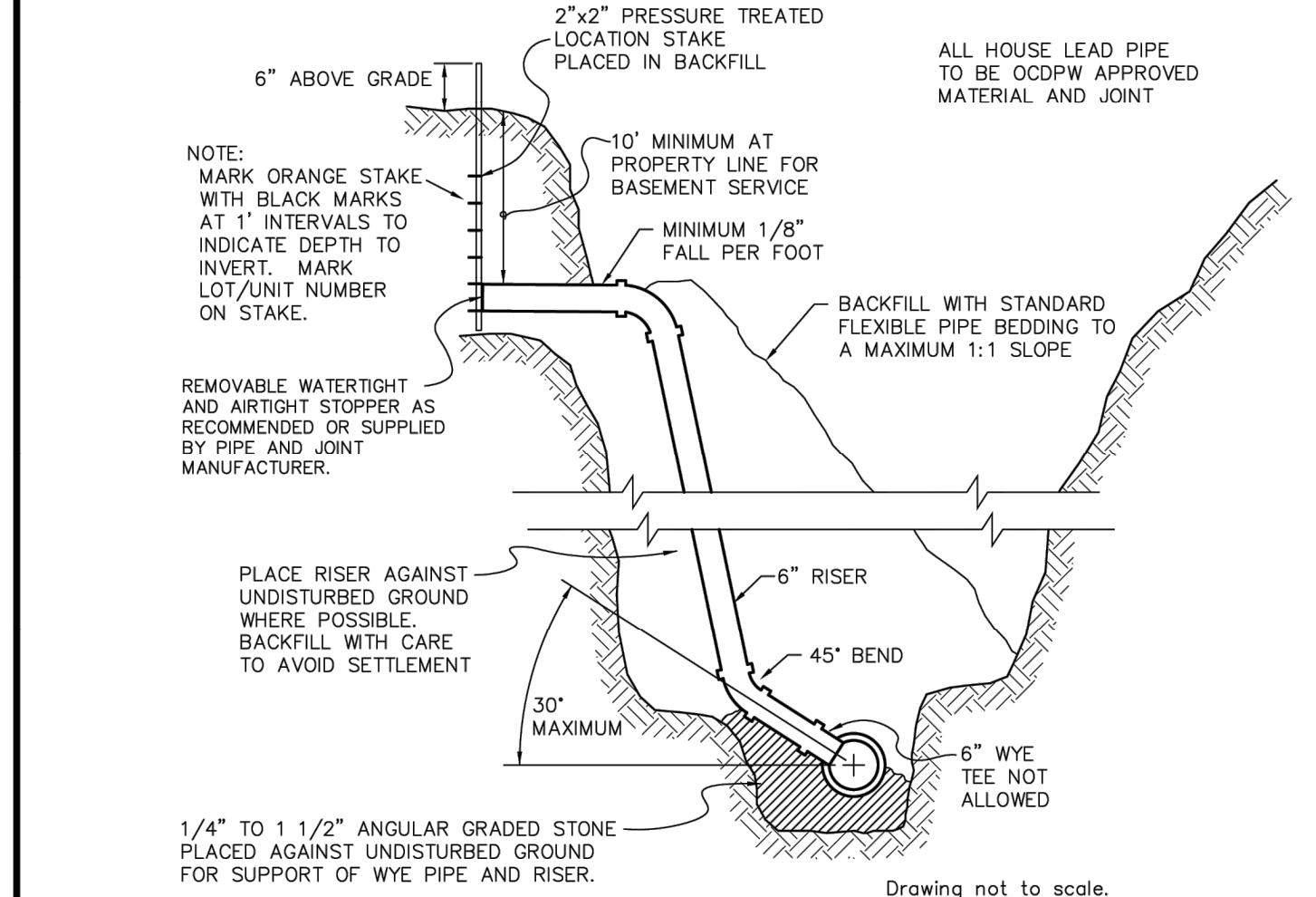
INTERIOR DROP CONNECTION



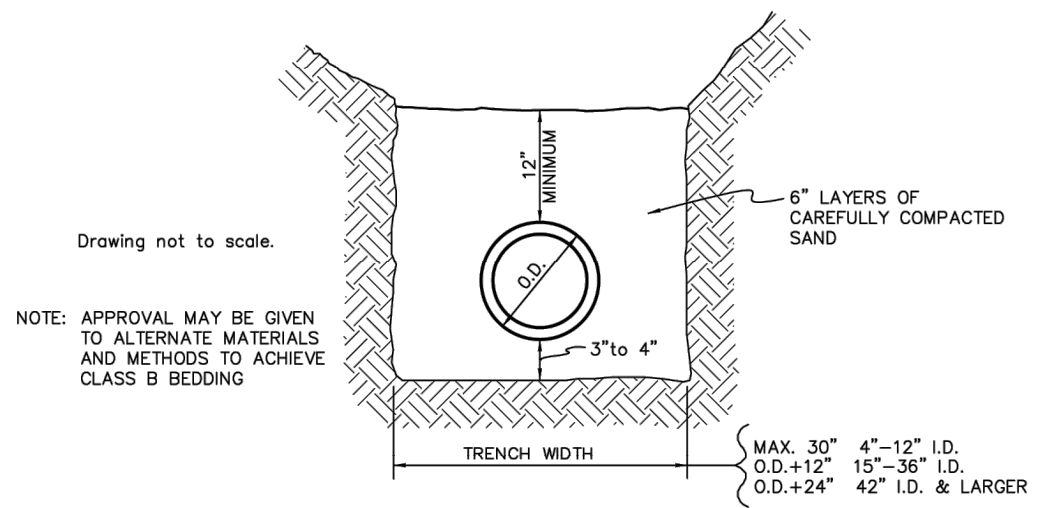
SUMP MANHOLE FOR TESTING, CLEANING, AND DEWATERING



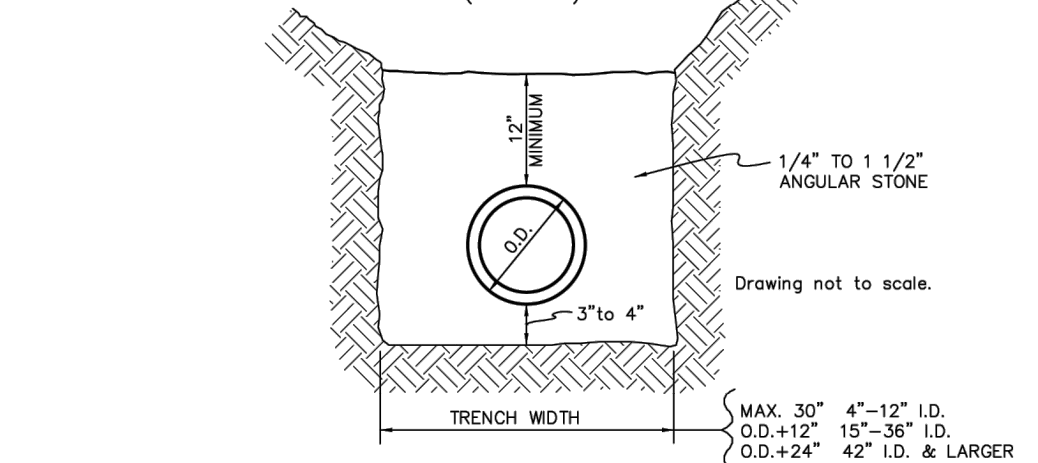
STANDARD MANHOLE ON 8" THROUGH 24" DIAMETER SEWERS



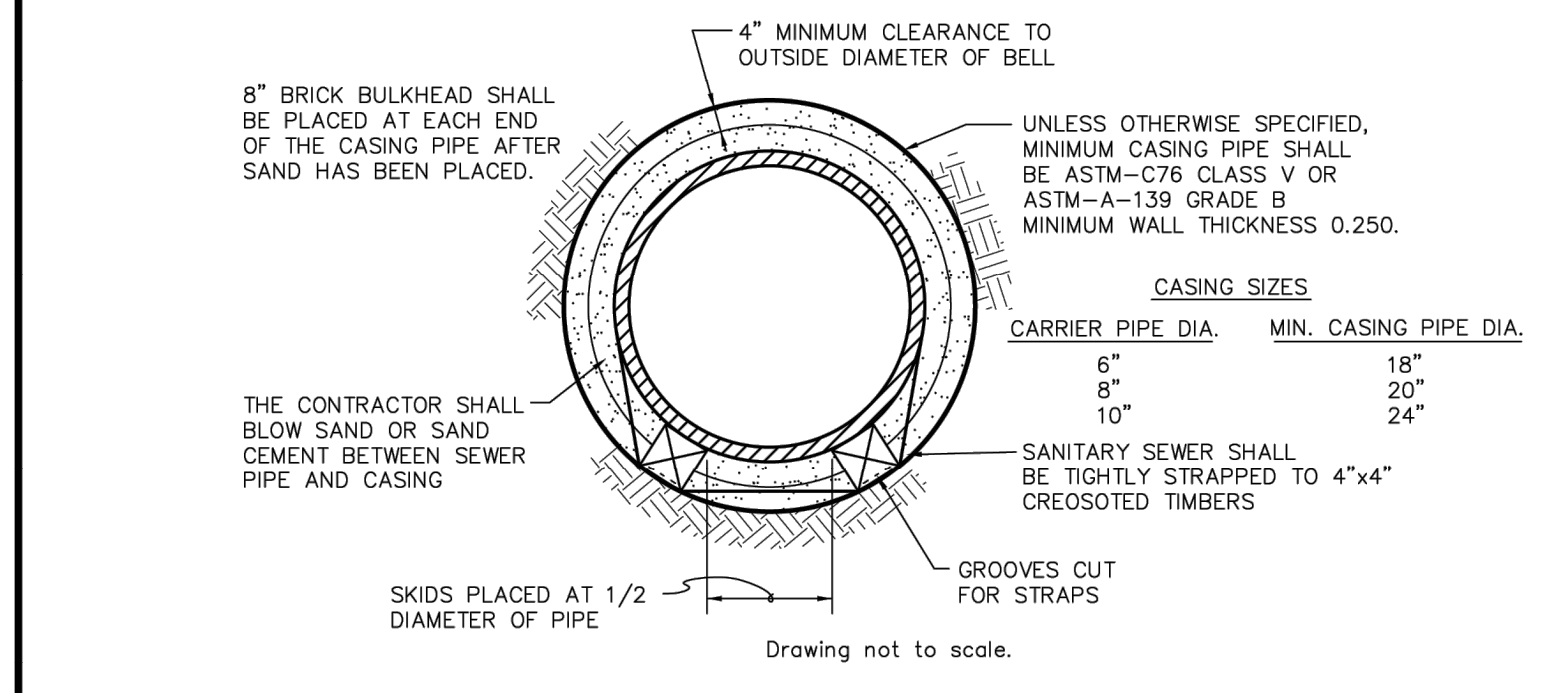
HOUSE/BUILDING LEAD DETAIL



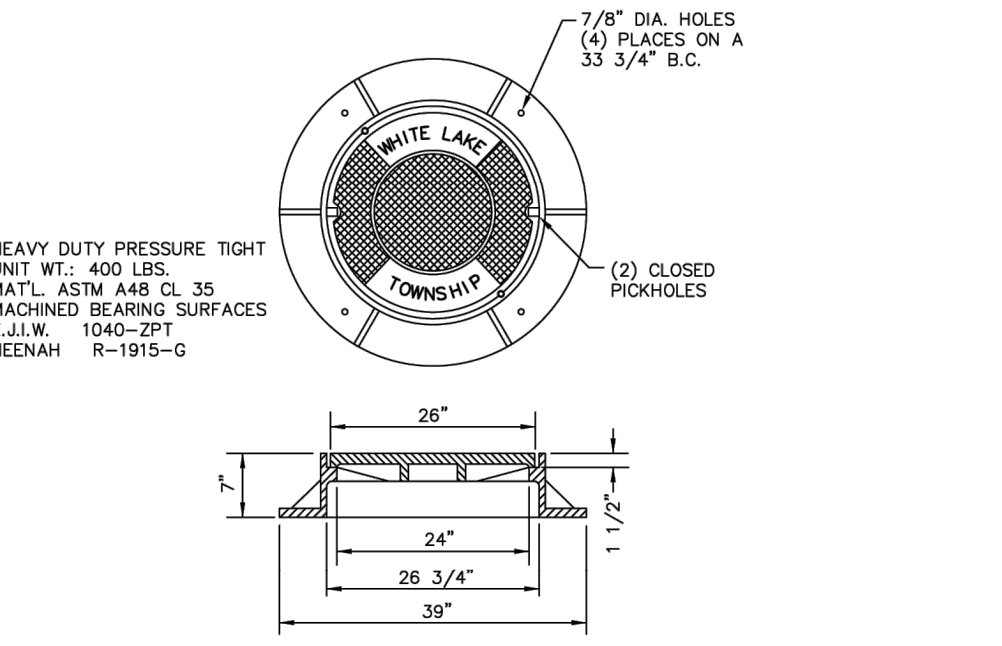
BEDDING DETAIL FOR RIGID PIPE (CLASS B)



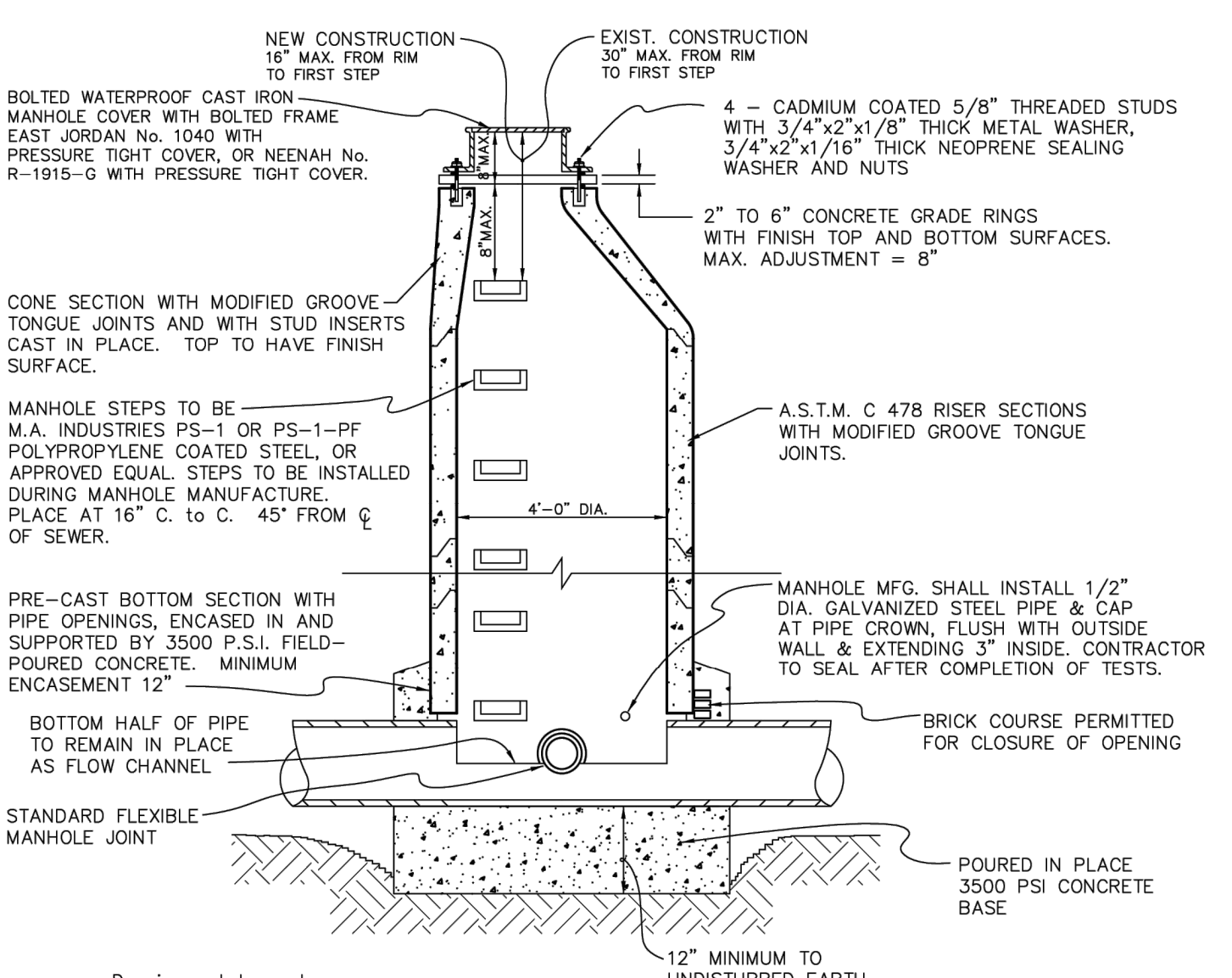
BEDDING DETAIL FOR FLEXIBLE PIPE



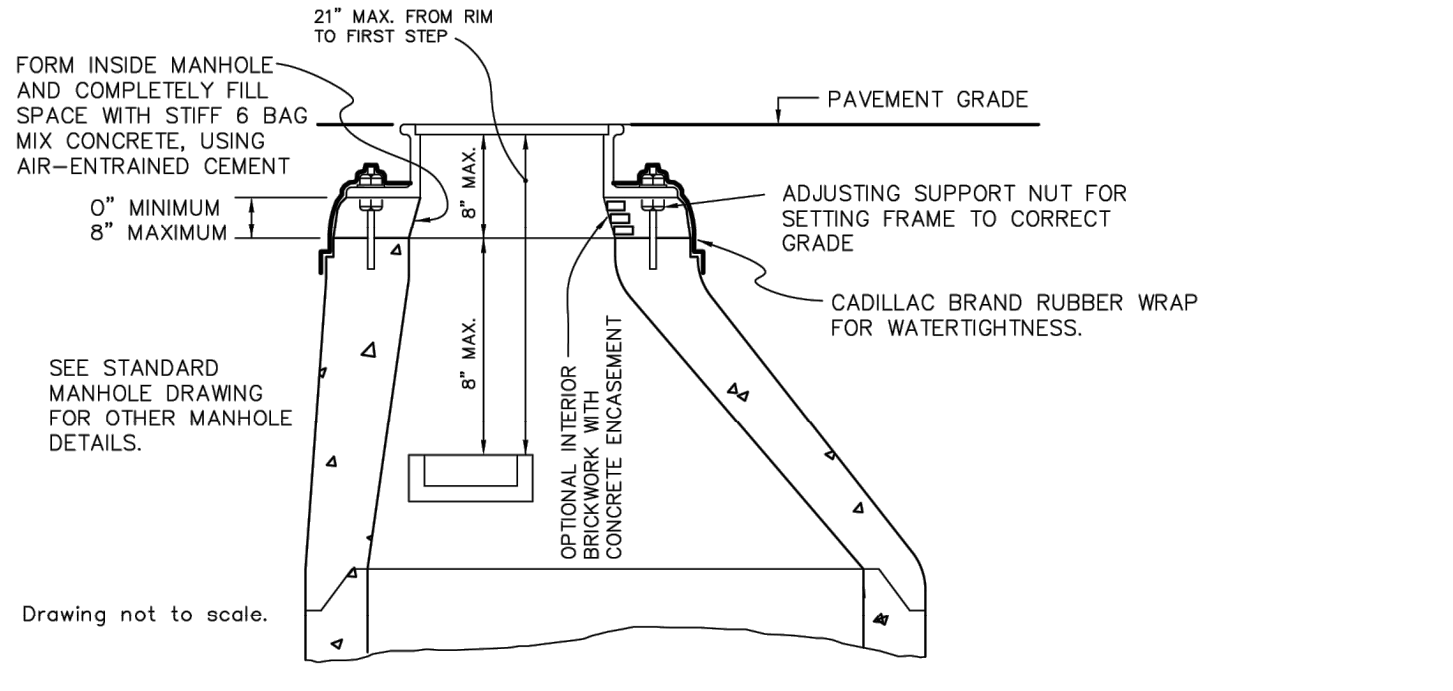
PIPE BARREL SUPPORT FOR SEWER



MANHOLE COVER & FRAME



SKETCH OF MINIMUM MANHOLE REQUIREMENTS ON MANHOLES CONSTRUCTED OVER EXISTING SEWERS



OPTIONAL CONSTRUCTION DETAILS

REVISIONS	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
		FIRST ISSUE	09/11/97		OCWRC COMMENTS	11/06/15			
		UPDATED TITLE BLOCK	04/30/13						
		UPDATED NOTES	02/17/15						

REVISIONS	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
		FIRST ISSUE	09/11/97		OCWRC COMMENTS	11/06/15			
		UPDATED TITLE BLOCK	04/30/13						
		UPDATED NOTES	02/17/15						

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White Lake Township
 7525 Highland Road (M-59)
 White Lake, Michigan 48383
 248-698-3300

SANITARY SEWER STANDARD DETAILS

JOB NO.	09/11/97
DATE ISSUED	09/11/97
SHEET NO.	

SANITARY SEWER CONSTRUCTION NOTES

- All construction shall conform to the current standards and specifications of the local unit of government and the Oakland County Water Resources Commissioner (OCWRC). All sanitary sewer construction shall have full time inspection supervised by a professional engineer provided by or caused to be provided by the local unit of government.
- At all connections to Oakland County Water Resources Commissioner's sewers or extensions, and before start of construction, the Contractor must obtain a Sewer Inspection Permit issued by the OCWRC. Gravity sewer permit charges are \$250.00 per each connection plus \$25.00 for each manhole constructed. Pressure sewer permit charges are \$250.00 per 2460 L.F. of force main with a minimum permit fee of \$250.00. Failure to pass any test segment will result in an additional charge to the Contractor for each retest, in accordance with the above price schedule. The Contractor shall also have posted with the OCWRC a \$5,000.00 surety bond and \$500.00 cash deposit. The Contractor shall notify the local unit of government and the OCWRC (248-858-1110) 24 hours prior to the beginning of any construction. Final acceptance tests must be witnessed by County personnel and must be scheduled by Municipality or it's consultant in advance with 24 hour notice at 248-858-1110.
- No sewer installation shall have an infiltration or exfiltration exceeding 100 gallons per inch diameter per mile of pipe in a 24 hour period, and no single run of sewer between manholes shall exceed 100 gallons per inch diameter per mile. Air tests in lieu of infiltration tests shall be as specified in the OCWRC "Acceptance Tests", dated September, 1972. Only pipe and pipe joints approved by the Oakland County Water Resources Commissioner may be used for sanitary sewer construction.
- Located in the first manhole upstream from the point of all connections to an existing OCWRC sewer, or extension thereof, a temporary 12-inch deep sump shall be provided in the first manhole above the connection which will be filled in after such successful completion of any acceptance test up to the standard fill provided for the flow channel. A watertight bulkhead shall be provided on the downstream of the sump manhole.
- All building leads and risers shall be 6-inch S.D.R. 23.5 ABS OR PVC pipe with chemically fused joints, or an approved equal pipe and joint. Sewer pipe wye shall contain factory installed premium joint material of an approved type compatible with that of the building lead pipe used. Building leads to be furnished with removable air tight and water-tight stoppers.
- All rigid sewer pipe shall be installed in Class "B" bedding or better. All flexible, semi-flexible or composite sewer pipe shall be installed in conformance to the Oakland County Water Resources Commissioner specifications.
- All new manholes shall have Oakland County Water Resources Commissioner approved flexible, water-tight seals where pipes pass through walls. Manholes shall be of precast sections with modified groove tongue and rubber gasket type joints. Precast manhole cone sections shall be Oakland County Water Resources Commissioner approved modified eccentric cone type. All manholes shall be provided with bolted, water-tight covers.
- At all connections to manholes on Oakland County Water Resources Commissioner's sewers or extensions thereto drop connections will be required when the difference in invert elevations exceeds 18-inches. Outside drop connections only will be approved.
- Taps to existing manholes shall be made by coring. The Contractor shall place a KOR-N-SEAL boot (or OCWRC approved equal) after coring is completed. Blind drilling will not be permitted in lieu of coring.
- New manholes constructed directly on Oakland County Water Resources Commissioner's sewers shall be provided with covers reading "Oakland County - Sanitary" in raised letters. New manholes built over an existing sanitary sewer shall have monolithic poured bottoms.
- No ground water, storm water, construction water, downspout drainage or weep tile drainage shall be allowed to enter any sanitary sewer installation.
- Prior to excavation, the Contractor shall telephone MISS DIG (647-7344) for the location of underground pipeline and cable facilities, and shall also notify representatives of other utilities located in the vicinity of the work.
- 18" minimum vertical separation and 10' minimum horizontal separation must be maintained between sanitary sewer and water main.
- Manhole frame and cover shall be as follows: East Jordan heavy manhole cover, base flange type #1040 or Neenah Foundry heavy duty #R-1642 manhole frame. Solid lid cover shall be non-rocking and marked "WHITE LAKE TOWNSHIP SEWER DEPARTMENT."

BEBOSS Engineering
 Engineers Surveyors Planners Landscape Architects
 3121 E. GRAND RIVER AVE.
 HOWELL, MI. 48843
 517.546.4836 FAX 517.548.1670

GATEWAY CROSSING
 GATEWAY CROSSING, LLC
 600 NORTH OLD WOODWARD, SUITE 101
 BIRMINGHAM, MI. 48009
 248-937-7000

PROJECT	PREPARED FOR	TITLE	DATE
GATEWAY CROSSING	GATEWAY CROSSING, LLC	TOWNSHIP SANITARY DETAILS	05/30/24

TOWNSHIP COMMENTS	DATE
2 M.D.	8/6/24
1 M.D.	7/9/24
NO BY	

DESIGNED BY:	CHECKED BY:

SCALE:	JOB NO.
NO SCALE	09/11/97
JOB NO.:	DATE:
22-029-1	05/30/24

SHEET NO.	BOSS Engineering
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SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

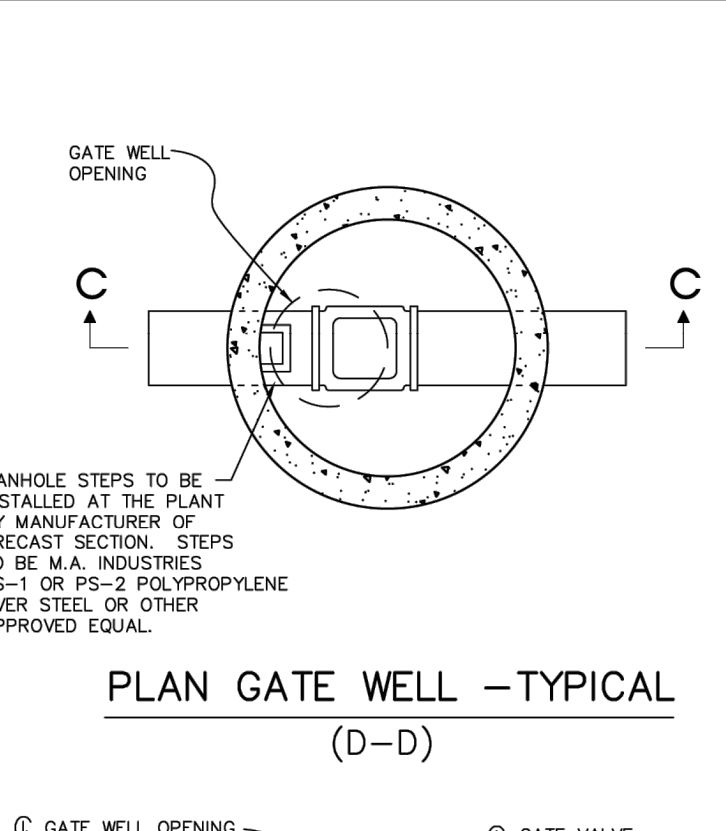
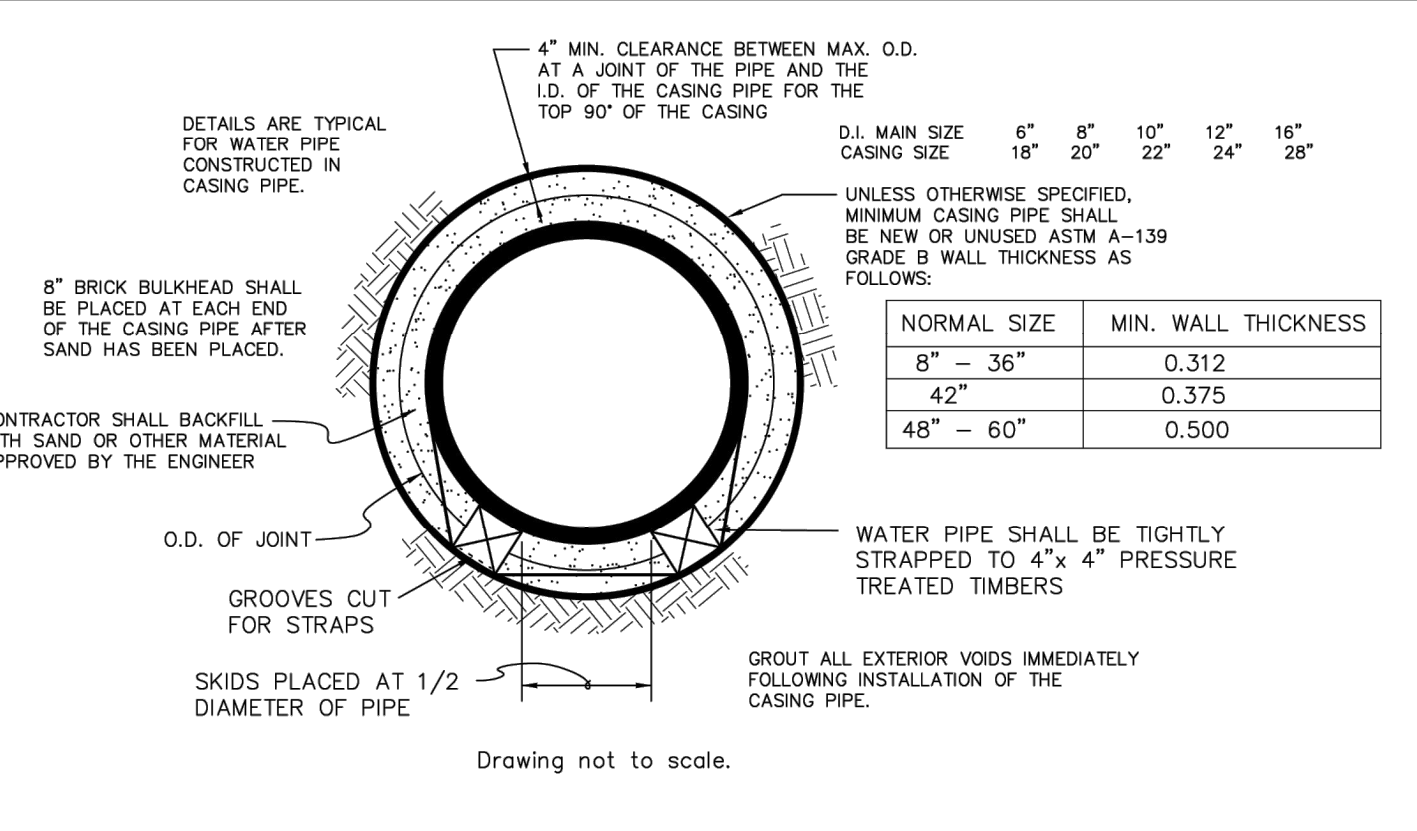
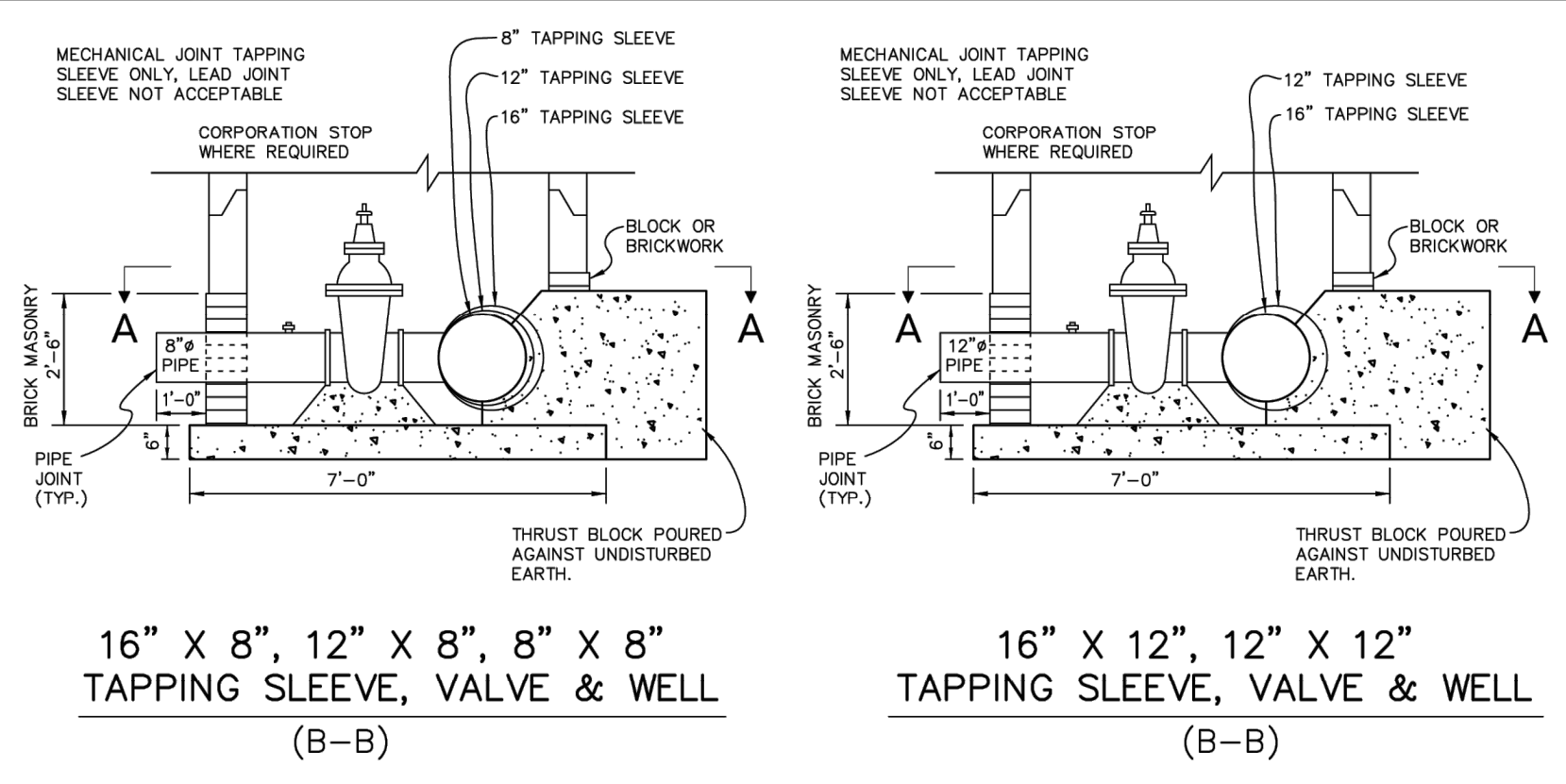
THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE LOCAL PLANNING AND ZONING DEPARTMENT OR FROM THE PLANNING AND ZONING DEPARTMENT OF THE TOWNSHIP OF WHITE LAKE, MICHIGAN.

BEBOSS
Engineering
Planners Landscape Architects
Engineers Surveyors Planners Landscape Architects
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HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

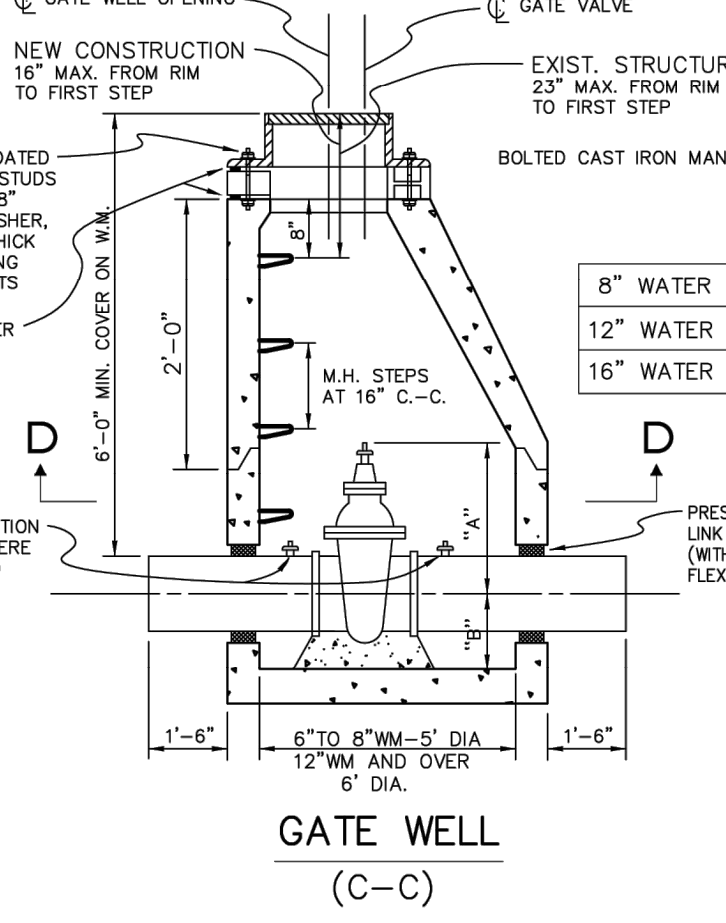
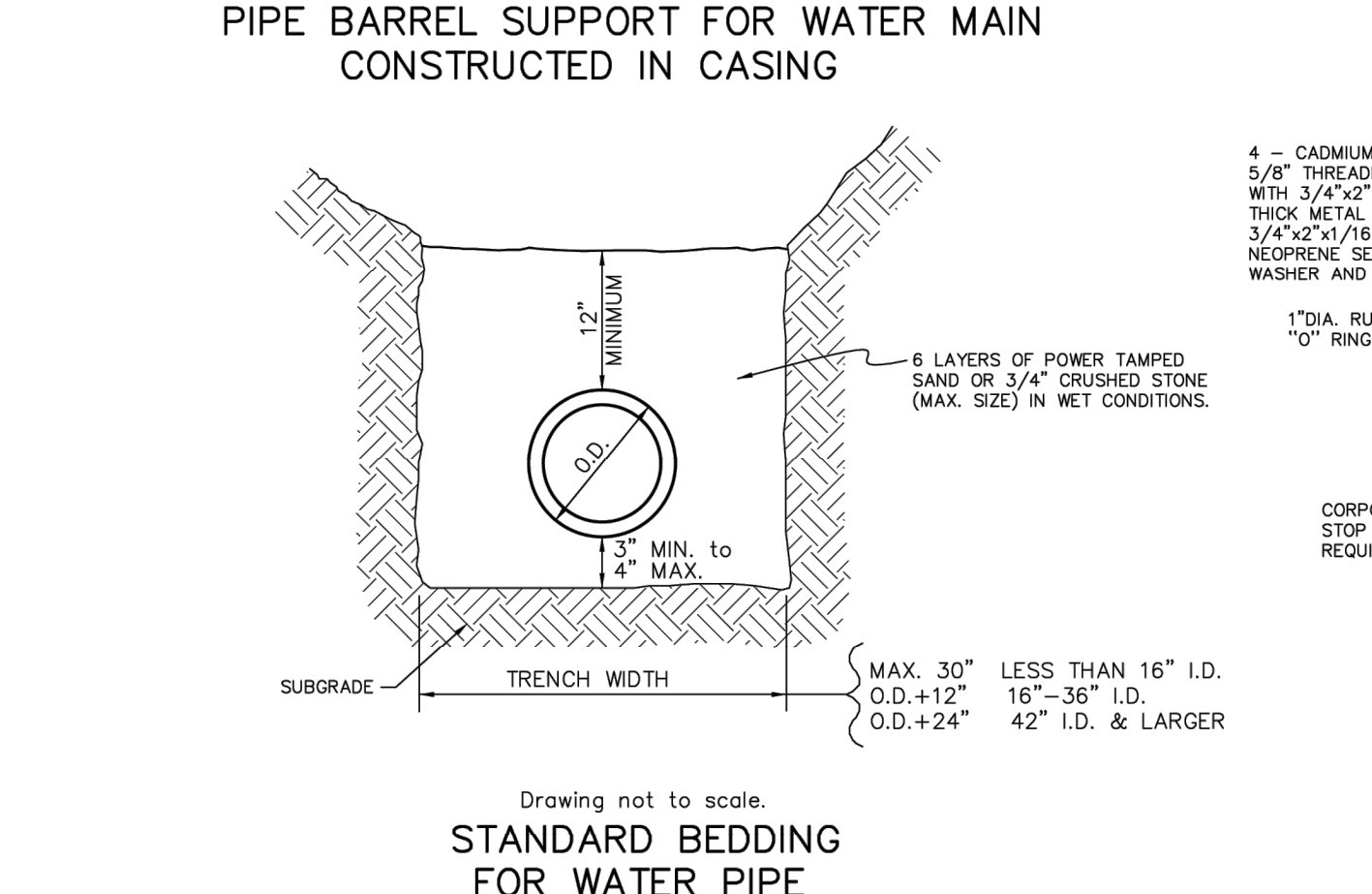
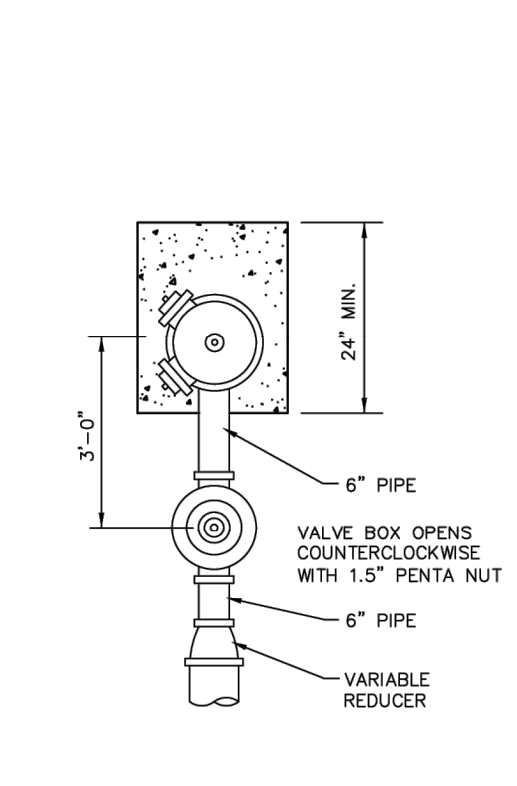
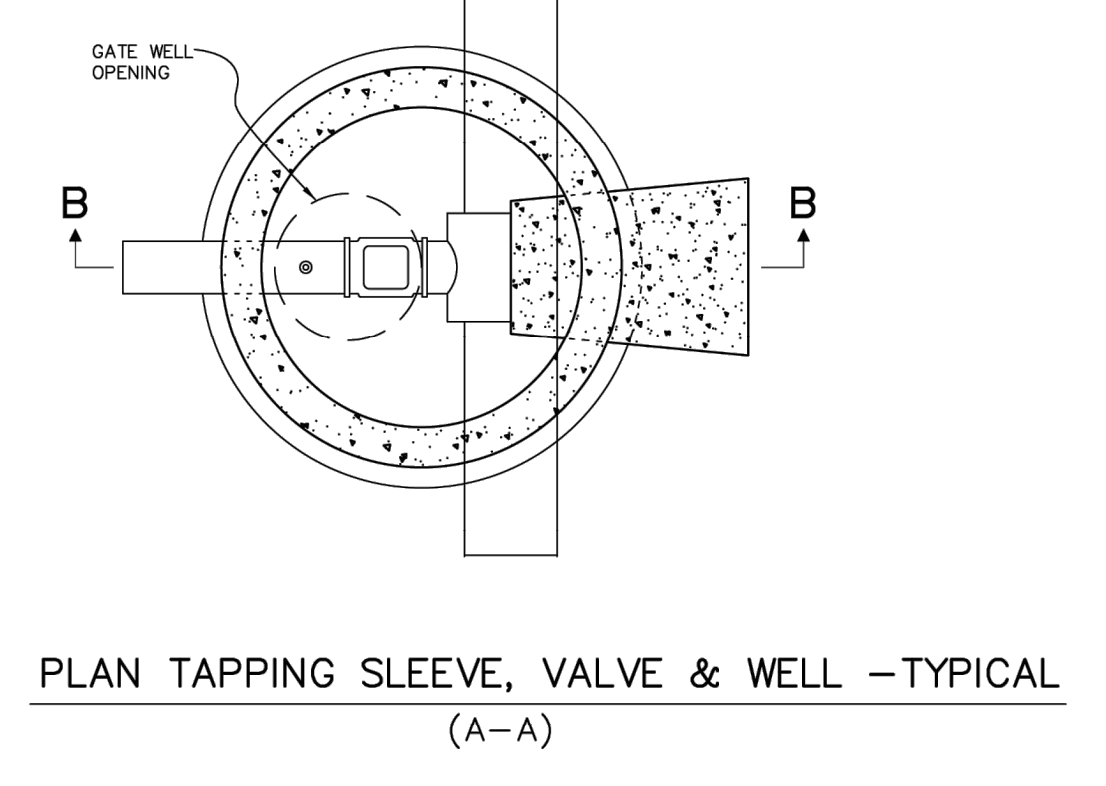
GATEWAY CROSSING
GATEWAY CROSSING, LLC
600 NORTH OGDON WOODWARD, SUITE 101
BIRMINGHAM, MI 48209
248-937-7000

TOWNSHIP WATERMAIN DETAILS

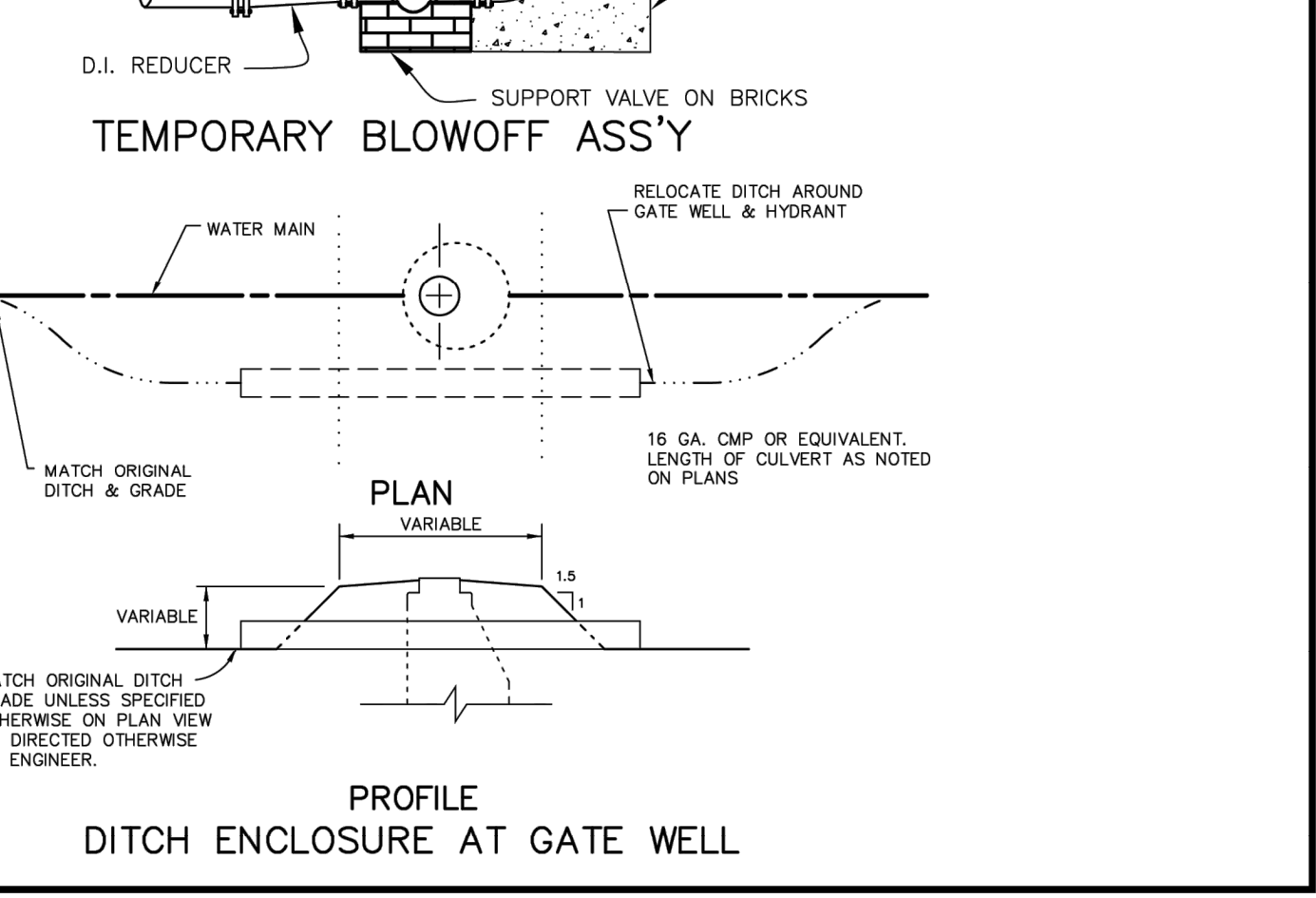
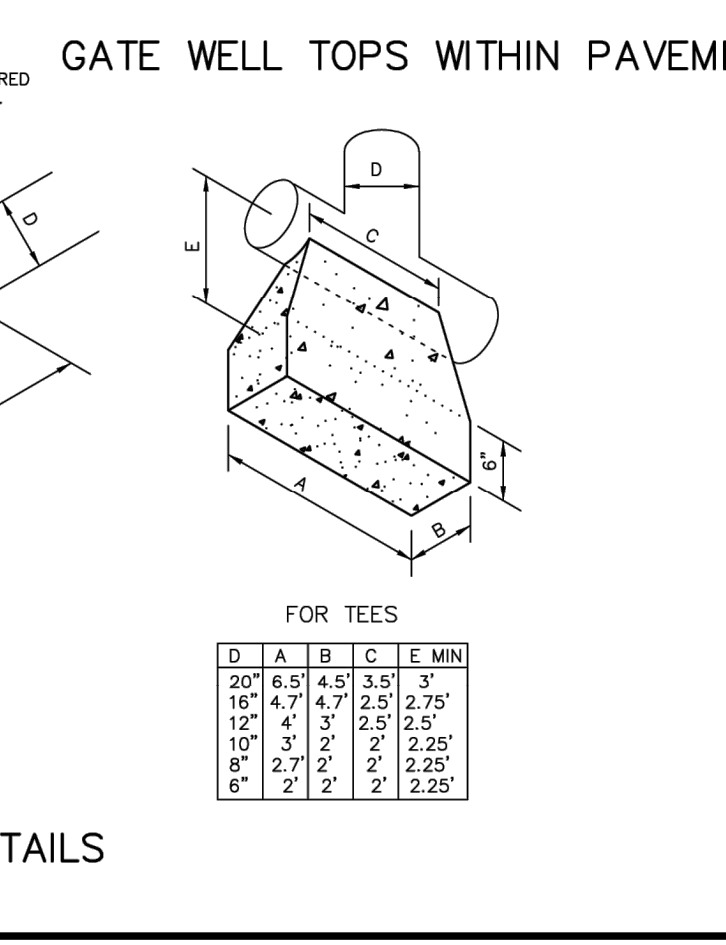
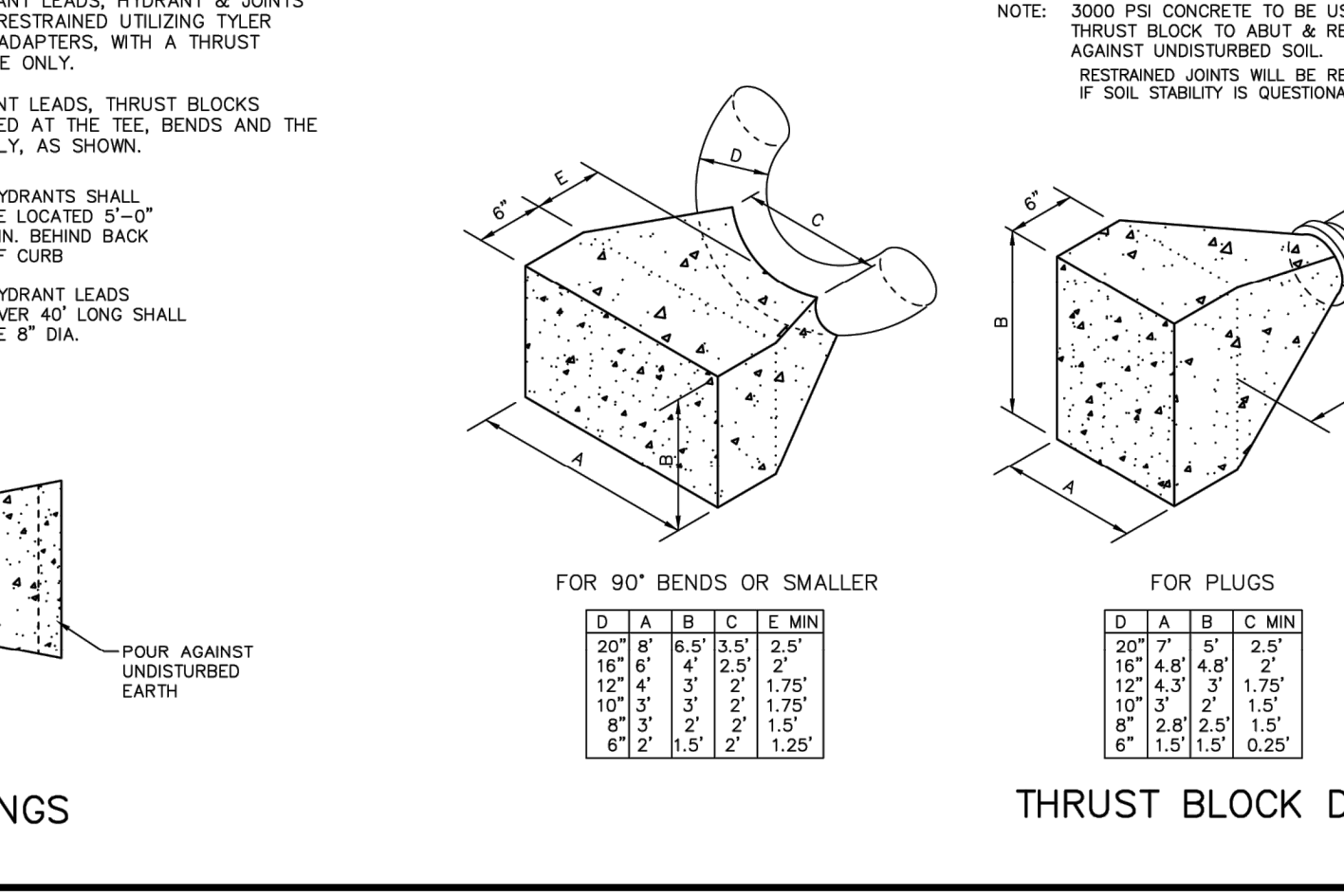
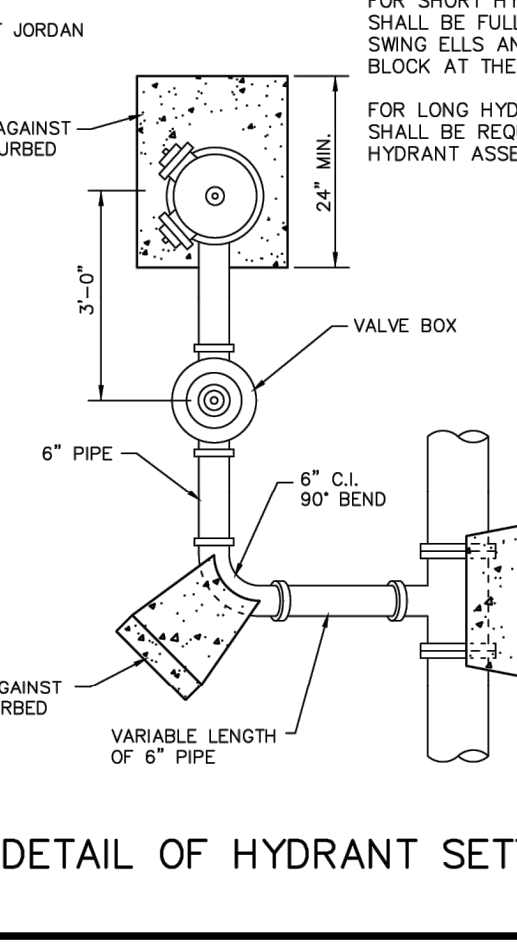
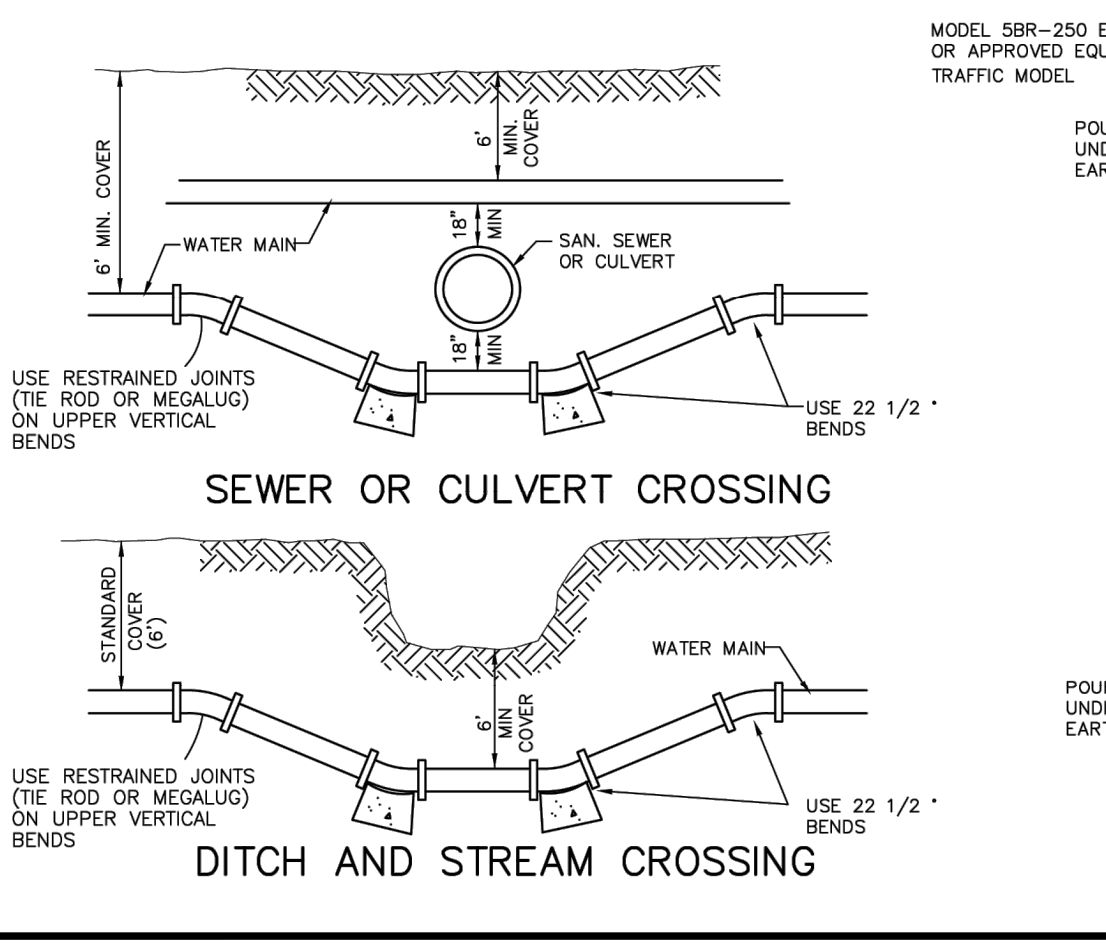
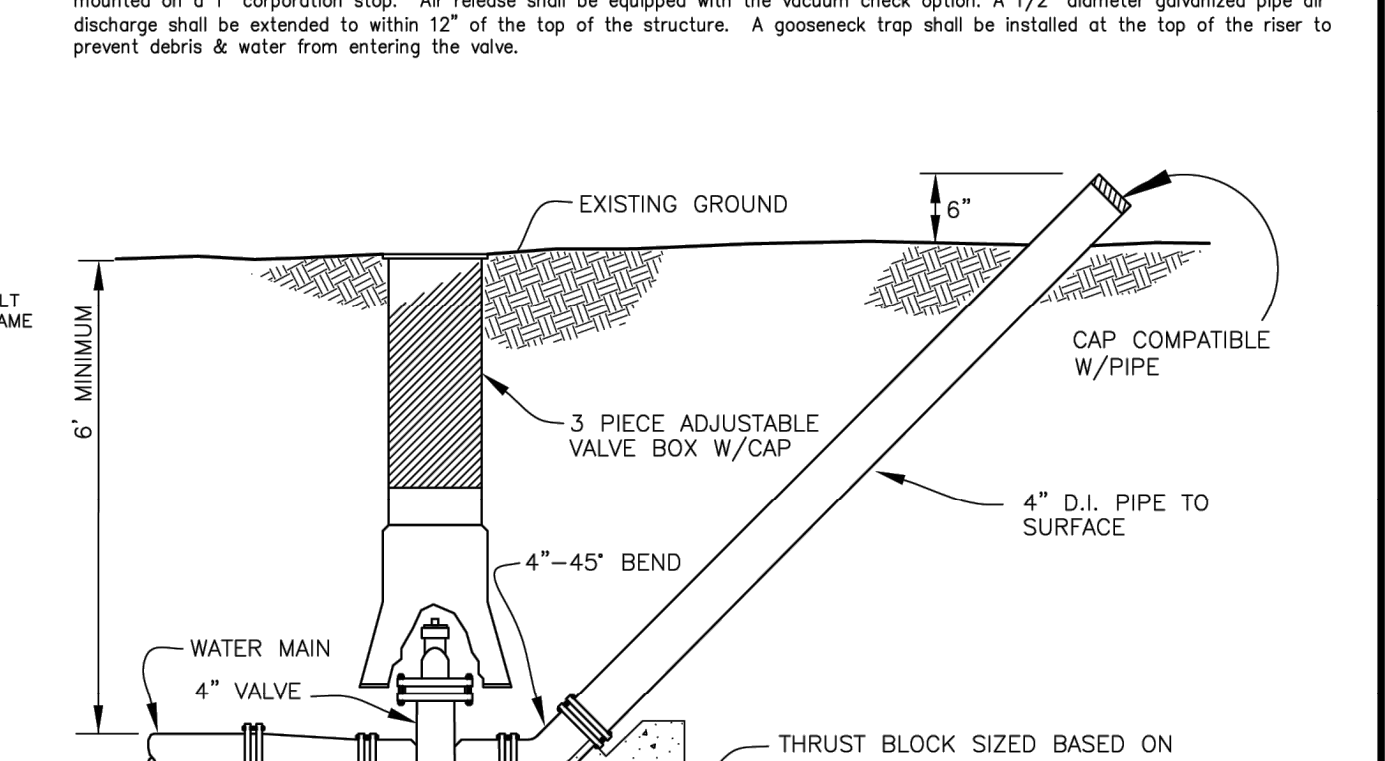
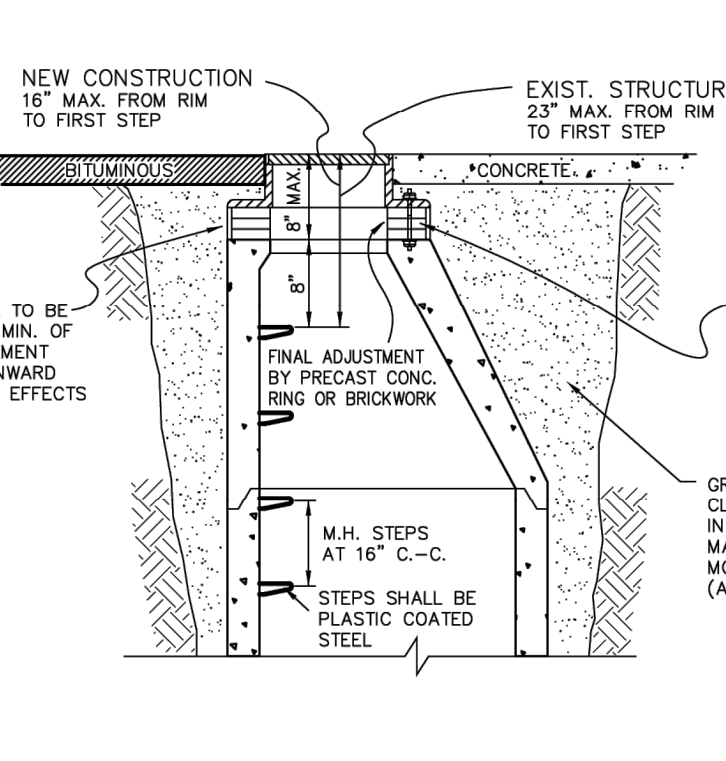
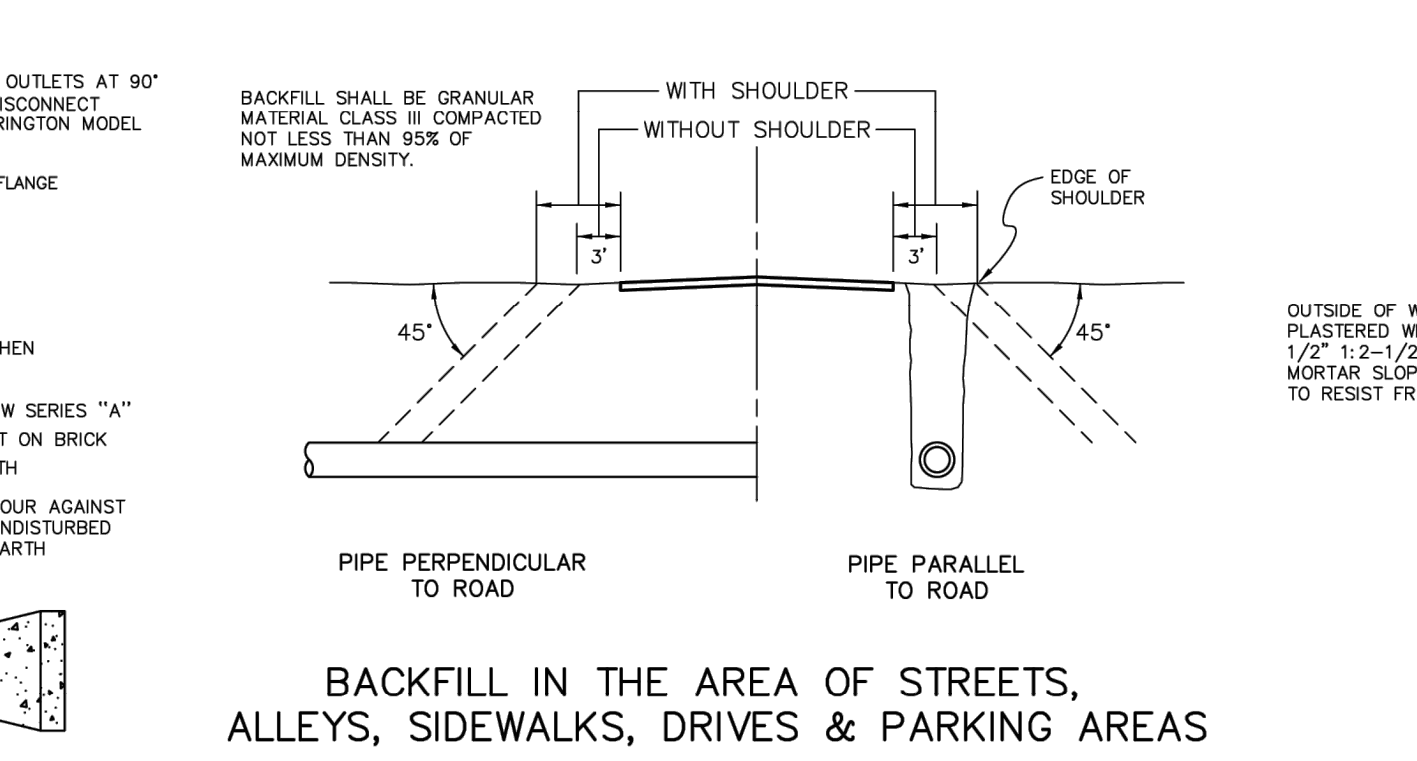
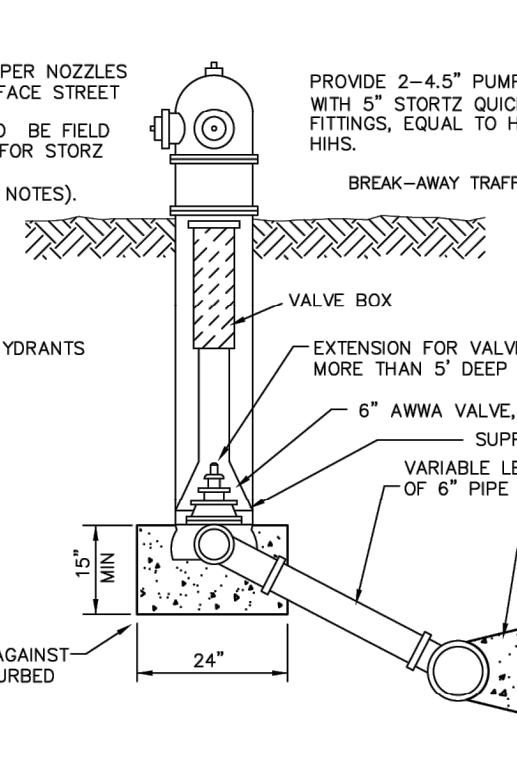
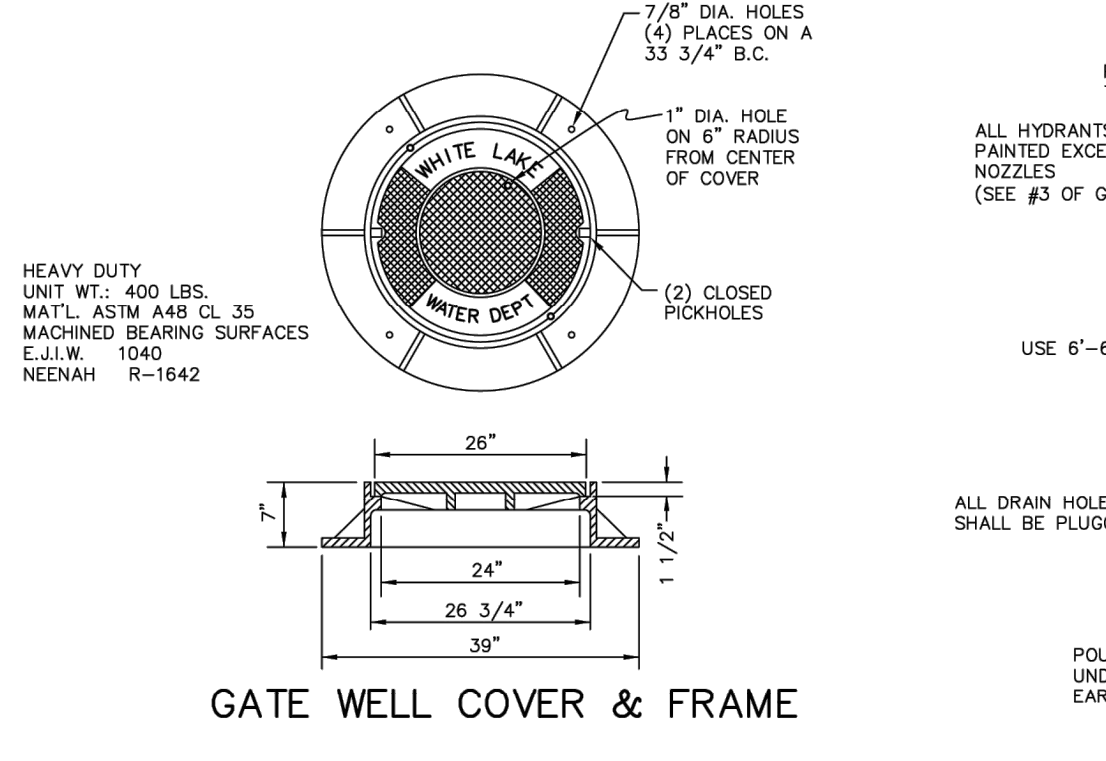
PROJECT	PREPARED FOR	TITLE
	GATEWAY CROSSING, LLC	
	600 NORTH OGDON WOODWARD, SUITE 101	
	BIRMINGHAM, MI 48209	
	248-937-7000	
DESIGNED BY:	DATE	DATE
DRAWN BY:	8/6/24	7/9/24
CHECKED BY:	1 M.D.	NO BY
SCALE: NO SCALE	TOWNSHIP COMMENTS	REVISION PER
JOB NO: 22-029-1	DATE: 05/30/24	
SHEET NO. 21		



- WATER MAIN NOTES**
- All construction procedures and materials used on this project shall conform to White Lake Township current standards and specifications.
 - All hydrants shall be East Jordan Iron Works SBR-250 traffic model. Self-draining hydrants shall not be used. Valve shall have 1-1/2" pentagon nut and shall open counter-clockwise. Provide two 4.5" pumper outlets with 5" Storz quick connect nozzles (Harrington Integral Hydrant Storz, Model HHS) as manufactured by Harrington, Inc. of Erie, PA.
 - All hydrants shall be field painted with a heavy coat of bright safety red polyurethane or alkyd glass enamel, except for the Storz fittings and caps, which shall be left unpainted.
 - All water mains shall be ductile iron pipe Class 54, cement lined with push on joints. Mechanical joints allowed only for tapping sleeves, hydrants & hydrant valves. Only Cor-Blue bolts shall be used for assembling mechanical joints. All bends, tees, valves and hydrant tees shall have a poured concrete thrust block as detailed on this sheet. Joints which have thrust blocks bearing on soil of questionable stability shall be fully restrained utilizing Tyler swing elbows and adapters or a system approved by the Township Engineer. HDPE pipe for directional boring, if approved by the Township Engineer, shall meet all of the requirements of the MDEQ and shall be DR9 (200 psi), and shall have two #8 tracer wires, terminated in the nearest gate well at the highest step.
 - Tapping sleeve shall be mechanical joint or approved equal. Ductile iron or stainless steel are allowed.
 - Specifications shall include direction of operation of all valves. All valves shall be counter clockwise open.
 - All necessary easements shall be provided in the name of White Lake Township before acceptance of the water distribution system.
 - The design engineer shall furnish White Lake Township with one reproducible set of "As-Built" water main plans or an AutoCAD file upon completion of the job.
 - All required cross-connection devices shall be installed as required by the local plumbing inspector and in accordance with the standards of the Michigan Department of Public Health.
 - Gate well frame and cover shall be as follows: East Jordan heavy manhole cover, base flange type #1040 or Neenah Foundry heavy duty #R-1642 Manhole frame, solid lid cover shall be non-rocking and marked "White Lake Water Department"
 - Gate valves shall be AWWA approved and of a double disc or resilient wedge design with push on joints, 16" gate valves may be mechanical joint provided Cor-Blue bolts are used. All gate valves with operating nuts greater than 5' below ground surface shall be provided with an extension stem. The length of the extension shall be such that it will be within 5' of the ground surface when an extension is used it shall be held in place by an extension stem guide suitably fastened to the wall of the gate well.
 - 1" corporation stops are to be placed on the main at each side of each main line gate valve and at such other locations as may be required by the engineer.
 - All pipe and fittings shall be subjected to a hydro-static pressure test of 150 PSI for a 2 hour duration; Township Engineer must be present. Maximum segment 2000 feet except that longer segments may be tested with allowable leakage based on 2000 feet.
 - 2 consecutive safe bacteria samples shall be taken from the water system approx. 24 hours apart at points established by the Township Engineer. Samples shall be taken by the Township Engineer.
 - Filing, flushing and sampling of water main can only be performed with a "Jumper" Line. The jumper shall be equipped with an approved RPE type of backflow preventer.
 - Adjustments on gate wells shall be limited to 23" maximum from top of rim to first step in accordance with MGHSA Rule 341.
 - All new water service lines shall have a minimum nominal size of 1". Services from 1" to 2" may be type K copper tubing or plastic DR-9 (200 PSI rated) meeting ASTM D2727-03 (Standard Specification for Polyethylene (PE) plastic tubing). ASTM Designation and pressure rating shall be stamped on the pipe by the manufacturer. Plastic pipe shall also meet AWWA C-901 Specifications. All sizes shall relate to the copper tubing outside diameter standard size (CTS). Copper pipe joints shall be flared. Fittings shall adapt to the plastic pipe with compression or top pipe thread adaptor. Plastic pipes shall be either compression style with a steel insert or may be fusion welded in the larger sizes.



- Plastic water service pipes shall be traced with two #10 copper tracer wires or two #12 copper coated steel or stainless steel wires insulated with a minimum of 30 mils of polyethylene insulation. The tracer wires shall be terminated to supply line so as to be locatable at the building and the curb box without digging.
- Water services sizes 3" and greater shall be Class 54 cement lined ductile iron with push on joints or HDPE DR-9 (200 PSI rated) with fusion welded joints and fittings, DIPS (Ductile Iron Pipe Size).
- A stop box shall be installed at the property or easement line and shall be equivalent to an A.Y. McDonald Mfg. 6100 fire regular pattern ball valve. The curb box shall have a 1" riser pipe with an Erie 2-hole pattern cover equivalent to A.Y. McDonald Mfg. #560L. Stop box shall be protected with a 2'x4' painted blue extending 4 feet above ground.
- Standard pipe cover shall be 6'-0".
- Air release manholes shall consist of a standard 5' diameter gate well style structure with a ValMet Model 25C air release valve mounted on a 1" corporation stop. Air release shall be equipped with the vacuum check option. A 1/2" diameter galvanized pipe air discharge shall be extended to within 12" of the top of the structure. A goose-neck trap shall be installed at the top of the riser to prevent debris & water from entering the valve.



REVISIONS	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
		GENERAL REVISION TO CAD	12/29/95		GW & NUT SIZE	07/23/98		REV. HYD. THRUST, AIR REL.	03/29/04			
		ADD NOTE 17	11/04/97		PIPE COVER & FLANGE TAPE	05/12/99		5-BR HYD. WS STAKE	02/21/02		HOPE, HYD. VALVES	07/18/05
		REVISE HYD. & THRUSTING	05/18/98		ADD BLOWOFF	07/06/99		ADD NOTE 19	07/23/03		UPDATED TITLE BLOCK	04/20/13

Johnson & Anderson
4494 Elizabeth Lake Road
Waterford, Michigan 48328
tel (248) 681-7800 fax (248) 681-2600

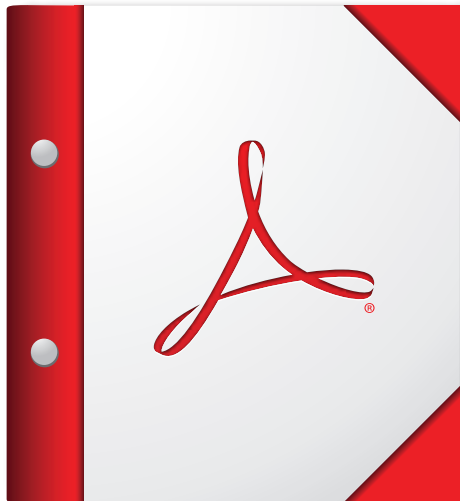
1060 W. Norton Avenue, Suite 7
Muskegon, Michigan 49441
tel (231) 780-3100 fax (231) 780-3115

2291 Water Street, Suite 6
Port Huron, Michigan 48060
tel (810) 987-7820 fax (810) 987-7895

White Lake Township
7525 Highland Road (M-59)
White Lake, Michigan 48383
248-698-3300

WATER MAIN STANDARD DETAILS

JOB NO. _____
DATE ISSUED _____
SHEET NO. _____



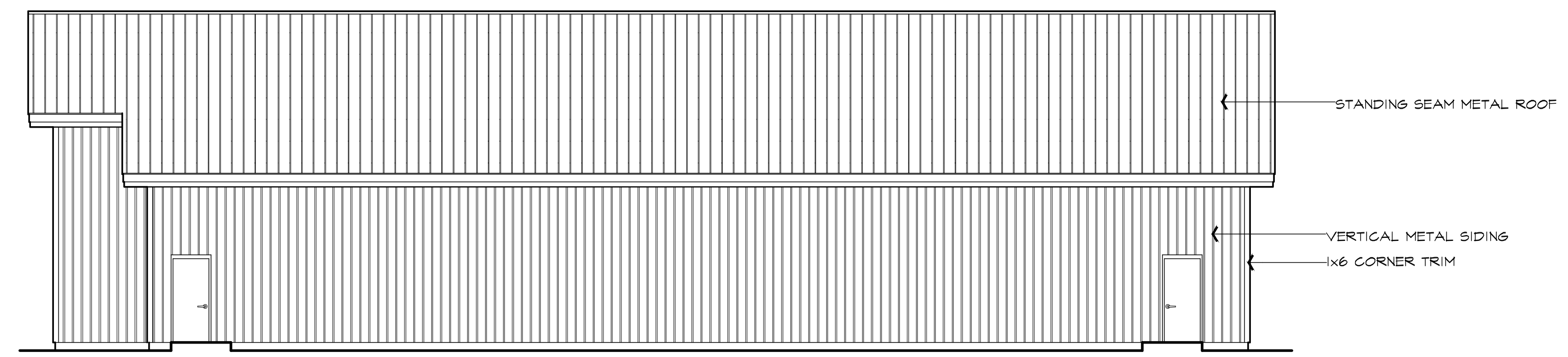
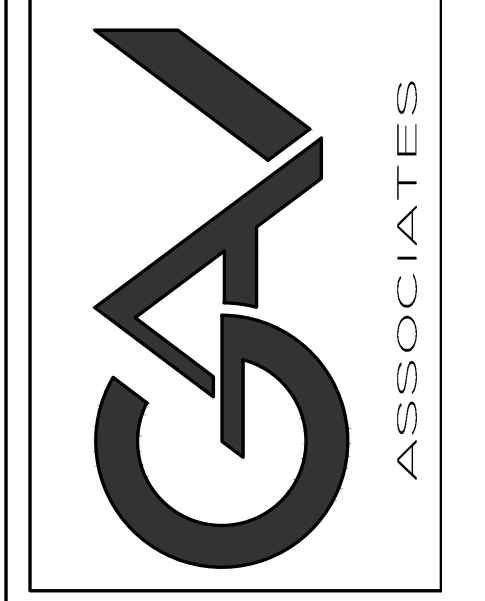
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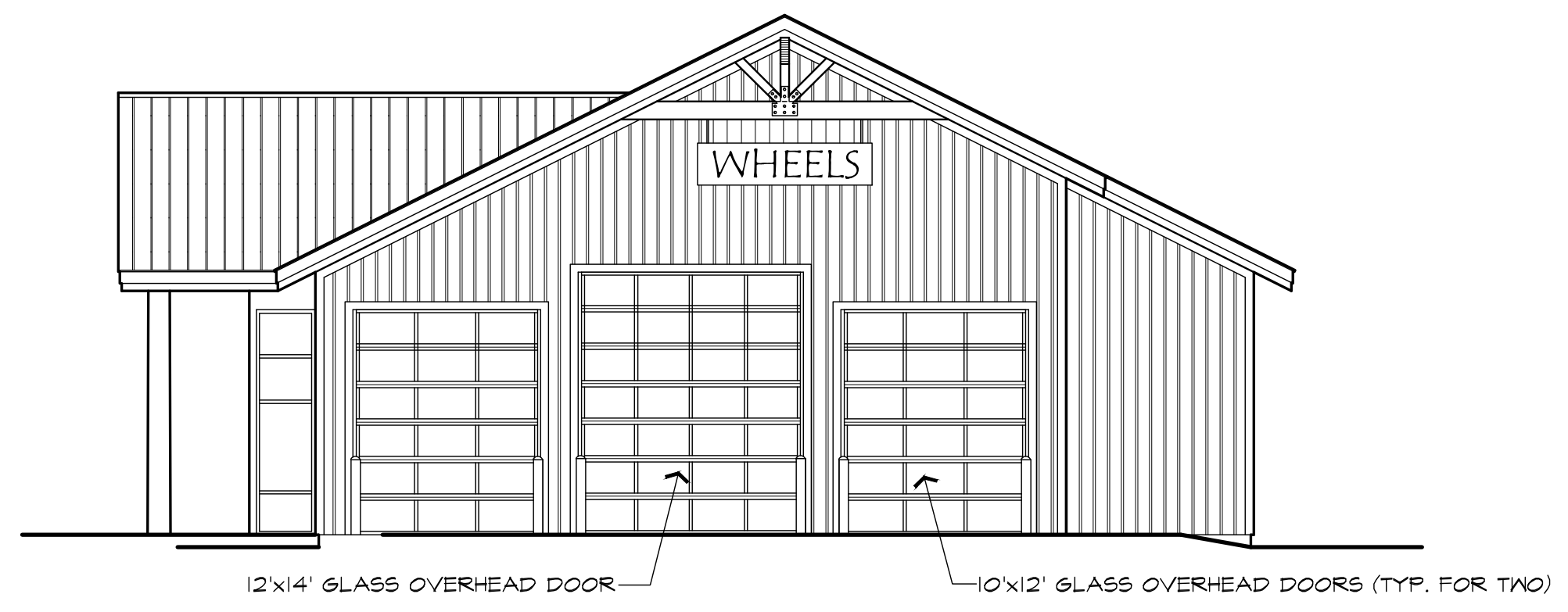
ISSUED FOR	DATE
	6.16.24
	8.12.24

ARCHITECTURAL DESIGN
 RESIDENTIAL
 COMMERCIAL
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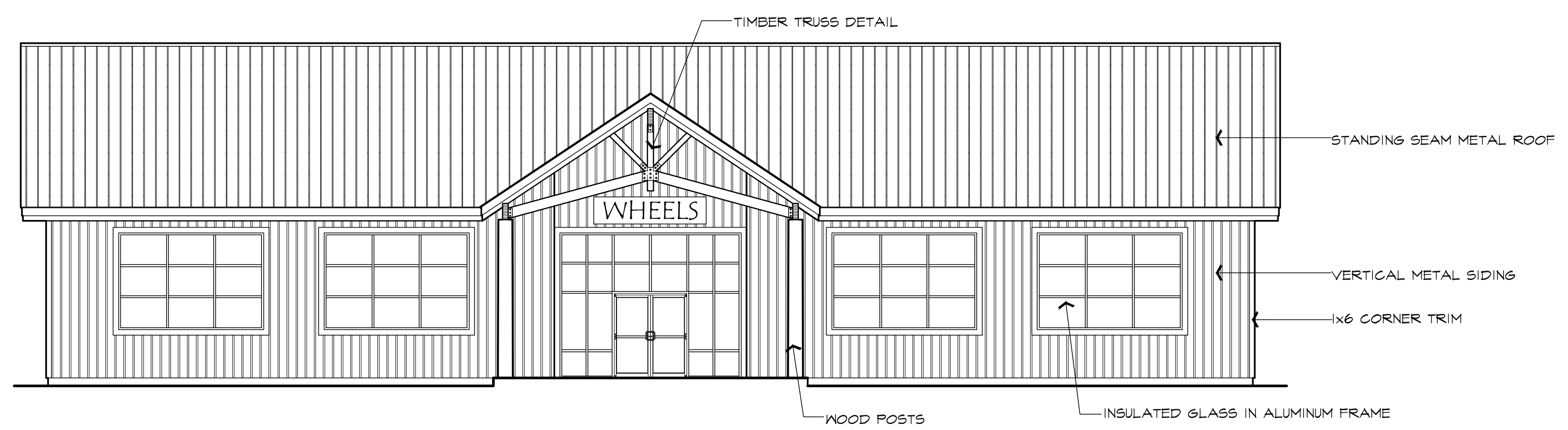
G.A.V. ASSOCIATES, INC
 2401 ORCHARD LAKE RD. STE. 180A
 FARMINGTON, MICHIGAN 48336
 PH: (248) 985-9101
 WEB: WWW.GAVASSOCIATES.COM



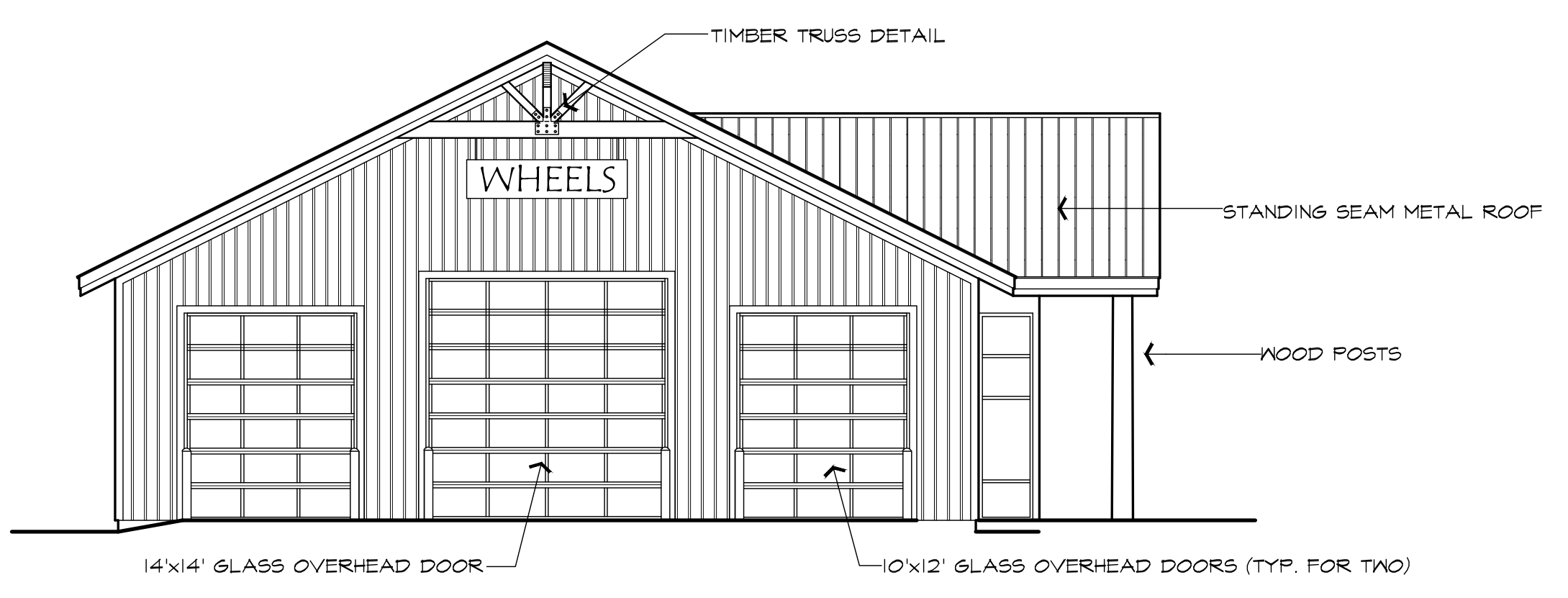
WEST ELEVATION
 SCALE: 1/8" 1'-0"



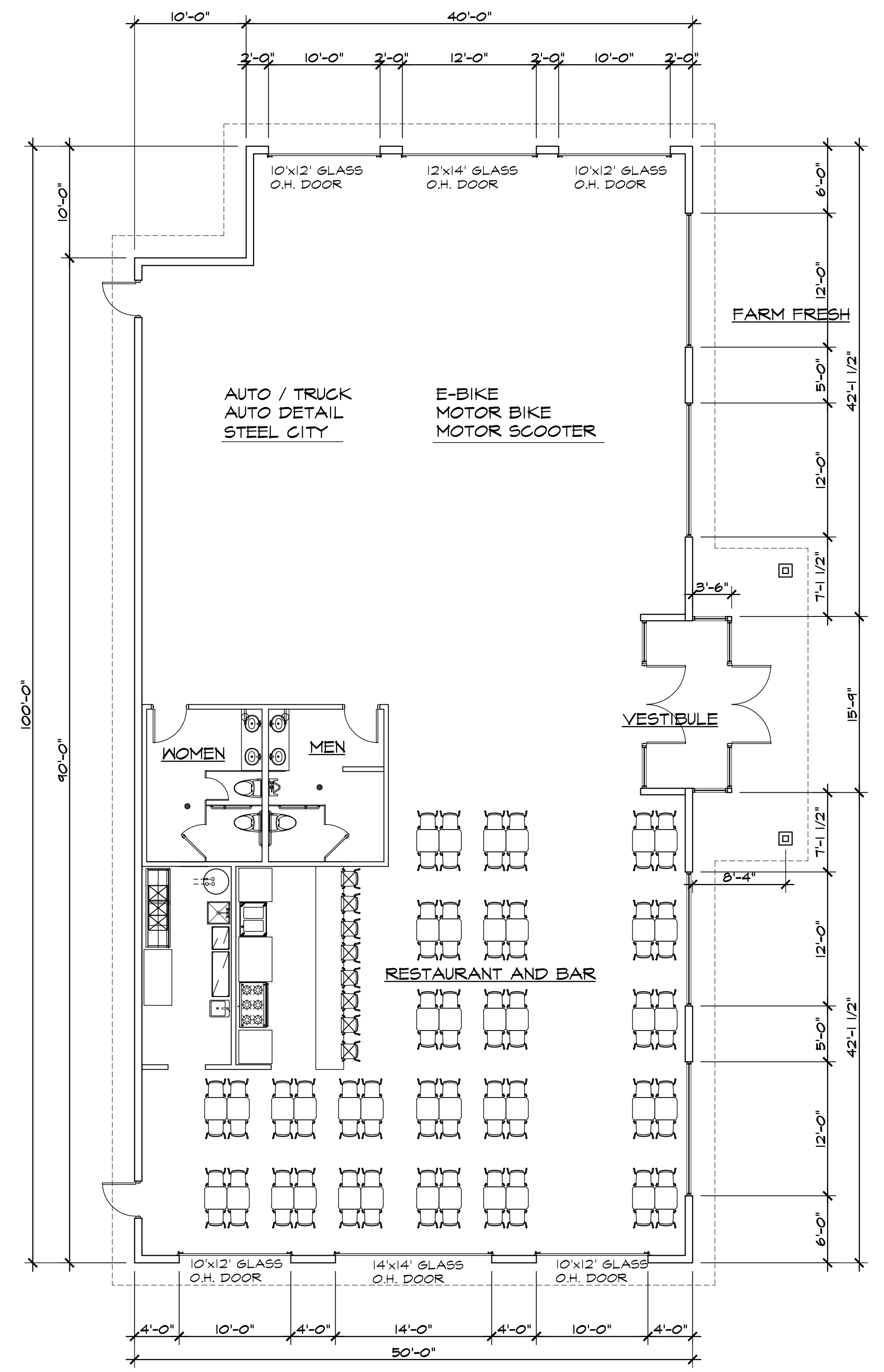
NORTH ELEVATION
 SCALE: 1/8" 1'-0"



EAST ELEVATION
 SCALE: 1/8" 1'-0"



SOUTH ELEVATION
 SCALE: 1/8" 1'-0"



FLOOR PLAN STUDY
 4,955 S.F. SCALE: 1/8" 1'-0"

PROPOSED COBB AUTO DEALERSHIP
 HIGHLAND ROAD
 WHITE LAKE TWP., MICHIGAN

DRAWN:	DESIGNED:	CHECKED:

SCALE : PER PLAN
 FILE NAME :
 JOB # 21128
 SHEET TITLE

SHEET #
A.101