

**GENOA CHARTER TOWNSHIP  
PLANNING COMMISSION PUBLIC HEARING  
MARCH 11, 2024  
MONDAY, 6:30 P.M.  
AGENDA**

**CALL TO ORDER:**

**PLEDGE OF ALLEGIANCE:**

**APPROVAL OF AGENDA:**

**DECLARATION OF CONFLICT OF INTEREST:**

**CALL TO THE PUBLIC:** *(Note: The Board reserves the right to not begin new business after 10:00 p.m.)*

**OLD BUSINESS:**

**OPEN PUBLIC HEARING #1**...Consideration of a site plan amendment for revisions to the previously approved site grading on a 4.32-acre parcel (4711-06-200-101) on the north side of Grand River Avenue, just west of Char-Ann Drive. The request is petitioned by Chestnut Development.

- A. Recommendation of Environmental Impact Assessment (9-20-23)
- B. Disposition of Amended Site Plan (10-17-23)

**OPEN PUBLIC HEARING #2**...Consideration of a special land use application, environmental impact assessment and site plan to allow for a proposed automatic car wash located on vacant parcels #4711-04-300-017 and 4711-09-100-017 Latson Road, east side of Latson Road, south side of Grand River Avenue. The request is petitioned by CWP West, LLC.

- A. Recommendation of Special Use Application.
- B. Recommendation of Environmental Impact Assessment (1-16-24)
- C. Recommendation of Site Plan (1-16-24)

**OPEN PUBLIC HEARING #3**...Consideration of a special land use application, environmental impact assessment and site plan to allow for a proposed multi-tenant commercial center including a drive through coffee shop and outdoor seating restaurant located on vacant parcels#:4711-04-300-017 and 4711-09-100-017 Latson Road, east side of Latson Road, south side of Grand River Avenue. The request is petitioned by Kevin Bahnam, 1015 Latson Road LLC.

- A. Recommendation of Special Use Application.
- B. Recommendation of Environmental Impact Assessment (1-16-24)
- C. Recommendation of Site Plan (1-16-24)

**NEW BUSINESS:**

**OPEN PUBLIC HEARING #4**...Consideration of a special land use application, environmental impact assessment and site plan to allow for temporary boat sales and service at an existing commercial site located at 5776 Grand River Avenue, south side of Grand River Avenue, west of Dorr Road. The request is petitioned by Wonderland Marine West

- A. Recommendation of Special Use Application
- B. Recommendation of Environmental Impact Assessment (11-29-23)
- C. Recommendation of Site Plan (2-16-24)

**OPEN PUBLIC HEARING #5**...Consideration of a special land use application, environmental impact assessment and site plan to allow for outdoor RV/camper storage at 2630 Grand River Avenue, south side of Grand River Avenue, east of Chilson Road. The request is petitioned by Schafer Construction.

- A. Recommendation of Special Use Application
- B. Recommendation of Environmental Impact Assessment (1-16-24)
- C. Recommendation of Site Plan (2-19-24)

**ADMINISTRATIVE BUSINESS:**

- Staff Report
- Approval of February 12 and February 13, 2024 Planning Commission meeting minutes
- Member discussion
- Adjournment

\*Citizen's Comments- In addition to providing the public with an opportunity to address the Township Board at the beginning of the meeting, opportunity to comment on individual agenda items may be offered by the Chairman as they are presented. Anyone speaking on an agenda item will be limited to 2 minutes.



**GENOA CHARTER TOWNSHIP**  
**Application for Site Plan Review**

**TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:**

APPLICANT NAME & ADDRESS: CHESTNUT DEVELOPMENT LLC. 6253 GRAND RIVER AVE STE 700  
BRIGHTON, MI 48116

*If applicant is not the owner, a letter of Authorization from Property Owner is needed.*

OWNER'S NAME & ADDRESS: CHESTNUT DEVELOPMENT LLC. 6253 GRAND RIVER AVE STE 700  
BRIGHTON, MI 48116

SITE ADDRESS: Grand River Ave PARCEL #(s): 11-06-200-101

APPLICANT PHONE: (734 )679-4356 OWNER PHONE: (888 )825-1420

OWNER EMAIL: permits@chestnutdev.com

LOCATION AND BRIEF DESCRIPTION OF SITE: North side of Grand River Ave.  
Just west of Char-Ann Drive.

BRIEF STATEMENT OF PROPOSED USE: Grading preparation for future  
development. Replacement of trees that were inadvertently removed by contractor.

Please see letter from MEGA Engineering dated 9-20-23 and revised site plans showing  
proposed mitigation.

THE FOLLOWING BUILDINGS ARE PROPOSED: None

**I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE  
PART OF THIS APPLICATION IS TRUE AND ACCURATE TO THE BEST OF MY  
KNOWLEDGE AND BELIEF.**

BY: Steve Gronow, Owner

ADDRESS: 6253 GRAND RIVER AVE STE 700 BRIGHTON, MI 48116



**Contact Information** - Review Letters and Correspondence shall be forwarded to the following:

1.) Kelly Ralko \_\_\_\_\_ of Chestnut Development, LLC. \_\_\_\_\_ at permits@chestnutdev.com  
Name Business Affiliation E-mail Address

### FEE EXCEEDANCE AGREEMENT

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: Steve Gronow, Owner of Chestnut DATE: 9/20/23

PRINT NAME: Steve Gronow, Owner PHONE: 888-825-1420

ADDRESS: 6253 GRAND RIVER AVE STE 700 BRIGHTON, MI 48116

**GENOA CHARTER TOWNSHIP  
PLANNING COMMISSION  
PUBLIC HEARING  
December 11, 2023**

**MINUTES**

CALL TO ORDER: Chairman Grajek called the meeting of the Genoa Charter Township Planning Commission to order at 6:30 p.m. Present were Chris Grajek, Eric Rauch, Tim Chouinard, Glynis McBain, Marianne McCreary, and Greg Rassel. Absent was Jeff Dhaenens. Also present were Planning Director Amy Ruthig, Brian Borden of Safebuilt, and Shelby Byrne of Tetra Tech.

PLEDGE OF ALLEGIANCE: The pledge of allegiance was recited.

APPROVAL OF AGENDA:

**Moved** by Commissioner Rauch, seconded by Commissioner Chouinard, to approve the agenda as presented. **The motion carried unanimously.**

DECLARATION OF CONFLICT OF INTEREST:

None

CALL TO THE PUBLIC:

The call to the public was made at 6:31 pm with no response.

OLD BUSINESS:

**OPEN PUBLIC HEARING #1...** Consideration of a site plan amendment for revisions to the previously approved site grading on a 4.32-acre parcel (4711-06-200-101) on the north side of Grand River Avenue, just west of Char-Ann Drive. The request is petitioned by Chestnut Development.

- A. Recommendation of Environmental Impact Assessment (9-20-23)
- B. Disposition of Amended Site Plan (10-17-23)

Mr. Steve Gronow, the applicant, and Mr. Allan Pruss with Monument Engineering Group were present. Mr. Pruss requested to have their item tabled this evening as they will have a complete site plan forthcoming.

Commissioner McCreary questioned what is to prohibit the applicant from removing additional trees at this time. Ms. Ruthig stated that the applicant is not in site plan compliance so they are not allowed to do any work. She asked the applicant when they anticipate having the site plan ready for review. Mr. Gronow stated he has someone who is interested in the property. He anticipates being before the Planning Commission in June or July.

The call to the public was made at 6:33 pm.

Mr. Dan Hassett of 2955 Turning Leaf stated 40-50 trees were removed. He showed and submitted pictures of the tree density before and after the trees were removed. He is hoping that a berm and pine trees can be planted.

The call to the public was closed at 6:35 pm

**Moved** by Commissioner Rauch, supported by Commissioner Rassel, to postpone Agenda Item #1 for Parcel #4711-06-200-101 until the March 11, 2024 Planning Commission Meeting per the applicant's request. **The motion carried unanimously.**

NEW BUSINESS:

**OPEN PUBLIC HEARING # 2...** Consideration of a special use application, environmental Impact assessment and site plan for a commercial stable located at 7318 Herbst Road, south Side of Herbst Road, east of Hubert Road. The request is petitioned by the Nancy Merlo, Brighton Equestrian Club.

- A. Recommendation of Special Use Application
- B. Recommendation of Environmental Impact Assessment (4-22-22)
- C. Recommendation of Site Plan (4-21-22)

Ms. Kathy Riesterer, who represents the applicant, and Mr. Ray Merlo were present. Ms. ~~Riesterer Rister~~ stated this was approved in 2022 with certain conditions but those conditions were not met, so the prior approval lapsed. They are requesting the same approval, and they have now completed the conditions of the previous approval.

She noted allowing the gravel was approved previously, instead of asphalt, as gravel is more advantageous for horses. The applicant agrees to limit the equipment to equestrian use. Mr. Merlo runs a construction company and he stores his equipment and trucks at a property near this site, but it is not stored there. Neighbors have noted that these trucks are on the site. She stated this is true; however, they are there to make deliveries or for construction purposes for the equestrian center or if Mr. Merlo visits the site in one of his work vehicles. They would like to reinstitute the fundraisers.

Mr. Borden reviewed his letter dated November 13, 2023:

- 1. Special Land Uses (Section 19.03):
  - a. The special land use standards of Section 19.03 are generally met.
  - b. Though the Zoning Map (AG) and Future Land Use Map (Low Density Residential) do not align, the proposal is compatible with the goals of the Master Plan.
  - c. In order to make favorable findings related to compatibility and impacts, the use conditions of Section 3.03.02(h) must be met to the Commission's satisfaction.
- 2. Commercial Stable Use Conditions (Section 3.03.02(h)):
  - a. The submittal demonstrates compliance with the applicable use conditions.

**Moved** by Commissioner Rauch, seconded by Commissioner Chouinard, to recommend to the Township Board approval of the Environmental Impact Assessment dated September 20, 2023 for two contiguous parcels (4711-09-200-006 and 008) at 4675 Grand River Avenue to allow for trailer sales and storage. **The motion carried unanimously.**

**OPEN PUBLIC HEARING #3**...Consideration of a site plan amendment for revisions to the previously approved site grading on a 4.32-acre parcel (4711-06-200-101) on the north side of Grand River Avenue, just west of Char-Ann Drive. The request is petitioned by Chestnut Development.

A. Disposition of amended Site Plan (9-1-23)

B. Recommendation of Environmental Impact Assessment (9-20-23)

Ms. Brittney Shay of Monument Engineering was present. She advised that grading plans were previously approved by the township in preparation for future development. There were 19 trees that were required to be saved; however, when the project started, those trees were removed. They are proposing a new plan to establish screening due to the removal of these trees.

Mr. Borden reviewed his letter dated October 3, 2023.

1. In accordance with Section 13.01, the Planning Commission has review and approval authority over the site plan for grading and tree removal.
2. The approved site plan included a condition for additional tree preservation in the northerly portion of the site; however, those trees were removed, and the applicant now seeks approval of an amended site plan.

The applicant has addressed some of their concerns; however, his additional comments are:

3. There is a discrepancy between the notes and plan with respect to the number of new trees proposed. The plan depicts 20 trees, while the notes say 19. This must be corrected.
4. The size of the new trees proposed is not identified.
5. In his opinion, if the new trees are to be treated as replacement for what was removed, the new trees need to be much larger than Ordinance minimums of six feet in height at the time of planting. The trees removed were well above 20 feet in height. Alternatively, the Commission could require an increase in the number of trees to be planted to help offset what was removed.
6. The silt fence line should be adjusted to ensure protection of the tree along the west side of the limits of disturbance.
7. The applicant must address any comments provided by the Township Engineer.

Ms. Byrne has no engineering issues. She stated that the berm or plantings will not affect the drainage or underground utilities.

The Fire Marshal had no issues.

Commissioner Rauch is disappointed that the petitioner is not present this evening. He would like to know what happened. This is a significant oversight. He is not in favor of replacing what was removed with 19 six-foot trees. He would request that they be replaced with something much more robust. Also, to ensure that the new plantings grow, it would require irrigation.

Commissioner McBain is not in favor of a berm because that suggests manicured landscaping. She would like to have more natural plantings, such as trees, bushes, brush, etc.

Ms. Ruthig stated that when staff was made aware of the trees being removed, they were concerned with the location the applicant proposed to place the berm because it is in the 50-foot wide buffer that was supposed to remain natural. This could compromise some of the existing trees inside that 50-foot buffer.

Commissioner Rauch reiterated Commissioner McBain's comments that it should look natural and not manicured.

After discussion, it was determined that a landscape architect needs to provide a plan for approval by the township.

The call to the public was made at 7:16 pm.

Mr. Dan Hassett of 2955 Turning Leaf stated there was an approximate 300-foot-wide area of trees removed. His house can now be seen from Grand River. He would suggest the applicant bring in a lot of dirt to make a 10-12-foot-high berm, and then plant 30-40 white pines.

Mr. Chris Mammoser of 2757 Turning Leaf is the secretary of the homeowner's association. He thanked Ms. Ruthig for all of her help with this issue. They have purchased much larger trees than what is being proposed so the developer can also.

The call to the public was closed at 7:22 pm.

Commissioner Lowe would like to request that the developer or his representative be present at all future meetings.

**Moved** by Rauch, supported by Lowe, to table Open Public Hearing #3 for a site plan amendment for revisions to the previously approved site grading on a 4.32-acre parcel, #4711-06-200-101. **The motion carried unanimously.**

#### ADMINISTRATIVE BUSINESS:

##### **Staff Report**

Ms. Ruthig stated there will be a Planning Commission meeting next month.



Genoa Charter Township Board Meeting

May 1, 2023

Approved Minutes

**Moved** by Skolarus, supported by Ledford, to approve Resolution #4 Acknowledging the filing of the Special Assessment Roll, Scheduling the Second Hearing for May 15, 2023, and Directing the Issuance of Statutory Notices for the Stillriver Drive Road Rehabilitation Special Assessment Project (Summer Tax 2023). **The motion carried unanimously with a roll call vote (Ledford - yes, Croft - yes, Hunt - yes, Lowe - yes, Mortensen- absent, Skolarus - yes, and Rogers - yes).**

Ms. Skolarus stated that an appeal of the Pine Creek Road Improvement Special Assessment District has been filed so township counsel has asked for a temporary postponement of agenda items #6, 7 and 8 to allow the attorneys to review the appeals and advise staff on the next steps.

**Moved** by Skolarus, supported by Lowe, to postpone Agenda Items #6, 7, and 8 as requested by the Township Attorney. **The motion carried unanimously,**

6. Request for approval of Resolution #6 Bond Authorizing Resolution for the Pine Creek Ridge Road Improvement Special Assessment District. (Roll Call)
7. Request to approve the Memorandum of Understanding with the Lake Villas of Pine Creek for their contribution to the 2023 Pine Creek Ridge Road Improvement Project.
8. Request to approve a project agreement with the Livingston County Road Commission to reconstruct the roads within the Pine Creek Ridge Subdivision consisting of approximately 5.45 miles with the Township's cost not to exceed \$4,210,000.
9. Consideration of a recommendation for approval of an environmental impact assessment corresponding to the site plan for proposed site grading on a 4.32-acre vacant parcel (4711-06-200-101) on the north side of Grand River Avenue, just west of Char-Ann Drive. The request is petitioned by Chestnut Development.

Mr. Allan Pruss of Monument Engineering, representing Chestnut Development, provided a review of the project. They will be grading the property and removing the guard rail to prepare it for future development. They will be preserving the trees as requested by the Planning Commission.

Mr. Mortensen arrived at 6:51 pm.

**Moved** by Hunt, supported by Lowe, to approve the Environmental Impact Assessment dated April 24, 2023 for Chestnut Development site grading project located on a 4.32-acre vacant parcel (4711-06-200-101) with the following conditions:

1. The silt fence line shall be adjusted to ensure protection of trees that are to be preserved per Planner's review letter dated April 4, 2023
2. MDOT approval for the removal of the guard rail shall be submitted to Township staff prior to issuance of land use permit.

**The motion carried unanimously.**

4. The proposal will result in the removal of several trees, though the submittal does not identify the exact (or estimated) quantity.
5. The submittal notes a potential location for structures that are not described/depicted in the PUD Agreement or the approved PUD plans. As suggested by Mr. Lekas , he recommends removing it from the plans.
6. The proposed construction road likely requires approval from the Road Commission.
7. Given the nature of the project, the plans need to be signed/sealed by a professional engineer.

Ms. Byrne has no engineering-related concerns with the project.

The Brighton Area Fire Authority Fire Marshal has no concerns regarding this project.

Ms. Spano stated Trinity has community farms at their other facilities. They use it as a community garden, patients use it for rehabilitation, the vegetables are served to the patients in the hospital, and it helps with their carbon footprint.

Commissioner Chouinard complimented the applicant for keeping the material on site.

The call to the public was made at 8:15 pm with no response.

Commissioner McCreary would like the applicant to add a tree buffer between this area and the adjacent residential property. Ms. Spano agrees. She recommended determining what should be planted after the grading has been completed. Commissioners agreed and recommended it be approved by Township Staff.

**Moved** by Commissioner Lowe, seconded by Commissioner Dhaenens, to recommend to the Township Board approval of the Environmental Impact Assessment dated February 24, 2023 for site grading for Trinity Health. **The motion carried unanimously.**

**Moved** by Commissioner McCreary, seconded by Commissioner McBain, to approve the Amendment to the approved Final PUD Site Plan dated February 24, 2023 for site grading for Trinity Health conditioned upon staff approval of additional tree plantings on the eastern side to buffer the neighboring property. **The motion carried unanimously.**

**OPEN PUBLIC HEARING #5...**Consideration of an environmental impact assessment and site plan for proposed site grading on a 4.32-acre vacant parcel (4711-06-200-101) on the north side of Grand River Avenue, just west of Char-Ann Drive. The request is petitioned by Chestnut Development.

- A. Recommendation of Environmental Impact Assessment (3-2-23)
- B. Disposition of Site Plan (2-10-23)

Mr. Allan Pruss of Monument Engineering Group and Brad Opfer of Chestnut Development were present. Mr. Pruss provided a review of the project, which will be to regrade the site and remove the guardrail along Grand River. The comments noted by the Township Planner will be addressed on the grading plan. They do not anticipate the need for stockpiling and staging; however, if it is, they have shown it on the plans.

The call to the public was made at 8:31 pm with no response.

Mr. Borden reviewed his letter dated April 4, 2023.

1. In accordance with Section 13.01, the Planning Commission has review and approval authority over the site plan for grading and tree removal.
2. Since the project only entails site engineering at this time, the applicant must address any comments provided by the Township Engineer.
3. He noted that the applicant has provided details of the stockpile and staging areas.
4. The silt fence line may need to be slightly adjusted to ensure protection of three trees that are to be preserved along the west and north sides of the limits of disturbance. Mr. Pruss advised that he will address these concerns.

Ms. Byrne reviewed her letter dated March 30, 2023.

1. The grading plan appears to be filling in an existing detention pond area and adjusting the outlet rim elevation. As the site is currently undeveloped, this change won't have a major impact on the downstream storm system. When the site is developed in the future it will need to have a new storm management system designed and would need MDOT approval to outlet to the Grand River storm sewer.
2. She noted the applicant has addressed the existing storm pipes shown on the survey plan but missing on the proposed grading plan.
3. The existing water main is shown on the survey plan but should also be clearly shown on the grading plan.

The Brighton Area Fire Authority Fire Marshal has no concerns regarding this project.

Commissioner McCreary questioned the trees along Char-Ann and Turning Leaf that have blue tags. Mr. Pruss stated there is 20 feet of greenspace from the end of pavement on Char-Ann to their property line and they will not be grading within the first 50 feet of their property, so this is almost 80 feet of trees and brush that will remain. She does not want to see those trees removed now since there is no plan to develop the site at this time. Mr. Pruss and Mr. Opfer agreed not to remove the trees.

**Moved** by Commissioner Lowe, seconded by Commissioner Dhaenens, to recommend to the Township Board approval of the Environmental Impact Assessment submitted by Chestnut Development dated March 2, 2023 for proposed site grading on a 4.32-acre vacant parcel

(4711-06-200-101) on the north side of Grand River Avenue, just west of Char-Ann Drive. **The motion carried unanimously.**

**Moved** by Commissioner Lowe, seconded by Commissioner Dhaenens, to approved the Site Plan submitted by Chestnut Development dated February 10, 2023 for site grading on a 4.32-acre vacant parcel (4711-06-200-101) on the north side of Grand River Avenue, just west of Char-Ann Drive, conditioned upon the trees to the north side of the property as discussed this evening shall not be removed per the revised diagram submitted this evening and final approval to be done by Township Staff. **The motion carried unanimously.**

ADMINISTRATIVE BUSINESS:

**Staff Report**

Ms. Ruthig stated there will be May and June Planning Commission meetings.

She advised that Staff may begin requesting demarcation signs be installed for wetlands in new developments. The developer does not encroach into the wetlands per the plans, but homeowners are not aware where the wetlands are adjacent to their property and sometimes mow their lawn into them, etc.

**Approval of the February 13, 2022 Planning Commission meeting minutes**

Needed changes were noted.

**Moved** by Commissioner McCreary, seconded by Commissioner Lowe, to approve the minutes of the February 13, 2022 Planning Commission Meeting as corrected. **The motion carried unanimously.**

**Member Discussion**

There were no items to discuss this evening.

**Adjournment**

**Moved** by Commissioner McCreary, seconded by Commissioner Lowe, to adjourn the meeting at 9:02 pm. **The motion carried unanimously.**

Respectfully Submitted,

Patty Thomas, Recording Secretary



December 5, 2023

Planning Commission  
Genoa Township  
2911 Dorr Road  
Brighton, Michigan 48116

<b>Attention:</b>	Amy Ruthig, Planning Director
<b>Subject:</b>	Chestnut Development site grading and tree removal – Amendment to Approved Site Plan (2 <sup>nd</sup> Review)
<b>Location:</b>	Vacant parcel – north side of Grand River, west of Char-Ann Drive
<b>Zoning:</b>	OSD Office Service District

Dear Commissioners:

At the Township’s request, we have reviewed the revised submittal proposing to amend a previously approved site plan.

At their April 10, 2023 meeting, the Planning Commission granted conditional site plan approval to allow site grading and tree removal, per Section 13.01 of the Township Zoning Ordinance.

The condition was that the (19) existing trees on the north side of the property were not to be removed.

In the time since approval, grading activities commenced, and the trees subject to the Commission’s condition were “inadvertently” removed.

Subsequently, the Commission tabled a request to amend the approved site plan at their October 10, 2023 meeting due to insufficient replacement plantings and a lack of attendance by the developer.

The applicant now seeks to plant replacement trees to better screen the residential properties north of the subject site.

**A. Summary**

1. In accordance with Section 13.01, the Planning Commission has review and approval authority over the site plan for grading and tree removal.
2. The approved site plan included a condition for additional tree preservation in the northerly portion of the site; however, those trees were removed, and the applicant now seeks approval of an amended site plan.
3. The “Tree Removal Calcs” on the amended site plan may need to be updated.
4. The silt fence line should be adjusted to ensure protection of the tree along the west side of the limits of disturbance.
5. The applicant must address any comments provided by the Township Engineer.





*Aerial view of site and surroundings (looking north)*

## **B. Background/Proposal/Process**

The applicant proposes site grading in anticipation of future development of the property.

The site and adjacent properties to the east are zoned OSD; those to the west along Grand River are zoned GCD; and the adjacent properties to the north are zoned LDR. It is important to note that the adjacent property to the west contains a single-family residence, though it is zoned GCD.

Per Section 13.01, grading that changes the topography of the site by more than 3 feet on average or removal of more than 25% of existing trees with a diameter of 8 inches or more is subject to review by the Zoning Administrator, though it may be forwarded to the Planning Commission for their consideration (as is the case in this instance).

Similar to the original proposal, the project entails filling to level the parcel, which has/had approximately 20' of elevation change from the northwest (high ground) to the southeast.

The project included the removal of 42 trees with a diameter of 8 inches or more (57% of such trees on site); however, it is unclear whether this includes the 19 additional trees that were removed. As such, the "Tree Removal Calcs" on Sheet V-1.0 may need to be updated.

Procedurally, the Planning Commission has review and approval authority over the amended site plan; however, the amended Environmental Impact Assessment is subject to Planning Commission recommendation with final approval by the Township Board.

## **C. Site Plan Review**

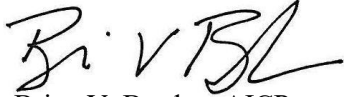
The project entails site grading, tree removal, and new tree plantings.

We provide the following comments for the Commission's consideration:

- The amended grading plan maintains 20' side yard buffer zones, and a 50' rear buffer zone from the LDR property to the north.
- 38 new evergreen trees are proposed to replace the 19 were "inadvertently" removed.
- The proposal includes 4 different types of evergreen trees (Norway Spruce, Black Hill Spruce, Colorado Blue Spruce, and Eastern White Pine).
- The silt fence line should be adjusted to ensure protection of the tree along the west side of the limits of disturbance.
- The Commission should consider any comments provided by the Township engineering consultant.

Should you have any questions concerning this matter, please do not hesitate to contact our office.

Respectfully,  
**SAFEBUILT**

A handwritten signature in black ink, appearing to read "B. V. Borden". The signature is stylized with a large, looped "B" and "B" and a clear "V".

Brian V. Borden, AICP  
Michigan Planning Manager



December 4, 2023

Ms. Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

**Re: Chestnut Site Grading Amendment  
Sketch Plan Review No. 2**

Dear Ms. Ruthig:

Tetra Tech conducted a second review of the proposed amended Chestnut Development Grading plan last dated October 17, 2023. The plan was prepared by Monument Engineering Group Associates on behalf of Chestnut Development. The sketch plan was previously approved, but the Petitioner is proposing to amend the sketch plan to replace additional trees that have been removed. The proposed berm from the previous submittal has been removed from the plans.

The proposed trees will not impact existing utilities or site drainage; therefore, we have no engineering related concern to the proposed amended sketch plan.

Sincerely,

A handwritten signature in blue ink that reads 'Shelby Byrne'.

Shelby Byrne, P.E.  
Project Engineer

**From:** [Rick Boisvert](#)  
**To:** [Amy Ruthig](#)  
**Cc:** [Kelly VanMarter](#)  
**Subject:** Plans  
**Date:** Friday, November 3, 2023 4:48:03 PM  
**Attachments:** [7075 McClements Rd. Fillmore Park Mountain Bike GT \(Site\) 11032023.pdf](#)  
[1015 S. Latson Rd - Mister Car Wash GT \(Site\) 11032023.pdf](#)  
[1111 S Latson Rd South Latson Commercial Development GT \(Site\) 11032023.pdf](#)  
[3639 E Grand River Ave - Arby's \(Site\) \(GT\) 11032023.pdf](#)

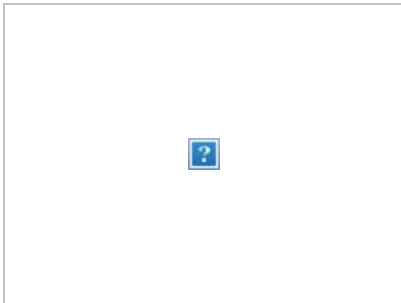
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Amy,  
Attached are review letters for those who need them from us.

We have no new comments on the Chestnut Site Grading and No issues with the Woodland Village Parking plans. I don't see a need for a letter unless you would like one for these two.

Cordially,

Rick Boisvert, FM, CFPS  
Fire Marshal  
Brighton Area Fire Authority  
615 W. Grand River  
Brighton, MI 48116  
O: (810)229-6640 D: (810)299-0033  
F: (810)229-1619 C: (248)762-7929  
[rboisvert@brightonareafire.com](mailto:rboisvert@brightonareafire.com)





# Monument Engineering Group Associates, Inc.

Developing Lifelong Relationships

[monumentengineering.com](http://monumentengineering.com)

298 Veterans Drive, Fowlerville, MI 48836 (HQ)  
(517) 223-3512



## IMPACT ASSESSMENT

VACANT LAND GRAND RIVER AVE.  
SECTION 6, GENOA TOWNSHIP

### **PREPARED BY:**

Monument Engineering Group Associates, Inc.  
298 Veterans Drive  
Fowlerville, MI 48836

### **PREPARED FOR:**

Chestnut Development  
6253 Grand River Avenue  
Suite 750  
Brighton, MI 48114

*March 2, 2023*

*Revised April 24, 2023*

*Updated September 20, 2023*

- Fowlerville
- Northern Michigan
- Portage



## IMPACT ASSESSMENT

### **Revised Plans:**

Plans were revised on September 1, 2023, to show new trees (19) replacing trees originally identified to be saved that were inadvertently removed during grading operations. These revisions have no impact on the Impact Assessment previously submitted.

### **18.07.01 Preparer:**

Prepared by: Monument Engineering Group Associates, Inc.  
298 Veterans Drive, Michigan 48836  
Allan W Pruss, PE, PS

Mr. Pruss has over 30 years of land development experience as an engineer and project manager.

### **Project Description:**

This project entails filling the site in preparation for future development. Currently the site has approximately 20' of fall from the northwest corner to the southeast corner of the site. Some clearing of the site (tree removal) will take place as part of the earthmoving operations. Landscape setbacks will be adhered to around the perimeter of the site so as to not affect the adjoining parcels.

### **18.07.02 Location:**

The site is in Section 6 T02N, R05E on the north side of Grand River Avenue. Just west of Char Ann Drive and east of Tahoe Blvd. Parcel ID 4711-06-200-101. See location map.

The site is a 4.34 acres parcel of vacant land with some trees mainly on the north side of the property. There is approximately 20' of vertical relief from the northwest corner of the property to the southeast corner. There are no structures on the site.

The property to the north is a residential neighborhood with Turning Leaf Drive adjacent to the property. To the east is an office building with access off Char Ann Drive. To the south is Grand River Avenue with vacant land (wetlands) to the south of Grand River Ave. To the west is a single-family structure located +/-350' from Grand River Ave.

See Location Map and aerial photo for specific location and description of the property.

## IMPACT ASSESSMENT



### 18.07.03 Impact on natural features:

The site is a 4.34 acres parcel of vacant land with some trees mainly on the north side of the property. There is approximately 20' of vertical relief from the northwest corner of the property to the southeast corner. There are no structures on the site. There are approximately 70 trees on site with a diameter breast height (DBH) of 8" or greater. Per the soil survey mapper, soil characteristics are mainly loam with some Carlisle muck. No soils investigation has been conducted as part of this project. There are no known wetlands (regulated or non-regulated) on the site. See site plan for existing conditions survey of the site.

### 18.07.04 Impact on stormwater management:

The site drains from northwest to southeast with approximately 20' of fall. The plan for this project is to prepare the site for future development by bringing fill to the site and creating a more level site. There will be no increase in impervious area. Soil erosion control measures will be implemented, and a soil erosion sediment control (SESC) permit will be applied for with the Livingston County Drain Commission (LCDC). There will be no impact on stormwater management nor the surrounding stormwater facilities.

### 18.07.05 Impact on surrounding land uses:

The proposed use will remain unchanged from current use (Vacant Land) as this is a site preparation project only. There will be no increase in noise, light or pollutants when this project is finished. Construction activities will take place during normal business hours, Monday through Saturday, 8 am until 6 pm. Dust control during construction will be handled by utilizing water buffalos during dry periods to keep moisture in the soils and minimize dust to adjoining parcels.

## IMPACT ASSESSMENT

Included as part of the soil erosion permit will be a tracking mat designed to knock mud off equipment and vehicles leaving the site. Any mud tracked onto any adjoining roads will be cleaned up daily or as needed during the day.

### **18.07.06 Impact on public facilities and services:**

The proposed use will remain unchanged from current use (Vacant Land) as this is a site preparation project only. There will be no increase in activity on this site after the project is completed. There will be no impact on public facilities or services after the project is completed.

### **18.07.07 Impact on public utilities:**

The proposed use will remain unchanged from current use (Vacant Land) as this is a site preparation project only. Although all public and private utilities are available to service this site, no new utility connections are proposed, therefore there will be no impact on public utilities. There is an existing connection to the public storm sewer system connecting into the Grand River right of way (ROW). This connection will remain in place and the current drainage patterns on the site will be maintained.

A SESC permit will be applied for from LCDC which will have erosion control measures implemented on the site throughout construction. These measures require them to be inspected on a weekly basis, or within 24 hours of a rain event, to ensure their integrity and that they are working properly.

### **18.07.08 Storage and handling of any hazardous materials:**

There will be no storage or handling of any hazardous materials on this site during or after construction.

### **18.07.09 Traffic Impact Study:**

As the property will remain vacant after construction activities, there will be no increase in directional trips to or from the site. Therefore, no traffic impact study will be required.

### **18.07.10 Historic and Cultural Resources:**

The site is currently vacant land with no structures.

### **18.07.11 Special Provisions:**

No special provisions are being requested.

### **18.07.12 A list of all sources shall be provided:**

No sources cited herein.

### **18.07.13 Any impact assessment previously submitted:**

There are no previous impact assessments previously submitted that we are aware of.

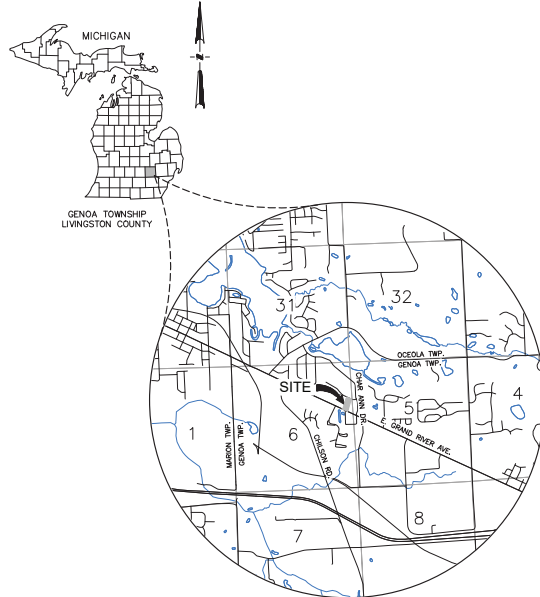
**LEGAL DESCRIPTION (AS PROVIDED)**

(PER TAX DESCRIPTION PROVIDED BY LIVINGSTON COUNTY GEOSPATIAL INFORMATION SYSTEM (GIS) MAPPING)

TAX NUMBER: 4711-06-200-101

SEC 6 T2N 55E COMM E 1/4 COR SEC TH N01°17'20"E 674.10 FT TH N61°41'16"W 330 FT FOR POB TH CONT N61°40'16"W 398.16 FT TH N21°00'11"E 424.64 FT TH N62°52'38"W 100.58 FT TH N20°45'29"E 50.12 FT TH S62°41'43"E 483.35 FT TH S19°15'30"W 483.42 FT TO POB CORR LEGAL 10/01 CONT. 4.37 AC.

PRELIMINARY SITE PLAN DRAWING FOR  
**CHESTNUT  
E. GRAND AVE**



**LOCATION MAP**

**BEARING REFERENCE**

BEARINGS ARE BASED ON PROJECT COORDINATE SYSTEM:  
MICHIGAN STATE PLANE COORDINATE SYSTEM, NAD83 (CONUS) (MOL) (GRS80), SOUTH ZONE 2113, INTERNATIONAL FEET, GROUND  
(LAT: 42°35'46.85" N, LON: 83°53'42.74" W, ELEV: 800.00', SCALE FACTOR: 1.00003817).

**DESIGN ENGINEER/SURVEYOR**

MONUMENT ENGINEERING GROUP ASSOCIATES, INC



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FOWLerville, MI 48836  
ALLAN W PRUSS, PE, PS  
PHONE: 517-223-3512

**CLIENT**

CHESTNUT DEVELOPMENT  
6253 GRAND RIVER AVENUE  
SUITE 750  
BRIGHTON, MICHIGAN 48114  
POC: STEVE GRONOW  
PHONE: 517-552-2489

**SHEET INDEX**

		PLAN SUBMITTALS											
		2/10/2023	2/13/2023	2/21/2023	2/22/2023	3/1/2023	4/24/2023	6/30/2023	7/7/2023	9/1/2023	10/17/2023		
GENERAL		INCLUDED SHEETS											
SHEET	G-1-0 COVER												
SHEET	V-1-0 TOPOGRAPHIC SURVEY & DEMO PLAN												
SHEET	V-2-0 AERIAL VIEW												
GRADING AND SOIL EROSION & SEDIMENTATION CONTROL (SESC)													
SHEET	C-7-0 GRADING AND SESC PLAN												
SHEET	C-7-1 LCDC SESC NOTES AND DETAILS												
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SHEET	C-10-0 MOT PLAN												
SHEET	C-10-1 MOT PLAN - LANE CLOSURE FORM DETAILS												
SHEET	C-11-0 DETAILS												
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SHEET	C-11-2 DETAILS												
SPECIFICATIONS													
SHEET	C-12-0 SPECIFICATIONS												
		GENOA TOWNSHIP, LIVINGSTON COUNTY STANDARD DETAILS											

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CLIENT :

**CHESTNUT DEVELOPMENT**  
6253 GRAND RIVER AVE.  
SUITE 750  
BRIGHTON, MI 48114  
POC: STEVE GRONOW  
517-552-2489

**COVER**  
PARCEL 4711-06-200-101  
PART OF NE 1/4, SEC. 6, T2N-R5E,  
GENOA CHARTER TOWNSHIP,  
LIVINGSTON COUNTY, MICHIGAN

DATE	PLAN SUBMITTALS / REVISIONS
02/27/2023	REVISED GRADING PLAN
02/27/2023	REVISED TREE REMOVAL CALC
04/24/2023	SITE PLAN REVIEW COMMENTS
06/30/2023	REVISED MOT SUBMITTAL
07/07/2023	REVISED MOT SUBMITTAL
10/17/2023	REVISED SITE PLAN SUBMITTAL

CURRENT ISSUE DATE:  
4/24/2023

PROJECT NO: 22-168

SCALE: N/A  
1" = 1/2" = 1'

FIELD: RZ  
DRAWN BY: M/AM  
DESIGN BY: SD  
CHECK BY: M/AM

**G-10**

NOT FOR CONSTRUCTION

**STRUCTURE SCHEDULE**

STRUCTURE	RIM ELEV.	PIPES
(50412) CBR	953.05	24" NW IE= 943.90 24" SE IE= 944.03
(60196) CBS	961.31	UNABLE TO ACCESS
(60290) CBR	949.74	12" SE IE= 944.52
(60291) STMH	952.44	UNABLE TO ACCESS
(60295) CBR	951.48	24" NW IE= 944.03 24" SE IE= 945.03
(60342) CBS	952.91	12" N IE= 950.69
(60375) CBS	955.08	10" NE IE= 952.87

**EXISTING PARKING**

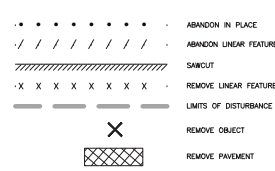
THERE ARE NO STRIPPED PARKING SPACES ON THE SUBJECT PROPERTY.

**SOILS INFO**

SOIL TYPES ARE ACCORDING TO THE USDA SOIL SURVEY WEB SITE (<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>)

- CarabA: CARLSLE MUCK, 0-2% SLOPES
- MoA: WAWASEE LOAM, 0-2% SLOPES
- MoB: WAWASEE LOAM, 2-6% SLOPES
- MoD: MIAMI LOAM, 12-18% SLOPES

**DEMOLITION LEGEND**



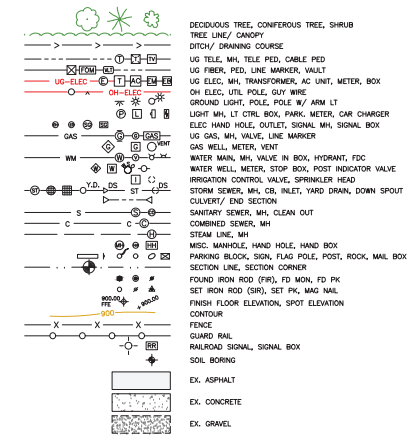
**DEMOLITION NOTES**

- UTILITY OBJECTS SUCH AS GAS METER, TRANSFORMER, TELEPHONE PEDESTAL, UTILITY POLE & WIRES ARE TO BE REMOVED BY OTHERS IF APPLICABLE.
- ANY TREES NOT MARKED PER PLAN ARE TO BE PROTECTED & PRESERVED DURING CONSTRUCTION.
- ALL EXISTING MDOIT SIGNS DAMAGED OR LOST BY THE CONTRACTOR MUST BE REPLACED IN KIND ON NEW SUPPORTS AT THE CONTRACTOR'S EXPENSE.
- ALL EXISTING PAVEMENT MARKINGS THAT ARE REMOVED FOR TRAFFIC CONTROL OR OBLITERATED DURING CONSTRUCTION OPERATIONS MUST BE REPLACED WITH WATERBORNE FOR THE LONGITUDINAL, LANE LINES.

**TREE REMOVAL CALCS**

74 TREES ON-SITE WITH A DIAMETER 8" OR LARGER  
NUMBER OF TREES PROPOSED TO BE REMOVED: 42  
42/74 x 100 = 57% OF TREES 8" OR LARGER BEING REMOVED

**EXISTING LEGEND**



**WETLAND NOTE**

ACCORDING TO THE NATIONAL WETLAND INVENTORY WEBSITE (<http://www.fws.gov/wetlandsdata/mapper.html>), THERE ARE NO NOTED WETLANDS ON THE SUBJECT PARCEL.  
WETLAND FLAGGING WAS NOT OBSERVED DURING THE FIELD SURVEY. AN OFFICIAL STUDY FOR THE PRESENCE OF WETLANDS WAS NOT CONDUCTED BY MONUMENT ENGINEERING GROUP ASSOCIATES.

**FLOOD ZONE**

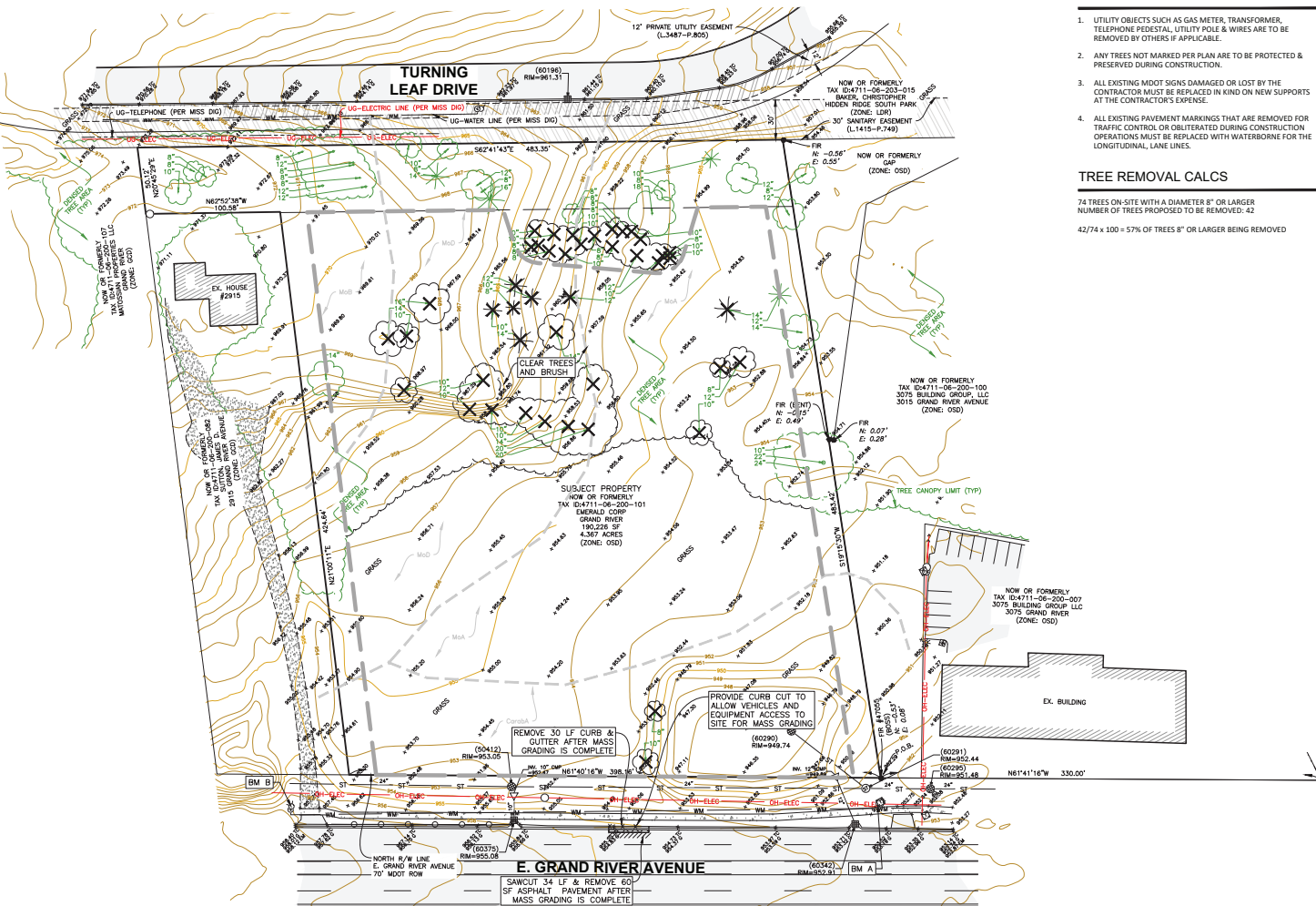
FEMA MAP SCALES DO NOT SUPPLY SUFFICIENT LEVEL OF DETAIL TO PLOT ACCURATELY. ZONES IF PLOTTED HEREIN ARE APPROXIMATE.  
BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THE SUBJECT PROPERTY APPEARS TO LIE ENTIRELY IN ZONE (X) AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO THE FLOOD INSURANCE RATE MAP FOR THE COUNTY OF LIVINGSTON, COMMUNITY PANEL NO. (26093C03070), EFFECTIVE DATE 9/17/2008.

**UTILITY NOTES**

- ALL FRANCHISE UTILITIES (GAS, FIBER, CABLE, UG ELEC., TELE) SHOWN ARE BASED ON MISS DG MARKINGS LOCATED AT TIME OF SURVEY UNLESS NOTED OTHERWISE.
- THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING 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 AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

**BENCHMARKS**

DATUM: NAVD83  
BM A: DISC. BENCH TIE ON SOUTH SIDE OF UTILITY POLE ELEV = 952.871'  
BM B: DISC. TOP ARROW OF HYDRANT ELEV = 960.727'



MONUMENT ENGINEERING GROUP ASSOCIATES  
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517-552-2489

**TOPOGRAPHIC SURVEY & DEMO PLAN**  
PARCEL 4711-06-200-101  
PART OF NE 1/4, SEC. 6, T2N-85E,  
GENOA CHARTER TOWNSHIP  
LIVINGSTON COUNTY, MICHIGAN

DATE	DESCRIPTION
02/27/2023	PLAN SUBMITTALS/PROVISIONS
02/27/2023	REVISED DRAWING PLAN
02/27/2023	REVISED TREE REMOVAL PLAN
04/24/2023	SITE PLAN REVIEW COMMENTS
06/26/2023	REVISED MDOIT SUBMITTAL
07/27/2023	REVISED MDOIT SUBMITTAL
10/17/2023	REVISED SITE PLAN SUBMITTAL

CURRENT ISSUE DATE:  
4/24/2023

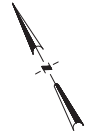
PROJECT NO: 22-168  
SCALE: 1" = 40'  
1/2" = 1'

FIELD: RZ  
DRAWN BY: MVM/JN  
DESIGN BY: BS  
CHECK BY: MAA/JP

**V-10**

NOT FOR CONSTRUCTION





**AERIAL SOURCE**

AERIAL IMAGE PER ESRI/DIGITAL GLOBE  
DATE: UNKNOWN



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**AERIAL VIEW**


PARCEL 4711-06-200-101  
PART OF NE 1/4, SEC. 6, T2N-R5E,  
GENOA CHARTER TOWNSHIP,  
LIVINGSTON COUNTY, MICHIGAN

PLAN SUBMITTALS/PROVISIONS	DATE
REVISED DRAINAGE PLAN	02/27/2023
REVISED TREE REMOVAL DNG	02/27/2023
REVISED SITE PLAN	04/24/2023
REVISED MOIST. SUBMITTAL	06/26/2023
REVISED MOIST. SUBMITTAL	07/27/2023
REVISED SITE PLAN SUBMITTAL	10/17/2023

CURRENT ISSUE DATE:  
4/24/2023

PROJECT NO: 22-168

SCALE: 1" = 40'



FIELD: RZ  
DRAWN BY: MVM/JN  
DESIGN BY: RZ  
CHECK BY: MVM/JN

**V-20**

NOT FOR CONSTRUCTION

**BENCHMARKS**

DATUM: NAVD83

BM A:  
DESC. BENCH TIE ON SOUTH SIDE OF UTILITY POLE  
ELEV = 952.871'

BM B:  
DESC. TOP ARROW OF HYDRANT  
ELEV = 960.727'

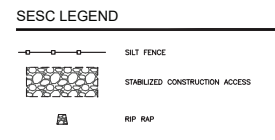
**SOILS INFO**

SOIL TYPES ARE ACCORDING TO THE USDA SOIL SURVEY WEB SITE  
(<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>)

SOIL TYPE LIMIT AND LABEL

- Carab: CARLISLE MUCK, 0-2% SLOPES
- Mia: WAWASEE LOAM, 0-2% SLOPES
- Mob: WAWASEE LOAM, 2-6% SLOPES
- Moc: MIAMI LOAM, 12-18% SLOPES

CONSTRUCTION SEQUENCE	OPERATION TIME SCHEDULE - BEGINNING		
	JUL	AUG	SEP
1 CONTRACTOR SHALL INSTALL SILT FENCE AS SHOWN ON APPROVED PLANS.			
2 REMOVE ALL TOPSOIL AND ORGANIC MATTER. TOPSOIL MAY BE STORED ON SITE IN DESIGNATED AREA TO BE USED FOR FUTURE PLANTING AND FILL AREAS. TRACK REMAINING TOP SOIL OFFSITE AND PROPERLY DISPOSE.			
3 PLACE INLET FILTERS AT CATCH BASINS THROUGHOUT SITE.			
4 FINISH GRADE AND STABILIZE AS SOON AS POSSIBLE. STABILIZE ALL DISTURBED AREAS WITH CLASS A SEED AND MULCH IN AREAS OF SLOPES OF 1% OR STEEPER. CONTRACTOR TO SEED AND INSTALL PEGGED IN PLACE EROSION CONTROL BLANKETS.			
5 REMOVE TEMPORARY SOIL EROSION MEASURES ONCE SEEDING VEGETATION HAS BEEN ESTABLISHED. CLEAN ALL AFFECTED STORM STRUCTURES AS NECESSARY.			
7 REPAIR/CLEAN INLET FILTERS AS REQUIRED.			
10 SEEDING VEGETATION HAS BEEN ESTABLISHED. CLEAN ALL AFFECTED STORM STRUCTURES AS NECESSARY.			

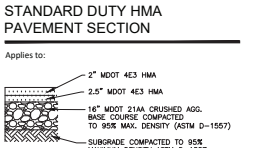
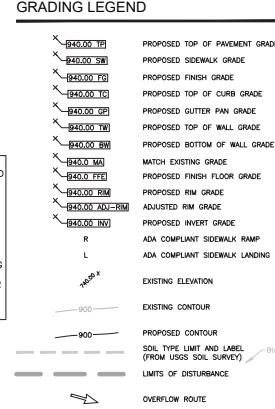


**EROSION CONTROL QUANTITIES**

Disturbed Area: 3.29 Acres

QTY	UNIT	ITEM
1172	LF	SILT FENCE
4	EA	INLET PROTECTION
1	EA	STABILIZED CONSTRUCTION ACCESS

NOTE: QUANTITIES ARE FOR ENTIRE SITE.



**DTMB SOIL EROSION & SEDIMENTATION CONTROL MEASURES**

MORGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET (DTMB)

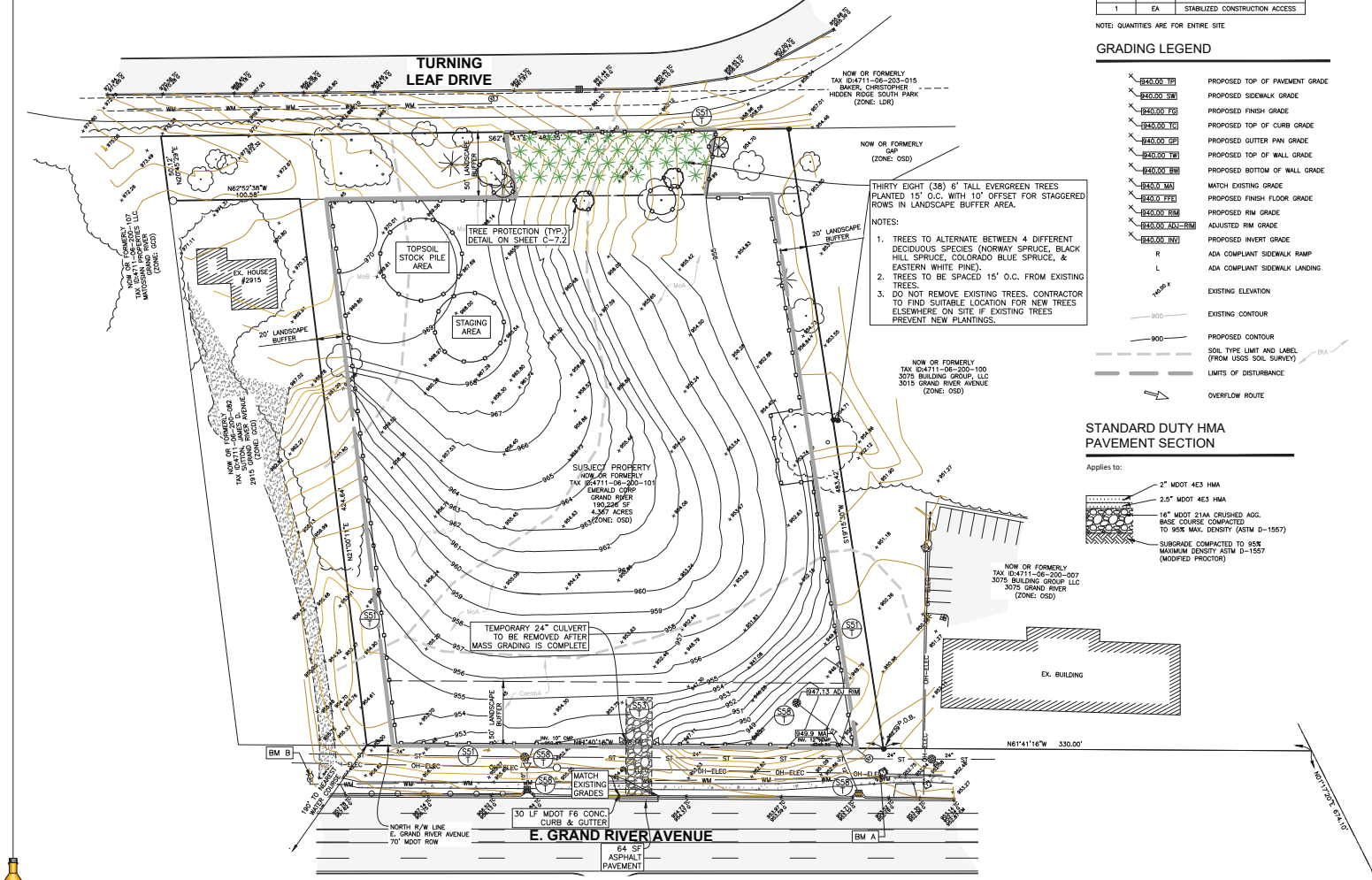
EROSION CONTROLS		
KEY BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
E6 MULCH		FOR USE IN AREAS SUBJECT TO EROSION. APPLICABLE TO SLOPES OF 1% OR STEEPER. MULCH OR OTHER COMPLETED (SPIN, GRASS, ETC.).
E8 PERMANENT SEEDING		EVALUATION METHOD INVOLVED AN IN-SITU SPREADER WHICH COVERED THE SITE COMPLETELY (SPIN, GRASS, ETC.).
SEDIMENT CONTROLS		
KEY BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
S51 SILT FENCE		USE ADJUNCT TO CRITICAL AREAS, TO PREVENT SEDIMENT LADEN SHEET FLOW FROM ENTERING THESE AREAS.
S53 STABILIZED CONSTRUCTION ACCESS		USED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE.
S55 SEDIMENT BASIN		AT THE OUTLET OF DISTURBED AREAS AND AT THE LOCATION OF A PERMANENT SEDIMENT BASIN.
S58 INLET PROTECTION FABRIC DROP		USE AT STORMWATER INLETS, ESPECIALLY AT CONSTRUCTION SITES.
EROSION & SEDIMENTATION CONTROLS		
KEY BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
ES51 CHECK DAM		USED TO REDUCE SURFACE FLOW VELOCITY, STABILIZE AND DESTROY FLOW CORROSION.
TEMPORARY <span style="float: right;">PERMANENT</span>		

**EROSION CONTROL STANDARDS**

- ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE.
- DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
- EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR WATERWAYS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
- CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. CONTRACTOR SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES AND OTHER CHANGES HAS BEEN ACCOMPLISHED.
- STAGING OF THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THESE PLACES AND AS REQUIRED TO INSURE PROGRESSIVE STABILIZATION OF DISTURBED AREAS.
- SOIL EROSION CONTROL PRACTICES WILL BE ESTABLISHED IN EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENTATION MEASURES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
- A CERTIFIED STORM WATER OPERATOR WILL BE NAMED ON THE MDEQ NOTICE OF COVERAGE FOR NPDES AS REQUIRED.
- ALL DISTURBED AREAS ARE TO BE TOP SOILED AND SEEDED WITH THE FOLLOWING MIN RATIO:  
TOP SOIL 3" IN DEPTH, GRASS SEED 218 LBS PER ACRE, FERTILIZER 150 LBS PER ACRE, STRAW MULCH 3" DEPTH 1.5 TO 2 TONS PER ACRE.
- HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1%. ON SLOPES OVER 1% STABILIZATION SHALL BE DONE WITH SEED AND STRAW MULCH WITH A TACKIFIER, OR STRAW BLANKETS PEGGED IN PLACE.

**SOIL EROSION CONTROL MAINTENANCE SCHEDULE AND NOTES.**

- CONTRACTOR MUST OBTAIN A SOIL EROSION AND SEDIMENTATION CONTROL PERMIT FROM THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE PRIOR TO COMMENCING WORK.
- EARTHWORK SHALL BE LIMITED TO THE PROPOSED SITE AS SHOWN ON THE PLAN.
- CONTRACTOR SHALL INSPECT THE SOIL EROSION/SEDIMENTATION CONTROL DEVICES ONCE A WEEK AND/OR WITHIN 24 HOURS OF A RAINFALL EVENT WHICH RESULTS IN A STORM WATER DISCHARGE FROM THE SITE. ANY DAMAGE TO EROSION CONTROL MEASURES MUST BE REPAIRED IMMEDIATELY.
- ALL MUD OR DEBRIS TRACKED ONTO EXISTING PUBLIC ROADS FROM THE SITE DUE TO CONSTRUCTION SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
- SILT FENCE MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY BUILT-UP SEDIMENT WHEN THE SEDIMENT HEIGHT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPLACE, RETIREMENT OR RE-BACKFILL THE SILTATION FENCE SHOULD IT FAIL OR BE DAMAGED DURING CONSTRUCTION.
- PERMANENT STABILIZATION MUST BE COMPLETED WITHIN 30 DAYS OF FINAL GRADING.
- ACCESS ROADS MUST BE MAINTAINED AS NECESSARY, TO KEEP THEM EFFECTIVE, NEW LAYERS OF STONE MAY BE ADDED AS OLD LAYERS BECOME COMPACTED. STEPS SHOULD ALSO BE TAKEN TO REPAIR THE ACCESS ROADS IF RUTS OR PONDING WATER APPEARS.
- INLET FILTERS SHOULD BE INSPECTED FOR BUILDUP OF SILT AND OTHER DEBRIS. THIS IS EVIDENT IF GEOTEXTILE/SOG STRUCTURE IS CAUSING FLOODING. MAINTENANCE WOULD CONSIST OF REMOVING OF SEDIMENTS WITH A STIFF BRISTLE BROOM OR SQUARE POINT SHOVEL. IF INLET FILTER IS BEYOND THIS LEVEL OF REPAIR, IT MAY BE NECESSARY TO REPLACE BOTH THE SOG AND GEOTEXTILE FILTER.
- IF SOIL EROSION/SEDIMENT CONTROL MEASURES ARE INADEQUATE FOR THE SITE. THE PROPER EROSION CONTROL AUTHORITY MUST BE NOTIFIED.



**MEGA ENGINEERING GROUP, INC.**

298 VETERANS DRIVE  
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MICHIGAN 48865  
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517-223-3112

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POC: STEVE GROWMAN  
517-552-2489

**GRADING AND SESC PLAN**

PARCEL 4711-06-200-101  
PART OF NE 1/4, SEC. 6, T2N-18E,  
GENOA CHARTER TOWNSHIP,  
LIVINGSTON COUNTY, MICHIGAN

DATE	DESCRIPTION
02/27/2023	REVISED DRAWING PLAN
02/27/2023	REVISED TIME REMOVAL DATE
04/24/2023	DATE PLAN REVIEW COMMENTS
06/26/2023	REVISED MDTF SUBMITTAL
07/07/2023	REVISED MDTF SUBMITTAL
10/17/2023	REVISED SITE PLAN SUBMITTAL

CURRENT ISSUE DATE:  
4/24/2023

PROJECT NO: 22-168

SCALE: 1" = 40'

FIELD: RZ  
DRAWN BY: MVMJN  
DESIGN BY: BEI  
CHECK BY: MALAP

**C-7.0**

NOT FOR CONSTRUCTION



# LCDC NOTES

## Top Soil & Soil Storage Areas:

- Top soil or soil storage areas shall be seeded and mulched, or matted with straw, immediately after the stripping process is completed, to prevent wind and water erosion.

## Slopes and Ditches:

- On-site ditches shall be of the flat bottom type, minimum width of 2' with a minimum of 3' horizontal to 1' vertical side slopes, 3:1.
- Side slopes in excess of 3' horizontal to 1' vertical shall not be used except with a mechanical device such as a retaining wall, or terracing.
- Ditches with steep grades will need "stone flow checks" to prevent scouring of the ditch bottoms. They may be used as a temporary measure and removed once sufficient stabilization has been established. These shall be depicted on plans by the engineer. Indicate flow checks on all slopes 3.00% and greater.

## Detention/Retention, Sedimentation Ponds:

- New land developments within Livingston County shall be equipped with detention/retention facilities for storm water in accordance with the Drainage Policies of the Livingston County Drain Commissioner.
- Inlets into detention ponds must not discharge at the same location as the outlet structure.
- Detention Pond Stand Pipe Outlet Detail must be the Livingston County Drain Commissioner's standard Detention Pond outlet, e.g. orifice outlets without sedimentation control devices are prohibited.
- Stand pipe structure must have a 2 ft. sump.
- Detention Pond stand pipe structure shall show staggering of outlet holes at different elevations. This will minimize plugging and provide for more effective filtering.
- The stone around the stand pipe structure shall be refreshed with clean stone prior to completion of the project.
- Detention/Retention, Sedimentation Ponds shall be excavated, top soiled, seeded, mulched and tacked prior to the start of massive earth disruption.
- Inlets into Detention/Retention Ponds must be located within two feet of the bottom floor of the pond.

## Detention Pond Spillway:

- Rip-rap proposed in the construction of the emergency spillway must be placed over keyed-in geo-fabric blanket.

## Silt Fence:

- All commercial projects constructed in Livingston County shall install 36" high silt fence.

## Inlet Protection:

- Sedimentation protection for catch-basin inlets. Silt sacks are the preferred choice in the winter months, because they are less likely to be disturbed by the process of snow plowing.
- Open-Pipe, inlet protection must be provided with straw bales, stone or geo-fabric.

## Outlet Protection:

- All storm drains 15" in diameter or larger shall have animal guards installed to prevent entrance to the system.
- All rip-rap must be placed over keyed-in geo-fabric.
- Storm drain outlets that do not empty into the retention/detention pond shall have a temporary 5'x10'x3" sump installed at the termination of the storm sewer. Upon completion of the stabilization work the sump area shall be filled and rip-rapped with cobble stone over keyed in filter fabric. Silt traps shall be inspected after each storm.
- Splash blocks may be required depending on the outley flow rate or velocity.

## Tracking onto public roadway:

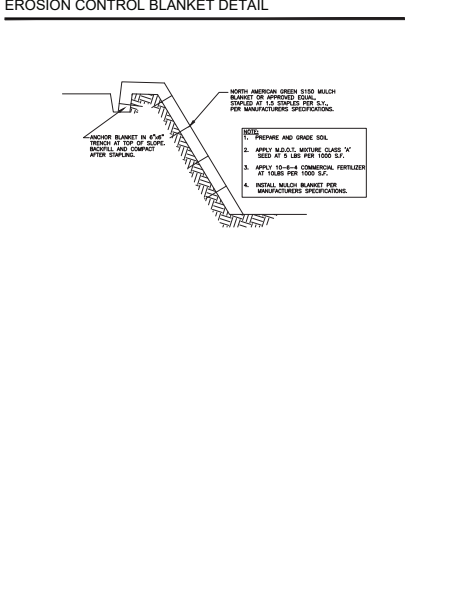
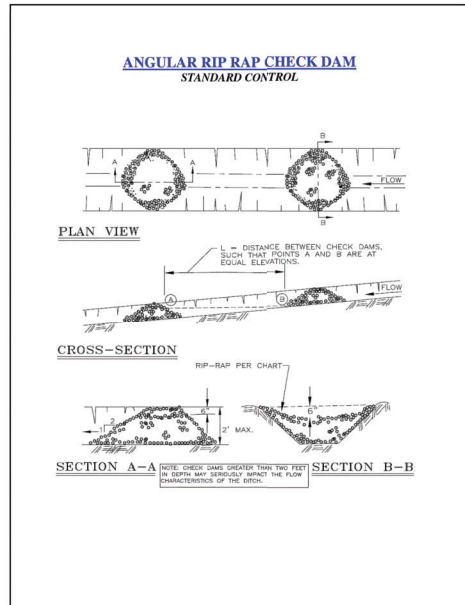
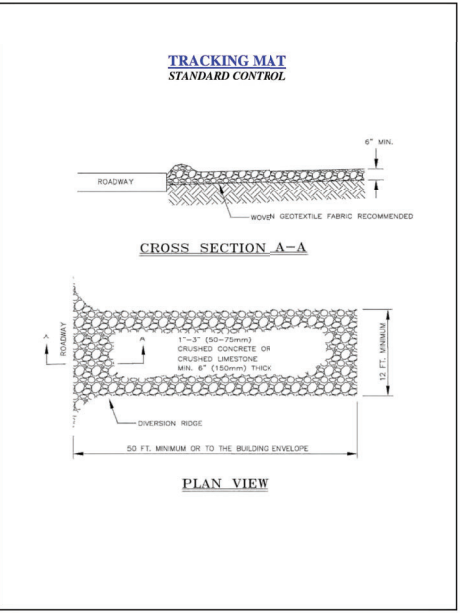
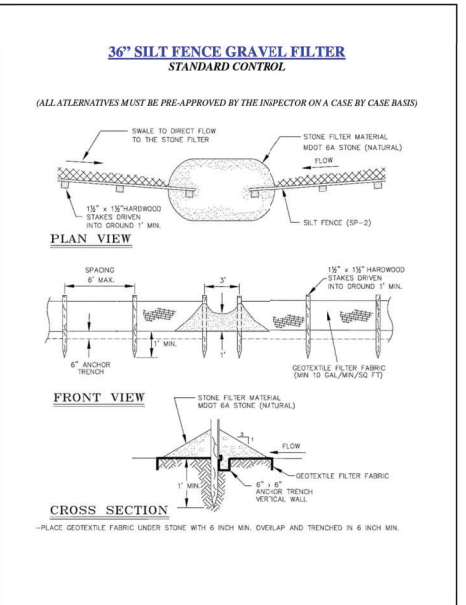
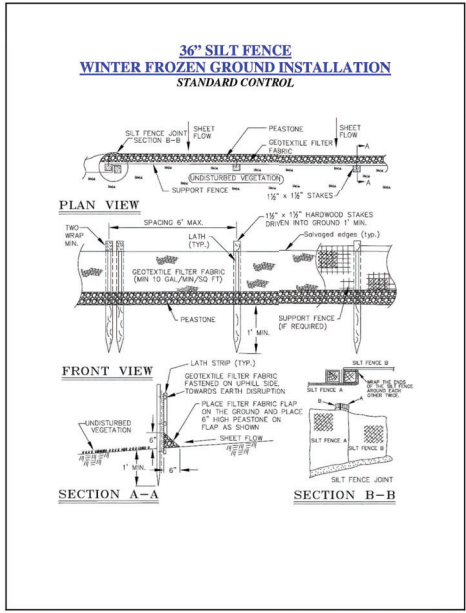
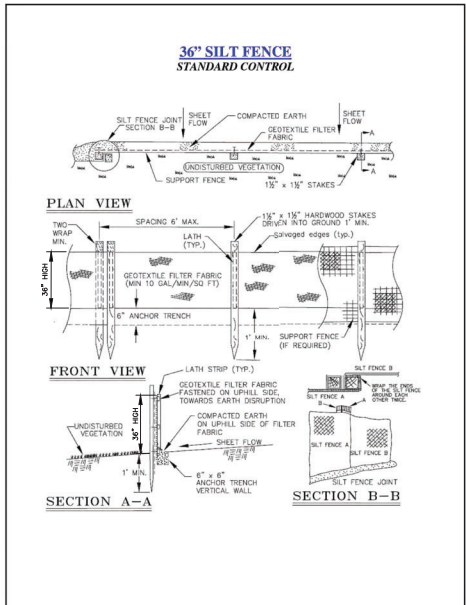
- It is required that each development have an ingress/egress of crushed stone to restrict tracking of material onto the Public Roadway. All commercial construction sites require a minimum 75-foot tracking mat shown at ingress/egress.

## Stabilization Standards:

- For subdivision and site condominium developments: As of May 01, 2000, it is required that temporary stabilization of the entire site be completed and approval from the Livingston County Drain Commissioner's Office obtained prior to the issuance of single family dwelling permits.
- For commercial or industrial sites, common areas shall be called out on plans, in accordance with Part 17, prescribed by R 323.1709 and R 323.1710, pursuant to PART 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act (Previously known as P.A. 347 of 1972) of Act 347, Public Acts Of 1972, as amended) indicating areas to be stabilized after 15 days of grade work. Areas to be outlined are as follows: detention/retention, drainage easements, utility easements, boulevards, etc.

## Seeding, Fertilizer and Mulch Bare Ground Ratio:

- This information shall be detailed on the construction plans.
- Top Soil 3" in depth
- Gross Seed 217.84 lbs per acre
- Fertilizer 150 lbs per acre
- Straw Mulch 3" in depth (All mulching must have a tie down)
- Hydroseeding is not acceptable for slopes exceeding 1% in such cases stabilization shall be done with seed and straw mulch with a tackifier.



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517-552-2489

LCDC SEC NOTES AND DETAILS

PARCEL 47111-06-200-101  
PART OF NE 1/4, SEC. 6, T2N-18E,  
GENOA CHARTER TOWNSHIP  
LIVINGSTON COUNTY, MICHIGAN

DATE	DESCRIPTION
02/27/2023	REVISIONS
02/27/2023	REVISED DRAWING PLAN
02/27/2023	REVISED DRAWING PLAN
04/24/2023	REVISED DRAWING PLAN
06/26/2023	REVISED DRAWING PLAN
07/27/2023	REVISED DRAWING PLAN
10/17/2023	REVISED DRAWING PLAN

CURRENT ISSUE DATE: 4/24/2023

PROJECT NO: 22-168

SCALE: N/A

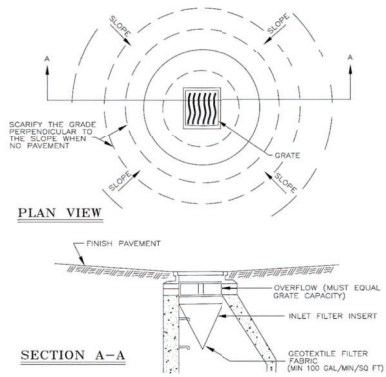
FIELD: RZ  
DRAWN BY: MVM/JN  
DESIGN BY: MVM  
CHECK BY: MVM/JN

**C-7.1**

NOT FOR CONSTRUCTION

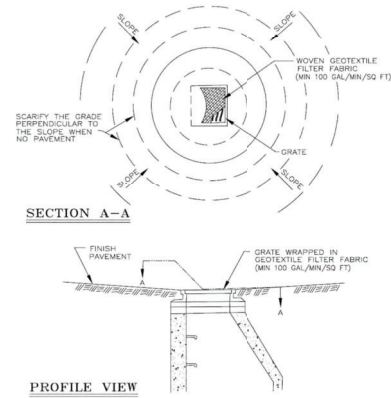
**SILT SACK OR APPROVED EQUAL LOW POINT/YARD  
INLET FILTER**  
STANDARD CONTROL YEAR ROUND OR WINTER USE

APPROVED FOR USE DURING WINTER MONTHS OR IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING



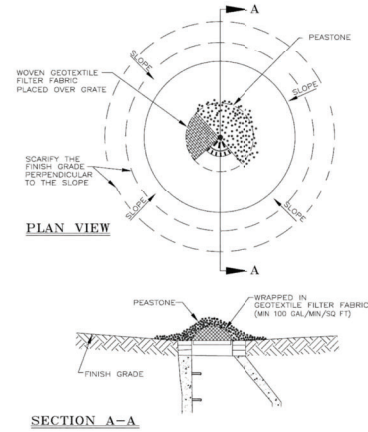
**GEOTEXTILE FABRIC LOW POINT/YARD INLET FILTER**  
STANDARD CONTROL NON-WINTER USE

NOT FOR USE IN WINTER MONTHS OR IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING



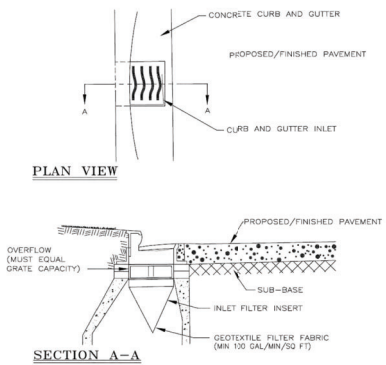
**GEOTEXTILE & PEASTONE LOW POINT/YARD  
INLET FILTER**  
STANDARD CONTROL NON-WINTER USE

NOT FOR USE IN WINTER MONTHS OR IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING



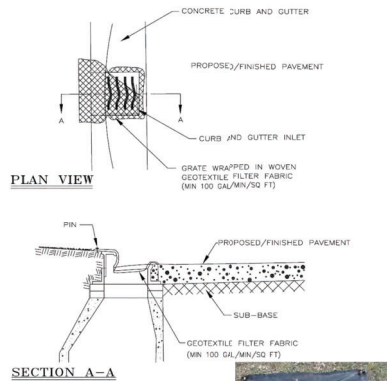
**SILT SACK OR APPROVED EQUAL CURB AND  
GUTTER INLET FILTER**  
STANDARD CONTROL YEAR ROUND OR WINTER USE

APPROVED FOR USE DURING WINTER MONTHS OR IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING

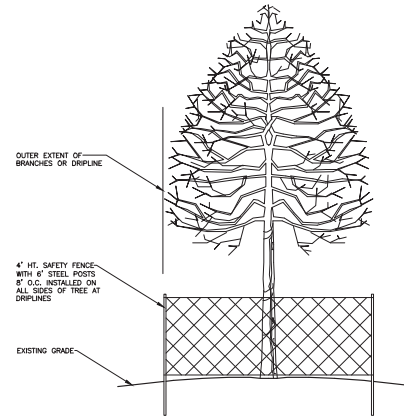


**GEOTEXTILE FABRIC CURB AND GUTTER INLET FILTER**  
STANDARD CONTROL NON-WINTER USE

NOT FOR USE IN WINTER MONTHS OR IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING



**FENCE DETAIL - TREE PROTECTION**



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ALL UTILITIES SHALL BE DETERMINED BY  
THE PROPERTY OWNER OR BY A  
REGISTERED PROFESSIONAL ENGINEER  
BEFORE ANY CONSTRUCTION  
ACTIVITY BEGINS. THE OWNER  
SHALL BE RESPONSIBLE FOR  
OBTAINING ALL NECESSARY  
PERMITS AND NOTICES FROM  
THE UTILITIES AND FOR THE  
PROTECTION OF ALL UTILITIES.

CLIENT :

**CHESTNUT  
DEVELOPMENT**  
6253 GRAND RIVER AVE.  
SUITE 750  
BRIGHTON, MI 48114  
POC: STEVE GRONOW  
517-552-2489

**LCDC SESC DETAILS**

PARCEL 4711-06-200-101  
PART OF NE 1/4, SEC. 6, T2N-R5E,  
GENOA CHARTER TOWNSHIP,  
LIVINGSTON COUNTY, MICHIGAN

DATE	DESCRIPTION
02/21/2023	ISSUED GRADING PLAN
02/22/2023	REVISED TREE REMOVAL Dwg
04/24/2023	ISSUED SESC DETAILS
04/24/2023	SITE PLAN REVIEW COMMENTS
06/26/2023	REVISED MOIST SUBMITTAL
07/27/2023	REVISED TREE REMOVAL
10/17/2023	REVISED SITE PLAN SUBMITTAL

CURRENT ISSUE DATE:  
4/24/2023

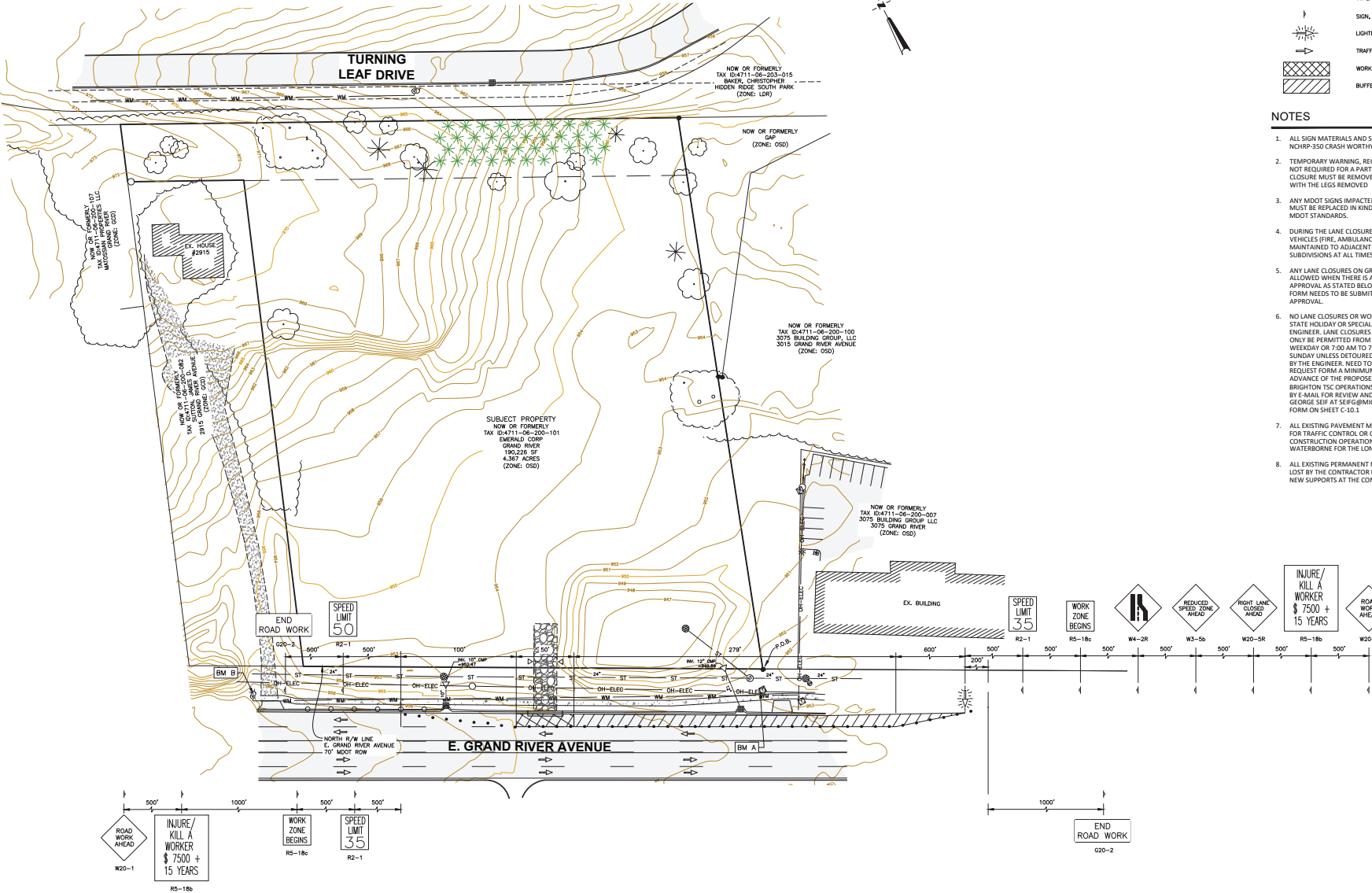
PROJECT NO: 22-168

SCALE: N/A

FIELD: RZ  
DRAWN BY: M/AM  
DESIGN BY: RS  
CHECK BY: M/AM

**C-7.2**

NOT FOR CONSTRUCTION



- ### LEGEND
- ..... CHANNELIZING DEVICES
  - TYPE II LIGHTED BARRICADE
  - SIGN, TYPE (A OR B), TEMPORARY
  - LIGHTED ARROW, TYPE C
  - TRAFFIC FLOW
  - WORK AREA
  - BUFFER ZONE

- ### NOTES
1. ALL SIGN MATERIALS AND SUPPORTS MUST MEET NCHRP-350 CRASH WORTHY OR MASH REQUIREMENTS
  2. TEMPORARY WARNING, REGULATORY, AND GUIDE SIGNS NOT REQUIRED FOR A PARTICULAR LANE OR SHOULDER CLOSURE MUST BE REMOVED, COVERED OR LAID DOWN WITH THE LEGS REMOVED
  3. ANY MDOT SIGNS IMPACTED DURING CONSTRUCTION MUST BE REPLACED IN KIND ON NEW SUPPORTS PER MDOT STANDARDS.
  4. DURING THE LANE CLOSURES ACCESS FOR EMERGENCY VEHICLES (FIRE, AMBULANCE, POLICE) MUST BE MAINTAINED TO ADJACENT HOMES, BUSINESSES AND SUBDIVISIONS AT ALL TIMES.
  5. ANY LANE CLOSURES ON GRAND RIVER AVE. WILL ONLY BE ALLOWED WHEN THERE IS ACTIVE WORK. PRIOR TO APPROVAL AS STATED BELOW, A LANE CLOSURE REQUEST FORM NEEDS TO BE SUBMITTED FOR REVIEW AND APPROVAL.
  6. NO LANE CLOSURES OR WORK DURING ANY DESIGNATED STATE HOLIDAY OR SPECIAL EVENT AS DEFINED BY THE ENGINEER. LANE CLOSURES ON GRAND RIVER AVE. WILL ONLY BE PERMITTED FROM 9:00 AM TO 3:00 PM, WEEKDAY OR 7:00 AM TO 7:00 PM ON SATURDAY AND SUNDAY UNLESS DETOURED AND OTHERWISE APPROVED BY THE ENGINEER. NEED TO SUBMIT A LANE CLOSURE REQUEST FORM A MINIMUM OF 5 BUSINESS DAYS IN ADVANCE OF THE PROPOSED CLOSURE TO THE MDOT BRIGHTON TSC OPERATIONS/TRAFFIC AND SAFETY UNITY BY E-MAIL FOR REVIEW AND APPROVAL. SUBMIT TO GEORGE.SEF@MICHIGAN.GOV. SEE ATTACHED FORM ON SHEET C-10.1
  7. ALL EXISTING PAVEMENT MARKINGS THAT ARE REMOVED FOR TRAFFIC CONTROL OR OBLITERATED DURING CONSTRUCTION OPERATIONS MUST BE REPLACED WITH WATERBORNE FOR THE LONGITUDINAL LANE LINES.
  8. ALL EXISTING PERMANENT MDOT SIGNS DAMAGED OR LOST BY THE CONTRACTOR MUST BE REPLACED IN KIND ON NEW SUPPORTS AT THE CONTRACTOR'S EXPENSE.

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POC: STEVE GROWHOW  
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**MOT PLAN**

PARCEL 4711-06-200-101  
PART OF NE 1/4, SEC. 6, T2N-R5E,  
GENOA CHARTER TOWNSHIP  
LIVINGSTON COUNTY, MICHIGAN

DATE	DESCRIPTION
02/27/2023	REVISED DRAWING PLAN
02/27/2023	REVISED TREE REMOVAL LINE
04/24/2023	SITE PLAN REVIEW COMMENTS
06/26/2023	REVISED MDOT SUBMITTAL
07/27/2023	REVISED MDOT SUBMITTAL
10/17/2023	REVISED SITE PLAN SUBMITTAL

CURRENT ISSUE DATE:  
4/24/2023

PROJECT NO: 22-168

SCALE: 1" = 40'  
1/2" = 1'

FIELD: RZ  
DRAWN BY: M/JMN  
DESIGN BY: BSJ  
CHECK BY: M/JAP

**C-10.0**

NOT FOR CONSTRUCTION





**TYPICAL NUMBER KEY**

**CODES**

AB = ARROW BOARD  
 AV = ADVANCE WARNING  
 C = CLOSURE  
 CL = CENTER LEFT TURN LANE  
 CR = CROSSOVER  
 CRUSHP = CRUSH AND SHAPE  
 L = LANE MESSAGE  
 ER = EXIT RAMP  
 FR = FREEWAY  
 GEN = GENERAL INFORMATION  
 GOR = FREEWAY GORE AREA  
 N = INSIDE  
 INT = INTERSECTION  
 L = LANE  
 L = LEFT  
 LC = LANE CLOSURE  
 LD = LONG DURATION

LO = LANE OPEN  
 OUT = OUTSIDE LANE CLOSURE  
 OUT = OUTSIDE OF SHOULDER  
 MID = MIDDLE OF INTERSECTION OR ROAD  
 NF = NON-FREEWAY  
 PARK = PARKING LANE  
 PCH = PORTABLE CHANGEABLE MESSAGE SIGN  
 RI = RIGHT  
 ROLL = ROLLING ROADBLOCK  
 RUM = RUMBLE STRIP  
 S = SHORT DURATION  
 SHL = SHOULDER CLOSURE  
 SIGN = SIGN  
 SPM = STOPPED TRAFFIC ADVISORY  
 TR = TRAFFIC REGULATOR  
 TS = TEMPORARY SIGNAL  
 ZIP = ZIPPER MERGE

**GENERAL NOTES**

100 - GENERAL NOTES  
 110 - TRAFFIC REGULATORS  
 120 - NON-FREEWAY  
 130 - CENTER LEFT TURN (CL) LANES  
 140 - PARKING LANE  
 150 - CLT 7 LANE SECTIONS  
 160 - SIGNAL WORK  
 170 - FREEWAY CLOSURES  
 210 - FREEWAY LANE SHIFTS  
 220 - FREEWAY ENTRANCE RAMPS  
 230 - FREEWAY EXIT RAMPS  
 300 - ADVANCE WARNINGS  
 310 - CROSSOVER CLOSURE  
 320 - CRUSH AND SHAPE  
 340 - MERGE SYSTEMS  
 350 - GORE LOCATIONS  
 360 - ROLLING ROADBLOCK  
 4000 - MAINTENANCE  
 5000 - SURVEY

**EXAMPLE TYPICAL**

CODE: 152-CLT(7)-311R-311RZ-CLZ-SHIFT

152 - TYPICAL NUMBER  
 CLT(7) - CENTER LEFT TURN LANE, 7 LANES TOTAL  
 311RZ-CLZ = 3 LANES CLOSED, 1 RIGHT LANE AND 2 LEFT LANES  
 311RZ-CLZ = 2 LANES SHIFTED TO THE LEFT.

**NOT TO SCALE**

NO. 101-GEN-KEY  
 SHEET 1 OF 1

**THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL**

**GENERAL NOTES**

01. SEE GEN-SPACING-CHARTS FOR COMMON VALUES INCLUDING: DISTANCE BETWEEN TRAFFIC SIGNAL DEVICES  
 L = MINIMUM WIDTH OF LANE  
 ALL LANE DEVICES BEHIND BUFFER  
 02. DISTANCE BETWEEN SIGNS: THE VALUES FOR SIGNS AND SIGNALS IN TYPICAL ARE MINIMUMS AND MUST BE ADJUSTED AS DIRECTED BY THE ENGINEER  
 03. ALL TEMPORARY SIGNS, TABLES OR BARBARRIES THAT EXCEED THE HEIGHT AND WIDTH MUST BE APPROVED BY THE ENGINEER AND MUST BE SECURED TO PREVENT SWAYING AND COLLAPSE  
 04. ALL EXISTING TEMPORARY SIGNAGE MUST BE IN COMPLIANCE WITH OTHER PROPOSED SIGNAGE TO PREVENT CONTRADICTIONS AND CONFUSION TO ROAD USERS  
 05. ALL EXISTING TEMPORARY SIGNAGE MUST BE IN COMPLIANCE WITH OTHER PROPOSED SIGNAGE TO PREVENT CONTRADICTIONS AND CONFUSION TO ROAD USERS  
 06. ALL EXISTING TEMPORARY SIGNAGE MUST BE IN COMPLIANCE WITH OTHER PROPOSED SIGNAGE TO PREVENT CONTRADICTIONS AND CONFUSION TO ROAD USERS

**TRAFFIC REGULATOR NOTES**

THE TRAFFIC REGULATOR MUST FOLLOW ALL THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS FOR TRAFFIC REGULATORS  
 THE TRAFFIC REGULATOR MUST BE PLACED IN THE CENTER OF THE ROADWAY AND MUST BE SECURED TO PREVENT SWAYING AND COLLAPSE  
 THE TRAFFIC REGULATOR MUST BE PLACED IN THE CENTER OF THE ROADWAY AND MUST BE SECURED TO PREVENT SWAYING AND COLLAPSE

**TEMPORARY TRAFFIC CONTROL DEVICE NOTES**

THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 100 FEET  
 THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 100 FEET  
 THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 100 FEET

**GENERAL NOTES**

01. ALL NON-APPLICABLE SIGNS WHICH ARE NOT TO BE USED MUST BE DELETED TO AVOID CONTRADICTIONS AND CONFUSION TO ROAD USERS  
 02. ALL SIGNS MUST BE PLACED IN THE CENTER OF THE ROADWAY AND MUST BE SECURED TO PREVENT SWAYING AND COLLAPSE  
 03. ALL SIGNS MUST BE PLACED IN THE CENTER OF THE ROADWAY AND MUST BE SECURED TO PREVENT SWAYING AND COLLAPSE  
 04. ALL SIGNS MUST BE PLACED IN THE CENTER OF THE ROADWAY AND MUST BE SECURED TO PREVENT SWAYING AND COLLAPSE

**TRAFFIC TYPICALS**

NO. 102-GEN-NOTES  
 SHEET 1 OF 2

**THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL**

**SIGNAL NOTES**

001. EXISTING SIGNALS MUST BE EITHER 4-WAY FLANKING RED, BASED, OR TURNED OFF  
 002. SIGNALS IN OPERATION  
 003. SIGNALS IN OPERATION  
 004. SIGNALS IN OPERATION  
 005. SIGNALS IN OPERATION  
 006. SIGNALS IN OPERATION

**MAINTENANCE AND SURVEYING NOTES**

001. MAINTENANCE AND SURVEYING NOTES  
 002. MAINTENANCE AND SURVEYING NOTES  
 003. MAINTENANCE AND SURVEYING NOTES  
 004. MAINTENANCE AND SURVEYING NOTES  
 005. MAINTENANCE AND SURVEYING NOTES

**TRAFFIC TYPICALS**

NO. 102-GEN-NOTES  
 SHEET 2 OF 2

**DISTANCE BETWEEN TRAFFIC SIGNS, "S"**

POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)	25	30	35	40	45	50	55	60	65	70	75
DISTANCES (S)	250	300	350	400	450	500	550	600	650	700	750

**GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE, "B"**

LENGTHS (B)	20	25	30	35	40	45	50	55	60	65	70	75
B (FEET)	33	50	83	132	181	230	279	328	411	476	542	625

**MINIMUM MERGING TAPER LENGTH, "L" (FEET)**

POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)	25	30	35	40	45	50	55	60	65	70	75
OFFSET (FEET)	11	15	21	27	35	45	55	65	75	85	95
1	11	15	21	27	35	45	55	65	75	85	95
2	21	30	41	54	70	90	110	130	150	170	190
3	32	45	60	82	107	138	175	218	267	320	378
4	42	60	82	107	138	175	218	267	320	378	440
5	53	75	103	134	175	220	270	320	378	440	505
6	63	90	123	160	210	260	310	360	420	480	550
7	73	105	143	187	245	305	365	425	495	570	650
8	84	120	164	214	280	350	420	490	570	650	740
9	94	135	184	240	310	385	460	540	625	715	810
10	105	150	205	267	340	420	500	585	675	770	875
11	115	165	225	294	375	460	550	645	745	850	965
12	125	180	245	320	410	500	595	695	800	910	1030
13	136	195	266	347	440	535	635	740	850	965	1095
14	146	210	286	374	475	575	680	790	905	1025	1165
15	157	225	307	400	505	610	720	835	955	1080	1230

**NOT TO SCALE**

NO. 101-GEN-SPACING-CHARTS  
 SHEET 1 OF 3

**THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DESIGNING THE "S" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:**

$L = \frac{W \times S^2}{1.47 \times V}$  WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

$L = W \times S$  WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR GREATER

**MAXIMUM SPACING FOR CHANNELIZING DEVICES**

WORK ZONE SPEED LIMIT	DRUM AND 42" DEVICE SPACING (FT)	NIGHTTIME 42" DEVICE SPACING (FT)
< 45 MPH	50 FEET	25 FEET
45-50 MPH	50 FEET	25 FEET
50-55 MPH	50 FEET	25 FEET
55-60 MPH	50 FEET	25 FEET
60-65 MPH	50 FEET	25 FEET
65-70 MPH	50 FEET	25 FEET
70-75 MPH	50 FEET	25 FEET
75-80 MPH	50 FEET	25 FEET
80-85 MPH	50 FEET	25 FEET
85-90 MPH	50 FEET	25 FEET
90-95 MPH	50 FEET	25 FEET
95-100 MPH	50 FEET	25 FEET

**SIGN OUTLINE KEY**

DASHED OUTLINES INDICATE A SIGN THAT EXISTS ON SITE, AND NEEDS TO BE COVERED.

SOLID OUTLINES INDICATE A SIGN THAT IS TO BE PLACED ON THE PROJECT.

**TRAFFIC TYPICALS**

NO. 101-GEN-SPACING-CHARTS  
 SHEET 2 OF 3

**GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES - TEST LEVEL 2**

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE (TMA VEHICLE TO WORK AREA)
5.5 TONS (STATIONARY)	40 MPH OR LESS	35 FT

**GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES - TEST LEVEL 3**

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE (TMA VEHICLE TO WORK AREA)
5 TONS (MOVABLE)	45 MPH	150 FT
5 TONS (MOVABLE)	50-55 MPH	150 FT
5 TONS (MOVABLE)	60-75 MPH	175 FT
5 TONS (MOVABLE)	80-85 MPH	20 FT
5 TONS (MOVABLE)	90-95 MPH	25 FT
5 TONS (MOVABLE)	100-110 MPH	30 FT

**TRAFFIC TYPICALS**

NO. 101-GEN-SPACING-CHARTS  
 SHEET 3 OF 3

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**DETAILS**

PARCEL 4711-06-200-101  
 SEC. 6, T2N-18E-  
 PART OF  
 GENOA CHARTER TOWNSHIP  
 LIVINGSTON COUNTY, MICHIGAN

**DATE**

02/27/2023  
 02/27/2023  
 04/24/2023  
 06/26/2023  
 07/27/2023  
 07/27/2023  
 10/17/2023

**PLAN SUBMITTALS/PROVISIONS**

REVISED DRAINAGE PLAN  
 REVISED TREE REMOVAL PLAN  
 SITE PLAN REVIEW COMMENTS  
 REVISED MOIST. SUBMITTAL  
 REVISED MOIST. SUBMITTAL  
 REVISED MOIST. SUBMITTAL

**CURRENT ISSUE DATE:**  
 4/24/2023

**PROJECT NO:** 22-168

**SCALE:** N/A  
 1" = 17'-0"

**FIELD:** RZ  
**DRAWN BY:** MVM/JN  
**DESIGN BY:** MVM  
**CHECK BY:** MVM/JP

**C-11.0**

**NOT FOR CONSTRUCTION**

Local Agency Programs  
Hot Mix Asphalt (HMA) Selection Guidelines  
Revised: 11/01/2017  
FHWA Approved: 12/26/2017

The following guidelines have been developed at the request of Local Agency Engineers for use on Local Agency projects. These guidelines have been reviewed and approved by the County Road Association of Michigan Engineering Committee. Previous experience and performance shall permit variations from these guidelines as per Section D: Alternative Mixes.

A. HMA Mixture Type and Binder Selection

Selection is based on present day two-way commercial ADT. The commercial ADT ranges for each of the mixture types have taken into account an assumed future traffic growth rate.

Table with 6 columns: Com. ADT, Com. ADT 0-300, Com. ADT 301-700, Com. ADT 701-1000, Com. ADT 1001-3400, Com. ADT 3401-9999. Rows include Mixture Type (Top, Leveling, Base) and Binder Grades by Region (Superior, Metro, All Other).

Note 1: If the designer wishes to reduce the target air voids on projects to 3.5%, a note needs to be added to the plans on the HMA Application Table stating that the air voids have been changed to 3.5% for that particular project for top and leveling courses. For mixtures meeting the definition of base course, field regress air void content to 3.0 percent with liquid asphalt cement unless specified otherwise on HMA application estimate.

Note 2: The mixture type in each traffic category listed in the above table is specifically designed to perform under their respective Commercial ADT. Selecting a mixture type that is specifically designed for a higher Comm. ADT than the project being designed may adversely affect performance.

Note 3: One course overlays on composite pavements where the prevention of cold temperature related thermal cracking is not as much of a concern, the cold temperature number of the PG binder may be decreased by one grade to help reduce costs.

Example: For a one course overlay in the Superior Region on a composite project, the recommended PG binder would be a PG58-28 instead of a PG58-34.

Note 4: To address traffic areas that are more susceptible to rutting early in pavement life such as signalized intersections and other areas of stop/start traffic use the pay item entitled High Stress Hot Mix Asphalt Mixture. The difference between the High Stress HMA Mixture and the typical HMA pay item is the Performance Graded Binder. For High Stress Mixtures, increase the high temperature binder by one grade and add the polymer. The increase in the high temperature number results in an asphalt binder with improved high temperature stiffness or rutting resistance for both the leveling and top course.

Example: For a high stress application for a mixture type SE3 placed in an intersection the recommended binder grade would be a PG70-28P instead of a PG64-28. Following are the recommended guides for the proper application of the Special Provision for High Stress Hot Mix Asphalt Mixture:

- a. Use this pay item 1000 feet on either side of the center of signalized intersections and other areas where stop/start traffic occurs on the mainline (for quantity calculations use 1100 feet).
b. There are cases where the signalized intersections are spaced 1 mile or less over the entire length of the project. When this occurs, specify the High Stress HMA Mixture pay item for the entire length.
c. All HMA approaches that are adjacent to the High Stress HMA Mixture areas should be specified using this pay item.
d. Use of the Pay Item High Stress HMA (mix) should not be used unless it is to be distinguishable from the same mix with a different PG grade.

B. Application Rates

HMA application rates shown in the table below are the required minimum and maximum rates for each of the specific mixtures. Pavement designs requiring a HMA greater than the recommended maximum will require multiple lifts of the leveling and/or base mixes.

Table with 2 main sections: Marshall Mixture and Superpave Mixture. Columns include Mixture Type, Min #/yd, and Max #/yd. Values range from 110 to 275 for Marshall and 165 to 220 for Superpave.

Note 1: Application rate of 110 #/yd. per 1-inch thickness.

Note 2: When shoulders of 8 ft. or greater are being paved as a separate operation on a project, the following note should be added to the plans near the HMA Application Table: "For shoulders only, the mix design and/or JMF target value for Air Voids are to be adjusted to 2.5 percent." If it is not known whether the shoulders will be placed as a separate paving operation, the note should be added.

C. Aggregate Wear Index (All Projects)

Aggregate Wear Index (AWI) is required for all aggregates used in HMA top course mixtures. The following table identifies the required minimum AWI, based on the present average daily traffic (vehicular and commercial) per lane (ADT/Lane).

Table with 2 columns: ADT/Lane and Minimum AWI. Values: <100 (None), 100-2000 (220), >2000 (260).

D. Alternative Mixes

These guidelines provide for the selection of Hot Mixed Asphalt (HMA) and application rates utilizing the Superpave mix design system along with the Marshall Mix design system. The substitution of another HMA mixture type other than the recommended mixture is acceptable if it has demonstrated to perform under similar traffic conditions. If a local agency desires to use an HMA mixture or grade of binder other than what is contained within this guide, they must submit the change in writing. The letter or email must include the alternate mix design, the justification/reason for the change, and a statement that they accept responsibility for the outcome of the performance of the mix design that is used in lieu of the recommended mixture.

E. Non-Motorized Path Mixes

When designing a Non-Motorized Path, recommended HMA Mixes that have historically worked well include:

Superpave mixes:

- HMA, LVSP
- HMA, SE<sub>1</sub>

Shared Use Path, HMA Snowmobile Wearing Cse - Special (See: 12DS806(F355))

Marshall mixes:

- HMA, 13A
- HMA, 36A

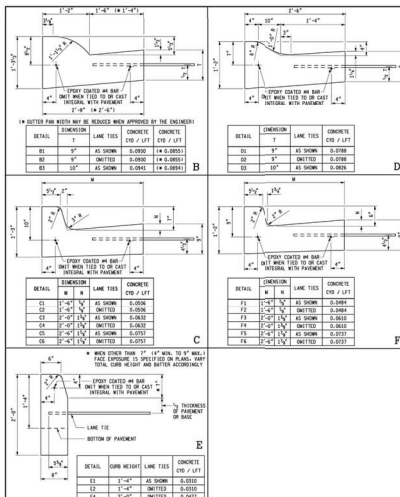
No AWI is required on the top course, however, if the designer wishes, he or she can use the Aggregate Wear Index (AWI) of 220 minimum.

Use PG 58-28 for all mixes, except for HMA, SE<sub>1</sub>, which should be PG 64-28.

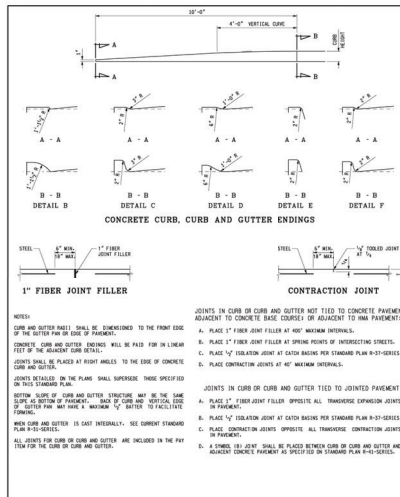
Application rates should match the chart on the previous page (page 3 of 4).

F. Non-Motorized Path Alternative Mixes

If a local agency desires to use an HMA mixture or grade of binder other than what is contained within this guide, or if they propose another pavement treatment or type, they must submit the change request to the LAP Staff Engineer in writing. The letter or email must include the alternate mix design, or pavement treatment, the justification and/or reason for the change, and a statement that they accept responsibility for the outcome of the performance of the mix design that is used in lieu of the recommended mixture.



MDOT logo and Michigan Department of Transportation information, including project name R-30-G and sheet number 1 of 2.



Michigan Department of Transportation information, including project name R-30-G and sheet number 2 of 2.



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PARCEL 47111-06-200-101 SUITE 700 PART OF NE 1/4, SEC. 6, T2N-R5E, GENOA CHARTER TOWNSHIP LIVINGSTON COUNTY, MICHIGAN

Table with columns: DATE, REVISION, DRAWING PLAN, REVISION NUMBER, PLAN NUMBER, REVISION DESCRIPTION, REVISION DATE.

PROJECT NO: 22-168 SCALE: N/A 1/2" = 1'

FIELD: RZ DRAWN BY: MVM/JN DESIGN BY: BSJ CHECK BY: MVM/JP C-11.1

NOT FOR CONSTRUCTION









**GENOA CHARTER TOWNSHIP**  
**Application for Site Plan Review**

**GENOA TOWNSHIP**

**OCT 04 2023**

**RECEIVED**

**TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:**

APPLICANT NAME & ADDRESS: CWP West, LLC, 222 E. 5th Ave. Tucson, AZ 85705  
*If applicant is not the owner, a letter of Authorization from Property Owner is needed.*

OWNER'S NAME & ADDRESS: 1015 Latson Road LLC 29592 Beck Road, Wixom, MI 48393

SITE ADDRESS: 1015 S. Latson Road, Howell, MI 48843 PARCEL #(s): 4711-04-300-017

APPLICANT PHONE: ( 206 ) 664-1303 OWNER PHONE: ( 248 ) 767-5337

OWNER EMAIL: kbahnam@usa2goquickstores.com

LOCATION AND BRIEF DESCRIPTION OF SITE: Site is located on east side of Latson Rd just south of Grand River Avenue. Site is currently a vacant, cleared site. Site is immediately south of existing O'Reilly Auto Parts store at the intersection.

BRIEF STATEMENT OF PROPOSED USE: Proposed use is an automatic car wash with vacuum cleaning stations.

THE FOLLOWING BUILDINGS ARE PROPOSED: An automatic car wash building approximaely 5,432 sft in footprint.

**I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.**

BY: [Signature]

ADDRESS: 29592 Beck Rd, Wixom MI 48393



**Contact Information** - Review Letters and Correspondence shall be forwarded to the following:

1.) Scott Tousignant of Boss Engineering at scottt@bosseng.com  
Name Business Affiliation E-mail Address

**FEE EXCEEDANCE AGREEMENT**

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: [Signature] DATE: 10-2-23  
PRINT NAME: Karam Bahnam PHONE: 248-767-5337  
ADDRESS: 29592 Beck Rd, Wixom MI 48393



GENOA CHARTER TOWNSHIP  
Special Land Use Application

GENOA TOWNSHIP

OCT 04 2023

RECEIVED

This application **must** be accompanied by a site plan review application and the associated submittal requirements. (The Zoning Official may allow a less detailed sketch plan for a change in use.)

APPLICANT NAME & ADDRESS: CWP West, LLC , 222 E. 5th Ave. Tucson, AZ 85705

*Submit a letter of Authorization from Property Owner if application is signed by Acting Agent.*

APPLICANT PHONE: ( 206) 664-1303

EMAIL: nkastern@mistercarwash.com

OWNER NAME & ADDRESS: 1015 Latson Road LLC, 29592 Beck Rd, Wixom, MI 48393

SITE ADDRESS: 1015 S Latson Rd, Howell, MI 48843

PARCEL #(s): 4711-04-300-017

OWNER PHONE: ( 248) 767-5337

EMAIL: kbahnam@usa2goquickstores.com

Location and brief description of site and surroundings:

Site is located on the East side of South Latson road, just South of Grand River Ave. The site is currently vacant. The site is zoned GCD with HDR and GCD to the east, GCD to the north, and NRPUD to the south and west. Site is immediately south of the existing O-Reilly Auto Parts on the south side of the Latson and Grand River Ave intersection. The site is currently vacant with tall grasses.

Proposed Use:

The proposed use will be an automatic automobile wash with supporting vacuum cleaning stations.

Describe how your request meets the Zoning Ordinance General Review Standards (section 19.03):

- a. Describe how the use will be compatible and in accordance with the goals, objectives, and policies of the Genoa Township Comprehensive Plan and subarea plans, and will promote the Statement of Purpose of the zoning district in which the use is proposed.

The proposed use will still have commercial identity and promote internal revenue and jobs within the Township. The site is currently vacant and the proposed development will provide a nice landscaped corridor along the east side of Latson as the site is currently vacant and cleared land.

- b. Describe how the use will be designed, constructed, operated, and maintained to be compatible with, and not significantly alter, the existing or intended character of the general vicinity.

The proposed car wash will be designed, constructed, operated, and maintained to be compatible with the surrounding GCD zoned parcels. A large existing berm buffers to the HDR zoning to the east and additional plantings will be added to the east property line. A car wash is appropriate in this location given its proximity to the access points to I-96 on Latson Road. All surrounding uses are commercial uses with the exception of the HDR zoning to the rear of the property.

- c. How will the use be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage structures, water and sewage facilities, refuse disposal and schools?

The site has access from Latson Road and will have proposed cross access to an adjacent development to the south. Public water is available at the rear of the parcel and existing sanitary leads are stubbed for this vacant site. The site will be designed to accommodate fire truck circulation and will have adequate signing to promote vehicular and pedestrian safety. Continuation of the 8' wide sidewalk along Latson Road will be completed along the frontage.

- d. Will the use involve any uses, activities, processes, or materials potentially detrimental to the natural environment, public health, safety, or welfare by reason of excessive production of traffic, noise, vibration, smoke, fumes, odors, glare, or other such nuisance? If so, how will the impacts be mitigated?

The proposed use will provide adequate stacking spaces and parking on the site to ensure no impact on traffic on Latson Road. The use will contain additional landscaping at the rear of the property for additional screening to HDR zoning. The site lighting will be designed for compliance with Twp Ordinance to ensure no excess lighting. The site will not generate odors, smoke, fumes, or vibration.

- e. Does the use have specific criteria as listed in the Zoning Ordinance (sections 3.03.02, 7.02.02, & 8.02.02)? If so, describe how the criteria are met.

7.02.02 (l) 1. The use will only have 1 Ingress driveway to Latson Road. 2) A landscaped berm currently exists on the property to the east. The development proposes additional landscape plantings (LO of a wall as the wall will be screened by the berm. 3) The washing facilities are enclosed within the building. 4) Vacuuming is not located in the required front yard and is 50+ ft from the HDR zoning. 5) Adequate stacking spaces are provided prior to entry into the automatic car wash and adequate drive aisles not in street ROW.

I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I AGREE TO DESIGN, CONSTRUCT AND OPERATE, AND MAINTAIN THESE PREMISES AND THE BUILDINGS, STRUCTURES, AND FACILITIES WHICH ARE GOVERNED BY THIS PERMIT IN ACCORDANCE WITH THE STATED REQUIREMENTS OF THE GENOA TOWNSHIP ZONING ORDINANCE, AND SUCH ADDITIONAL LIMITS AND SAFEGUARDS AS MAY BE MADE A PART OF THIS PERMIT.

THE UNDERSIGNED Kevin Bahnam, 1015 Latson Road LLC STATES THAT THEY ARE THE FREE OWNER OF THE PROPERTY OF PROPERTIES DESCRIBED ABOVE AND MAKES APPLICATION FOR THIS SPECIAL LAND USE PERMIT.

BY: [Signature]

ADDRESS: 29592 Beck Rd, Wixom MI 48393

**Contact Information** - Review Letters and Correspondence shall be forwarded to the following:

Scott Tousignant of Boss Engineering at scottt@bosseng.com  
 Name Business Affiliation Email

**FEE EXCEEDANCE AGREEMENT**

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: [Signature] DATE: 10-2-23

PRINT NAME: Karan Bahnam PHONE: 248-767-5337

GENOA TOWNSHIP

OCT 04 2023

RECEIVED

Letter of Authorization

I, Kevin Bahnam 1015 Latson Road LLC, whose address is 29592 Beck Road, Wixom, MI 48393, Owner of the parcel located at 1015 S. Latson Road, Howell MI 48843 whose parcel ID is 4711-04-300-017 does hereby authorize CWP West, LLC, whose address is 222 E. 5<sup>th</sup> Ave, Tucson, AZ 85705, to make application for development on the aforementioned parcel.



Owner Signature: Kevin Bahnam, USA 2 Go Quick Stores

10-2-23

Date

**GENOA CHARTER TOWNSHIP  
PLANNING COMMISSION  
PUBLIC HEARING  
November 13, 2023**

**MINUTES**

CALL TO ORDER: Chairman Grajek called the meeting of the Genoa Charter Township Planning Commission to order at 6:30 p.m. Present were Chris Grajek, Diana Lowe, Eric Rauch, Tim Chouinard, Glynis McBain, Marianne McCreary, and Greg Rassel. Also present were Planning Director Amy Ruthig, Brian Borden of Safebuilt, and Shelby Byrne of Tetra Tech.

PLEDGE OF ALLEGIANCE: The pledge of allegiance was recited.

APPROVAL OF AGENDA:

**Moved** by Commissioner Rauch, seconded by Commissioner Rassel, to approve the agenda as presented. **The motion carried unanimously.**

DECLARATION OF CONFLICT OF INTEREST:

None

CALL TO THE PUBLIC:

The call to the public was made at 6:31 pm with no response.

**OPEN PUBLIC HEARING #1...** Consideration of a special land use application, environmental impact assessment and site plan to allow for a proposed automatic car wash located on vacant parcel #4711-04-300-017 Latson Road, east side of Latson Road, south side of Grand River Avenue. The request is petitioned by CWP West, LLC.

- A. Recommendation of Special Use Application.
- B. Recommendation of Environmental Impact Assessment (10-26-23)
- C. Recommendation of Site Plan (10-25-23)

Mr. Brent LaVanway from Boss Engineering, Ms. Nicole Kastern of Mister Car Wash, and Mr. Frank Jarbou of CWP West, LLC were present.

Mr. LaVanway provided a review of the proposed project, noting this request is one part of a larger parcel and the second item on tonight's agenda will be for the other part. Ms. Kastern showed colored elevations and sample building materials.

Commissioner Rauch noted that the sign ordinance does not allow the number of signs shown. The proposed materials and colors meet the ordinance; however, while this item and Agenda



Item #2 are separate items, he suggested the two buildings use the same colors. The color tones proposed for Item #2 are lighter and more earth toned. They are more consistent with the surrounding buildings. The blue color proposed will need to be made darker, which is what was recently requested of a previous applicant.

Ms. Kastern stated they are two different brands and use different colors. She agreed that they do meet the ordinance.

Mr. Borden reviewed his letter dated November 8, 2023.

1. Special Land Uses (Section 19.03):

- a. The special land use standards of Section 19.03 are generally met.
- b. In order to make favorable findings related to compatibility and impacts, the conditions of Section 7.02.02(l) need to be met to the Commission's satisfaction.
- c. We suggest the applicant restrict the hours of operation to ensure compliance with the Township's Noise Ordinance. The hours of operation are 7 am to 10 pm. Ms. Kastern stated they are open from 7 am to 8 pm. Mr. Borden would like this added to the Impact Assessment.

2. Use Conditions (Section 7.02.02(l)):

- a. Landscaping is proposed in lieu of the required 6 foot solid fence or wall adjacent to the residential district. The Commission may allow this substitution, although a berm is not included.

3. Site Plan Review:

- a. The revised building elevations are generally compliant with the standards of Section 12.01; however, the west elevation is slightly deficient in the amount of brick or stone. It is required to be 70 percent.
- b. Building materials, design and color scheme are subject to review and approval by the Planning Commission.
- c. The proposed sidewalk easement is subject to review and approval by the Township Engineer.
- d. Consideration of the vacuum spaces as parking spaces results in excess of the 120 percent of parking allowed, which requires Planning Commission approval. He noted that if those spaces are not considered as parking, then they meet the ordinance.
- e. The landscape plan is deficient in width for the Latson Road greenbelt due to the shape of the property. As noted above, the wall or berm requirement for the easterly buffer zone is not proposed.
- f. The waste receptacle details must denote the required concrete base pad.

Additionally, the applicant must address any comments provided by the Township Engineer or Brighton Area Fire Authority regarding public facilities and services.

Mr. LaVanway stated there is currently a berm with plantings on the east side of the site and they added additional evergreens. Their property is three feet lower than the adjacent residential

property and this causes a drainage issue so he is not sure adding a wall is the best solution. Commissioner Rauch is considering the residents to the east of the site.

Ms. Byrne reviewed her letter dated November 8, 2023.

1. The petitioner should obtain approval from the Livingston County Road Commission (LCRC) for the proposed site driveway prior to final site plan approval.
2. The impact assessment provides a predicted water and sewer usage based on the Township's REU table, which provides 25.2 REUs per car wash with recycle. Historic water usage was also provided from other Mister Car Wash facilities with an average usage of 21,277 gallons per day. This average water usage from similar facilities should be considered when calculating the REU amount for the proposed development.
3. The petitioner is proposing a closed pipe type underground detention basin comprised of four 48-inch diameter pipes to provide 12,489 cubic feet of storage. The current car wash, site drive, and parking improvements do not allow enough space for any at-grade stormwater detention or retention.
4. The proposed underground detention basin will tie into the existing storm sewer on Latson Road. The petitioner will need to obtain approval from the LCRC to connect to their storm sewer and said approval should be provided to the Township prior to final site plan approval. In the past, the LCRC has not allowed any increase in storm volume into their storm sewer. The underground detention design has been revised since the last submittal to allow for additional infiltration to limit the storm volume that would outlet into the LCRC sewer.
5. The petitioner has provided a traffic impact study for the proposed development. The study included expected traffic volumes from other proposed developments in the area in the no-build condition and recommended signal timing and length be modified at the Grand River Avenue and Latson Road for both the no-build and build condition. The Livingston County Road Commission will review the traffic impact study as part of their approval for the proposed site driveways and they will need to review the recommendation of optimized signal timings at the Grand River Avenue and Latson Road intersection.

Mr. LaVanway stated they have worked with the LCRC regarding the entrances and exits for both parcels.

Mr. LaVanway stated he has seen the review letter from the Brighton Area Fire Authority Fire Marshal dated November 3 and they will comply with all of their requests.

Per Chairman Grajek's request, Mr. LaVanway provided a review of the traffic impact study, which was done for both parcels being developed. There is a rating of "F" for both the morning and afternoon peak times in the current conditions. With this development, it shows these same ratings of "F" during peak times as well as during other times. All of the others were within the acceptable level. The primary suggestion from the traffic engineer is to change the signal timing at Latson and Grand River. This would need to be coordinated between the LCRC and MDOT.

Commissioner McBain questioned the site signage directing vehicles to the wash area or the vacuums. Ms. Kastern stated this signage would be part of the site plan. Commissioner McBain is concerned with the traffic flow inside the site.

Commissioner Rauch asked for details of the vacuums, the monument signs, and the landscaping on the Latson Road side for both locations.

The call to the public was made at 7:32 pm.

Ms. Denise Pollicella of 4200 Sweet Road stated she is the co-founder and Executive Director of the Coalition to Stop the Latson PUD. She is speaking on behalf of over 600 members regarding the car wash and multi-tenant commercial projects proposed this evening. Her group has been publicly maligned as anti-development. That is not their purpose. They are in favor of measured, thoughtful and responsible development in areas where it is appropriate. Neither of these proposals require a rezoning or intrusion into the residential area and they are in the right location. They do not agree that the township should be approving additional new commercial or industrial development when there are so many vacancies on the Latson Grand River corridor. Many areas on Grand River are blight and the township is not doing enough to encourage redevelopment. They do not have any objections to these proposed developments and they should be granted special land use permits.

Ms. Deborah McCormick of 2650 Springhill Drive is concerned about the traffic on Latson Road due to the car wash. This is a dangerous area. There is a car wash one mile down the road. She appreciates the time that is being taken by the Planning Commission reviewing this development.

Mr. Saman Abro with the car wash on Grand River stated that there are already eight car washes in Howell. Car washes can have up to 300 cars per hour and that will generate a lot of traffic. Antonio stated Mister Car Wash does not want to service the community. There are social media pages with complaints against them.

The call to the public was closed at 7:39 pm.

Commissioner Rauch suggested having this item tabled to allow the applicant to address the outstanding issues discussed this evening, specifically:

- Updating the renderings to show materials and colors more consistent with the proposed project to the south, adding additional glass along the west elevation, removing the blue material, and updating the number of signs to meet the ordinance.
- He is recommending a screen wall along the east side of the site be installed to limit the adverse impacts on the adjacent residential property.
- The hours of operations should be added to the Environmental Impact Assessment.
- Provide photographs of the vacuums in a subdued color.
- Creative landscaping along Latson Road.
- Details of the proposed ground sign.
- Updated traffic study to include the current residential development on Latson Road in Oceola Township. Commissioner McCreary agrees with Ms. McCormick regarding the traffic in that area.

- The LCRC's requirements for the stormwater and their response to the traffic impact study and what improvements they agree to make.

Commissioner McBain suggested reducing the number of vacuum bays, she reiterated her concerns regarding the traffic flow on the site and agrees with additional landscaping being needed on Latson Road.

**Moved** by Commissioner Rauch, supported by Commissioner Chouinard, to table Open Public Hearing Item #1 petitioned by CWP West, LLC. **The motion carried unanimously.**

**OPEN PUBLIC HEARING #2...** Consideration of a special land use application, environmental impact assessment and site plan to allow for a proposed multi-tenant commercial center including a drive through coffee shop and outdoor seating restaurant located on vacant parcels#:4711-04-300-017 and 4711-09-100-~~017-004~~ Latson Road, east side of Latson Road, south side of Grand River Avenue. The request is petitioned by Kevin Bahnam, 1015 Latson Road LLC.

- A. Recommendation of Special Use Application.
- B. Recommendation of Environmental Impact Assessment (10-26-23)
- C. Recommendation of Site Plan (10-25-23)

Mr. Brent LaVanway of Boss Engineering, Mr. Jeff Klatt, the architect, and Mr. Frank Jarbou of CWP West, LLC were present.

Mr. LaVanway provided a review of the project. This is a multi-use tenant building on the site adjacent to the previous agenda item and one of the tenants will include a drive thru. There is a partial existing wall on the east side and they are again proposing to add additional evergreens where there is no wall. They will be requesting two variances from the ZBA, one is for the location of the parking and the proximity of a drive thru to an existing drive thru.

Mr. Klatt showed colored building renderings and material samples. The building is modern with clear lines and the colors are consistent with other buildings in the area.

Mr. Borden reviewed his letter dated November 8, 2023.

1. Special Land Uses (Section 19.03):

- a. The special land use standards of Section 19.03 are generally met.
- b. In order to make favorable findings related to compatibility and impacts, the conditions of Sections 7.02.02(i) and (j) and the buffer zone requirements of Section 12.02.03 must be met to the Commission's satisfaction.
- c. If a favorable recommendation is made, the Commission may wish to include a condition that a sound study be provided for the drive-through speaker system when the tenant is known.



February 6, 2024

Planning Commission  
Genoa Township  
2911 Dorr Road  
Brighton, Michigan 48116

<b>Attention:</b>	Amy Ruthig, Planning Director
<b>Subject:</b>	Mister Car Wash – Special Land Use and Site Plan Review #3
<b>Location:</b>	1015 Latson Road – east side of Latson Road, south side of Grand River Avenue
<b>Zoning:</b>	GCD General Commercial District

Dear Commissioners:

At the Township’s request, we have reviewed the revised submittal from CWP West, LLC for development of a Mister Car Wash automatic car wash at 1015 Latson Road (plans dated 1/16/24).

**A. Summary**

**1. Special Land Uses (Section 19.03):**

- a. The special land use standards of Section 19.03 are generally met.
- b. In order to make favorable findings related to compatibility and impacts, the conditions of Section 7.02.02(l) need to be met to the Commission’s satisfaction.
- c. We suggest the applicant restrict the hours of operation to ensure compliance with the Township’s Noise Ordinance.
- d. The applicant must address any comments provided by the Township Engineer or Brighton Area Fire Authority regarding public facilities and services.

**2. Use Conditions (Section 7.02.02(l)):**

- a. The use conditions are met.

**3. Site Plan Review:**

- a. The revised building elevations comply with the material standards of Section 12.01.
- b. Building materials, design and color scheme are subject to review and approval by the Planning Commission.
- c. The landscape plan is deficient in width for the Latson Road greenbelt.
- d. The waste receptacle details must identify the required concrete base pad.

**B. Proposal/Process**

The applicant proposes development of an automatic car wash on the vacant 1.58 acre site. The project includes a 5,432 square foot car wash building and 19 vacuum stations.

Table 7.02 allows automobile washes (automatic or self-serve) with special land use approval in the GCD. The request is also subject to the use conditions of Section 7.02.02(l).

Procedurally, the Planning Commission is to review the special land use, site plan, and Environmental Impact Assessment, and put forth recommendations to the Township Board following a public hearing.



*Aerial view of site and surroundings (looking east)*

### **C. Special Land Use Review**

Section 19.03 of the Zoning Ordinance identifies the review criteria for Special Land Use applications as follows:

- 1. Master Plan.** The Township Master Plan identifies the subject site as Mixed Use – West Grand River. This classification states that “regional commercial uses, such as auto-oriented uses (including fast-food) are only intended at interchange uses and where otherwise currently existing along Grand River Avenue.”

The subject site is located near a major roadway intersection and within close proximity to an interchange. Furthermore, there are other auto-oriented uses (gas stations and a drive-through coffee shop) in the immediate area.

As such, the Commission may find that the proposal is consistent with the Master Plan and Future Land Use Map.

- 2. Compatibility.** Surrounding properties are primarily commercial/service in nature, though the site does abut residential zoning and land use along the south half of the east side lot line.

The use conditions of Section 7.02.02(c), which include setbacks for vacuum stations and screening requirements, are intended to help mitigate potential impacts of car washes.

The previous submittal included a noise impact analysis related to the car wash dryer and vacuum stations. In summary, the analysis finds that the proposed use will not generate noise levels above 80 dB at a property line between 7AM and 10PM.

This is in line with the Township’s Noise Ordinance; however, the analysis also notes that use past 10PM will exceed the 50 dB limitation of said Ordinance. As such, we suggest the applicant restrict the hours of operation to avoid any potential issues.

- 3. Public Facilities and Services.** Given that the site fronts Latson Road near Grand River Avenue and was previously developed, we anticipate that necessary public facilities and services are in place.

However, the applicant must address any comments provided by the Township Engineer and/or Brighton Area Fire Authority related to this criterion.

- 4. Impacts.** Similar to comments above, in order to make a favorable finding under this criterion, the applicable use conditions must be met to the Commission’s satisfaction.

**5. Mitigation.** If further concerns arise as part of the review process, the Township may require additional efforts to mitigate potential adverse impacts.

**D. Use Conditions**

Automobile washes are subject to the use requirements of Section 7.02.02(1), as follows:

**1. Only one (1) ingress/egress driveway shall be permitted on any single street.**

The site plan proposes 1 turn restricted ingress/egress driveway to/from Latson Road. The site also has cross-access with the proposed development to the south.

**2. Where adjoining a residential district, a solid fence or wall six (6) feet in height shall be erected along any common lot line. Such fence or wall shall be continuously maintained in good condition. The Planning Commission may require landscaping, including a berm, as an alternative.**

A portion of the east side lot line abuts residential zoning (HDR). The revised plan includes a 6' screen fence, as required.

**3. All washing facilities shall be within a completely enclosed building.**

This standard is met.

**4. Vacuuming and drying may be located outside the building, but shall not be in the required front yard and shall be set back at least fifty (50) feet from any residential district.**

This standard is met.

**5. All cars required to wait for access to the facilities shall be provided stacking spaces fully off the street right-of-way which does not conflict with vehicle maneuvering areas to access gasoline pumps or vacuums, and as required Article 14, Parking and Loading-Unloading Standards.**

Section 14.04 requires 15 stacking spaces. The site plan depicts 21 stacking spaces across 3 service lanes.

**E. Site Plan Review**

**1. Dimensional Requirements.** As noted in the table below, the proposal complies with the dimensional requirements of the GCD:

	Min. Lot Req.		Minimum Yard Setbacks (feet)				Max. Lot Coverage (%)	Max. Height
	Area (acres)	Width (feet)	Front Yard	Side Yard	Rear Yard	Parking Lot		
<b>GCD</b>	1	150	35	15	50	20 front 10 side/rear	35% building 75% impervious	35' 2 stories
<b>Proposed</b>	1.48	390	41.7	57.6 (N) 221 (S)	62	No front parking 10 side (S) 10 rear	7.9% building 67.6% impervious	35' 1 story

**2. Building Design and Materials.** The primary building materials are stone and brick with metal siding and a metal roof.

The revised submittal includes material calculations that demonstrate compliance with the standards of Section 12.01.

Lastly, Section 12.01 requires the use of earth tone colors. The revised submittal has reduced the amount of bright blue to the overhead doors. This color is also depicted behind doors and windows.

Building materials and colors are subject to review and approval by the Planning Commission.

- 3. Pedestrian Circulation.** The site plan proposes an 8-foot wide concrete sidewalk along S. Latson. A portion of the sidewalk encroaches onto the property, though a note indicates that an easement will be provided.

The plan also provides internal pedestrian circulation between the vacuum stations and building, and attendant shelter and building.

- 4. Vehicular Circulation.** The site plan proposes 1 curb cut with a turn-restricted driveway along S. Latson. Cross-access is also provided with the proposed development to the south.

The revised plan includes pavement markings and directional signage, as well as a “collision detection system,” to aid vehicular circulations through the site.

The applicant must address any comments provided by the Township Engineer and/or the Brighton Area Fire Authority with respect to vehicular circulation.

- 5. Parking.** Based on information contained in the submittal, the project requires 5 parking spaces. The site plan provides 20 vacuum station/parking spaces along the east side of the site.

The design and dimensions of parking spaces and drive aisles comply with Ordinance standards.

- 6. Exterior Lighting.** The lighting plan identifies 9 light poles, 4 wall mounted fixtures, 19 vacuum station fixtures, and 1 canopy fixture.

Based on the detail sheets, the proposed fixtures are downward direct LED, as required.

Pole heights and photometric readings along property lines comply with Ordinance standards. The revised plan also complies with the maximum lighting intensity.

- 7. Landscaping.** The landscape plan has been reviewed for compliance with the standards of Section 12.02, as follows:

Standard	Required	Proposed	Notes
Front yard greenbelt	20' width 10 canopy trees	10' to 20' width 11 canopy trees	Partially deficient in width
Buffer Zone C (N)	10' width 8 canopy trees OR 8 evergreen trees OR 30 shrubs	10' width 30 shrubs	In compliance
Buffer Zone C (S)	10' width 9 canopy trees OR 9 evergreen trees OR 35 shrubs	10' to 20' width 4 canopy trees 1 evergreen tree 19 shrubs	In compliance
Buffer Zone C (E)	10' width 6 canopy trees OR 6 evergreen trees OR 24 shrubs	10' width 32 shrubs	In compliance
Buffer Zone B (E)	20' width 6' wall OR 3' berm 10 canopy trees 10 evergreen trees 40 shrubs	23' width 6' screen fence 10 canopy trees 15 evergreen trees 40 shrubs	In compliance
Parking lot	2 canopy trees 220 SF landscaped area	2 canopy trees 300+ SF landscaped area	In compliance



The Commission has the authority to modify landscaping requirements, per Section 12.02.13.

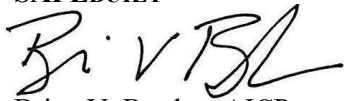
- 8. Waste Receptacle.** The proposed waste receptacle has been reviewed for compliance with the standards of Section 12.04, as follows:

	<b>Requirement</b>	<b>Proposed</b>	<b>Comments</b>
Location	Rear yard or non-required side yard	Rear yard	Requirement met
Access	Clear access w/ out damaging buildings/vehicles	Turning template demonstrates sufficient maneuvering area	Requirement met
Base design	9' x 15' concrete pad	Not depicted	Plans must denote required concrete base pad
Enclosure	3-sided enclosure w/ gate Masonry walls 6' height/taller than receptacle	3 sides w/ gate across 4 <sup>th</sup> CMU; colors match building 8' height	Requirements met

Should you have any questions concerning this matter, please do not hesitate to contact our office.

Respectfully,

**SAFE BUILT**



Brian V. Borden, AICP  
Michigan Planning Manager



February 6, 2024

Ms. Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

**Re: Mister Car Wash  
Site Plan Review No. 3**

Dear Ms. Ruthig:

Tetra Tech conducted a third review of the proposed Mister Car Wash site plan last dated January 16, 2024. The plan was prepared by Boss Engineering on behalf of 1015 Latson Road, LLC. The development is located on two parcels with a total of 3.38 acres on the east side of Latson Road, approximately 350 feet south of the Latson Road and Grand River Avenue intersection. The Petitioner is proposing to split the site into two parcels that are being reviewed separately, and this review includes a proposed 5,432 square foot car wash building on the proposed north parcel. The proposed improvements include a new parking lot, storm sewer, and underground detention.

We offer the following comments for your consideration:

#### **GENERAL**

1. The Petitioner should obtain approval from the Livingston County Road Commission (LCRC) for the proposed site driveway prior to final site plan approval.
2. The impact assessment provides a predicted water and sewer usage based on the Township's REU table, which provides 25.2 REUs per car wash with recycle. Historic water usage was also provided from other Mister Car Wash facilities with an average usage of 21,277 gallons per day. This average water usage from similar facilities should be considered when calculating the REU amount for the proposed development.

#### **DRAINAGE AND GRADING**

1. The Petitioner is proposing a closed pipe type underground detention basin comprised of four 48-inch diameter pipes to provide 12,489 cubic feet of storage. The current car wash, site drive, and parking improvements do not allow enough space for any at grade storm water detention or retention.
2. The proposed underground detention basin will tie into the existing storm sewer on Latson Road. The LCRC has indicated that the existing storm sewer is under MDOT jurisdiction and approval from MDOT will be required to connect to it. If approval from MDOT cannot be obtained the proposed site layout and storm management plan would change significantly, therefore we recommend that approval from MDOT be obtained prior to bringing the site plan before the Township Planning Commission.

**Tetra Tech**

3497 Coolidge Road, East Lansing, MI 48823  
Tel 517.316.3930 Fax 517.484.8140 [www.tetrattech.com](http://www.tetrattech.com)


**Ms. Amy Ruthig**  
**Re: Mister Car Wash**  
**Site Plan Review No. 3**  
**February 6, 2024**  
**Page 2**

## **TRAFFIC AND PAVEMENT**

1. The LCRC completed a review of the traffic impact study and plans, and the study was revised per their recommendation. The study recommended signal modifications at the Grand River Avenue and Latson Road intersection, which would need to be reviewed and discussed with MDOT. The study also recommended restricting the northern most site driveway to right-in-right-out and aligning the southernmost site driveway to align directly with the existing Lowes driveway. Both site driveway recommendations have been addressed on the revised plans.

We recommend the Petitioner address the above comments prior to Township approval. Please call or email if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Shelby Byrne". The signature is written in a cursive, flowing style.

Shelby Byrne, P.E.  
Project Engineer



# BRIGHTON AREA FIRE AUTHORITY

615 W. Grand River Ave.  
Brighton, MI 48116  
o: 810-229-6640 f: 810-229-1619

February 2, 2024

Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

RE: Mister Car Wash  
1015 S. Latson Rd.  
Genoa Twp., MI

Dear Amy,

The Brighton Area Fire Department has reviewed the above-mentioned site plan. The plans were received for review on January 17, 2024. The drawings are dated October 4, 2023 with latest revisions dated January 16, 2024. The project is based on proposed redevelopment of an existing vacant parcel for a new 5,432 square foot car wash development. Access to the site and the adjacent site have been modified per the LCRC requirements in this drawing set. The plan review is based on the requirements of the International Fire Code (IFC) 2021 edition. **Previously acknowledged and complied with notes have been removed from this letter.**

1. *One-way emergency vehicle access roads shall be a minimum of 20-feet wide. With a width of 20-feet, this includes the one-way in/out entry to the property. Access roads to the site shall be provided and maintained during construction. Access roads shall be constructed to be capable of supporting the imposed load of fire apparatus weighing at least 84,000 pounds, this includes over the underground retention.*

**IFC D 103.6**  
**IFC D 103.1**  
**IFC D 102.1**  
**IFC D 103.3**

Additional comments will be given during the building plan review process (specific to the building plans and occupancy). The applicant is reminded that the fire authority must review the fire protection systems submittals (sprinkler & alarm) prior to permit issuance by the Building Department and that the authority will also review the building plans for life safety requirements in conjunction with the Building Department.

If you have any questions about the comments on this plan review please contact me at 810-229-6640.

Cordially,

A handwritten signature in black ink, appearing to read "R. Boisvert".

Rick Boisvert, CFPS  
Fire Marshal

cc: Kelly VanMarter [kelly@genoa.org](mailto:kelly@genoa.org)



3121 E. Grand River Howell, MI 48843  
517.546.4836 fax 517.548.1670  
www.bosseng.com

February 20<sup>th</sup>, 2024

Amy Ruthig, Planning Director  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

Re: Mister Car Wash

Dear Ms. Ruthig,

Pursuant to the administrative meeting held with Genoa Township Planning Commission on February 19<sup>th</sup> for the Mister Car Wash project, we offer the following as a summary of the changes per the meeting.

1. The cross-access easement for the future connection at O'Reilly's has been added. See the attached supplemental document indicating this proposed easement.
2. The geometrics of the right-in/right-out approach has been revised to be a little more aggressive on the island to further help prohibit improper turning movements. We will continue to work with the LCRC on the final geometrics.
3. It was noted that the LED strip lighting on the car wash roofline should be recessed so the light source isn't visible as well as to modify the color temperature from a yellow to a white color consistent with the building sconce lights in the renderings provided.

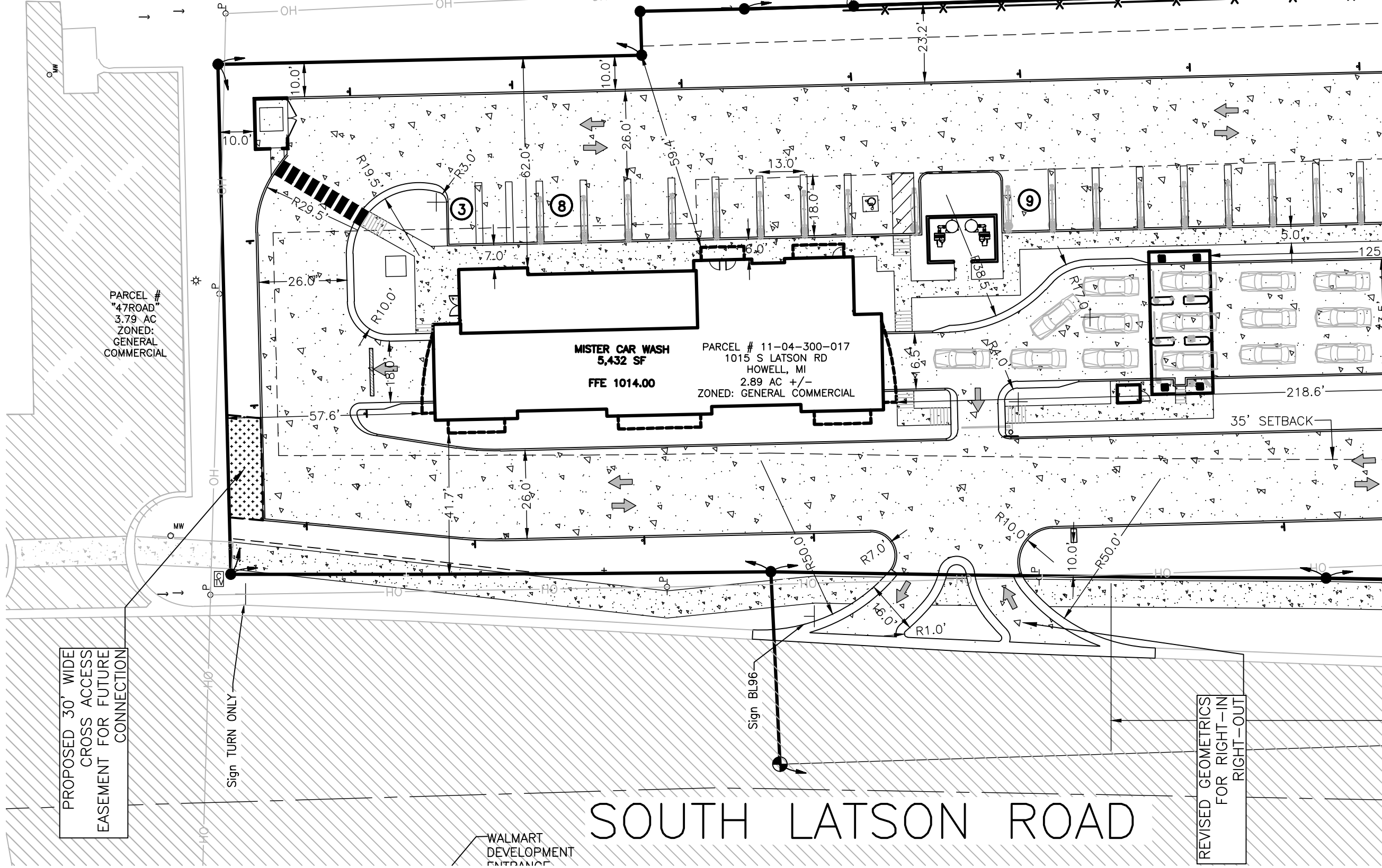
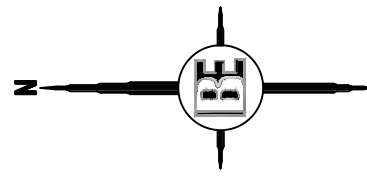
Should you have any questions concerning the modifications indicated above, please don't hesitate to ask.

Sincerely,

BOSS ENGINEERING COMPANY

A handwritten signature in blue ink, appearing to read "Scott Tousignant", is written over a horizontal line.

Scott Tousignant, PE  
Senior Project Manager  
[Scottt@bosseng.com](mailto:Scottt@bosseng.com)



THE LOCATION AND ELEVATION 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 LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITY CROSSINGS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE APPARENT OR IF THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

**LEGEND**  
 ○ = STEEL ROD SET  
 ● = STEEL ROD/PIPE FD  
 ⊙ = MONUMENT FOUND  
 \* = FENCE  
 (R) = RECORDED  
 (M) = MEASURED

3 WORKING DAYS  
**BEFORE YOU DIG  
 CALL MISS DIG**  
 1-800-482-7171  
 FOR THE LOCATION OF UNDERGROUND FACILITIES

**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

CLIENT:	CWP WEST LLC		
JOB NO.	21-519	DATE	02/20/24
SHEET	1 OF 1	SCALE:	1" = 30'
		DR. ST	

# SOUTH LATSON ROAD

**GENOA TOWNSHIP IMPACT ASSESSMENT  
Mister Car Wash**

Prepared for:

**Property Owner  
1015 Latson Road LLC  
Kevin Bahnam**

**Applicant  
CWP West, LLC  
Nicole Kastern**

Prepared by:

**Scott Tousignant, P.E.**



3121 E. Grand River Howell, MI 48843  
517.546.4836 fax 517.548.1670  
www.bosseng.com

**October 4, 2023  
Revised: October 26, 2023  
Revised: December 11, 2023  
Revised: January 16, 2024**



## DISCUSSION ITEMS

- A. Name(s) and address(es) of person(s) responsible for preparation of the Impact Assessment and a brief statement of their qualifications.

Prepared by:

Scott Tousignant, P.E.  
Professional Engineer/Project Manager  
Boss Engineering  
3121 E Grand River  
Howell, MI 48843

Prepared for:

Owner:  
1015 Latson Road LLC / Kevin Bahnam  
29592 Beck Road  
Wixom, MI 48393

Applicant:  
CWP West LLC / Nicole Kastern  
222 E. 5<sup>th</sup> Ave  
Tucson, AZ 85705

- B. Description of the site, including existing structures, man-made facilities, and natural features, all-inclusive to within 10' of the property boundary.***

The project site is on parcel # 4711-04-300-017 in Section 4, Genoa Township, Livingston County, MI.

The subject site is bordered:

- On the north by the 1.14 acre +/- parcel zoned General Commercial (GCD) with an existing O'Reilly Auto Parts store.
- On the east by the 9.13 acre +/- parcel zoned General Commercial (GCD) with the Country Corners Shopping center.
- On the east and south by the 12.09 acre +/- parcel zoned High Density Residential (HDR) with the Prentis Estates Apartments. An approximately 4' tall berm is directly along the property line here on the adjacent HDR parcel and is planted with large Red and Scotch Pines ranging in size from 11" d.b.h. to 24" d.b.h. There is an additional evergreen screen just south of the berm along the east property line planted with White Cedar.
- On the west by S. Latson Road and the Non-Residential PUD shopping center with Walmart, PetSmart, Lowe's and various fast-food restaurants.
- And on the south by a proposed commercial development immediately adjacent to the subject site.

MHOG sanitary runs along the west property line and South Latson Road. MHOG water runs along the east property line in the adjacent parcel. See the Existing Conditions for locations.

The subject site is a vacant parcel of land consisting of tall, unmaintained grasses and minimal trees. There is currently one existing commercial drive approach accessing the south end of the subject property. This commercial drive will be removed and a new drive installed further to the north as per LCRC recommendations as a right-in/right-out only with a full access drive provided on the adjacent site to the south (with a cross access easement).

**C. Impact on natural features: A written description of the environmental characteristics of the site prior to development, i.e., topography, soils, vegetative cover, drainage, streams, creeks or ponds.**

These currently vacant parcels are flat (2-6% slopes) and covered by grass and weeds.

The soils are largely Miami Loam with 2 to 6% slopes. Other soils on site are Conover Loam and Washtenaw Silt Loam. The site drains via surface flow from east to west to the South Latson Road storm sewer system. No wetlands/streams/creeks or other water bodies are located on site.

**D. Impact on storm water management: description of soil erosion control measures during construction.**

Storm water will be managed on site and installed before any building construction. Underground storm water detention is planned with a discharge to the South Latson Road storm system and ultimately to the regional detention basin to the south at I-96. Detailed construction plans will be reviewed by the Township Engineer and the Soil Erosion Control plans will be reviewed and permit issued by the Livingston County Drain Commissioners office prior to construction commencing. Ongoing/periodic soil erosion inspections will occur per County requirements to ensure soil erosion is managed proactively.

**E. Impact on surrounding land use: Description of proposed usage and other man-made facilities; how it conforms to existing and potential development patterns. Effects of added lighting, noise or air pollution which could negatively impact adjacent properties.**

The proposed use on this General Commercial site includes an automatic car wash with supporting vacuum cleaning stations at the rear of the site. The proposed uses conform to existing and potential development patterns and will not negatively impact adjacent properties with added lighting, noise or air pollution. The site development will comply with Township Ordinances for lighting levels as well as noise levels. The uses proposed do not impact adjacent properties with noise, light or air pollution.

An existing berm and evergreen screening in the adjacent parcel to the north along the High-Density Residential (HDR) property line screens that use from these proposed commercial uses. Additional landscaping is proposed for the east property line to screen the HDR use. A 6' high screen fence is proposed along the property line shared with the residential zoning to the east. Proposed uses on this site are compatible with existing zoning and adjacent zoning on S. Latson Road. Given its proximity to the I-96/Latson interchange, a car wash use would be appropriate and consistent with surrounding land and uses.

Hours of operation for the car wash:

Summer hours: 7am – 8pm

Winter hours: 7am – 7pm

**F. Impact on public facilities and services: Description of number of residents, employees, patrons, and impact on general services, i.e., schools, police, fire.**

The proposed car wash does not add additional burden on the fire and police services as the site is surrounded by similar development that already receives coverage. The uses do not add population that impacts schools. The car wash will add to Township tax revenue as the site currently sits vacant. The car wash will add approximately 16 jobs which has a positive impact on the community.

**G. Impact on public utilities: description of public utilities serving the project, i.e., water, sanitary sewer, and storm drainage system. Expected flows projected in residential units.**

Storm water will be detained on-site via the use of an underground detention system. The storm water will be discharged at pre-development rates to the South Latson Road storm sewer system as the site currently sheet flows into this road storm system. Detailed construction plans would be reviewed by the Township Engineer and the Soil Erosion Control permit would be reviewed and issued by the Livingston County Drain Commissioner. MHOG sanitary sewer runs along the west property line and South Latson Road. It is expected that the site will be connected to MHOG sanitary sewer along South Latson Road and MHOG water along the east property line in the adjacent parcel. The proposed car wash use does utilize a good amount of water. One method in calculating water usage is utilizing the Townships REU Factor Table (at 25.2 REU's per automated car wash with recycle). This REU count calculates to approximate average daily usage of 6,500 gpd and peak day usage of 28,000 gpd. Per water usage records at three comparable facilities for Mister Car Wash, data that spans the last year and a half for those 3 locations averages out to 21,177 gpd of daily water usage. The MHOG public water is anticipated to accommodate the use. In response to the proposed uses water usage, the Mister Car Wash facility will utilize a water recycle system. The water recycle system is outlined in Appendix A attached herein.

**H. Storage or handling of any hazardous materials: Description of any hazardous materials used, stored, or disposed of on-site.**

No storing or handling of any hazardous materials is expected for this development.

**I. Impact on traffic and pedestrians: Description of traffic volumes to be generated and their effect on the area.**

A traffic study has been performed. It is prepared under separate cover and submitted to the Township and Livingston County Road Commission. In summary of the Traffic Impact Study performed by Colliers Engineering & Design, *“Based on the results of this study, the following should be considered to provide acceptable traffic operations with the proposed development project. 1) Optimize signal timings at the intersection of Grand River Avenue and Latson Road. 2) Construct two driveways to Latson Road with the S. site driveway aligned with the existing Lowes driveway and the N. site driveway restricted to right-in-right-out only.”*

The Livingston County Road Commission will be required to review and approve the commercial driveway approaches on South Latson Road. Communications with LCRC indicate that the proposed drive location is acceptable. A right-in/right-out access will be provided in front of the Mister Car Wash site with a full access drive provided on the adjacent site to the south. A cross access easement will be provided.

***J. Special provisions: Deed restrictions, protective covenants, etc.***

Detroit Edison easements are located at the north end of the northern parcel.

***K. Description of all sources:***

- Genoa Township Zoning Ordinance
- “Soil Survey of Livingston County Michigan” Soil Conservation Services, USDA
- Traffic Impact Study by Colliers Engineering & Design dated September 15, 2023

**APPENDIX A**  
**Water Reclaim System**

# Reducing and Recycling Water Through the Wash Process

*We take water conservation seriously with state-of-the-art technologies*

## Reducing Freshwater Usage Through Recycling

Implementation of our water systems **reduces freshwater** usage by **11%**



## Freshwater Use Reduced

- Freshwater usage **reduced 11%** by our water system design
- 33% of water, on average, is **recycled** during the wash process
- Sophisticated water filtration and storing systems that enable us to **recycle and reuse water** through the wash process

## Environmentally Friendly

- Our proprietary cleaning products are **free of dyes**
- Concentrated proprietary chemistry **reduces plastic usage** in chemical storage
- Industry leader with installation of air gates on blower systems to **reduce energy pull** during the drying process



*It's not just about washing cars. It's about **how** we wash them.  
We are focused on finding smarter ways to reduce our environmental impact and be more efficient in energy usage.*

1) On average, during the wash process.  
2) RO: Reverse Osmosis process of filtering water and removing total dissolved solids to create soft water.

# Inspection and Maintenance Guide

Prepared for:

**Mister Car Wash  
1015 S. Latson Road  
Howell, MI 48843**

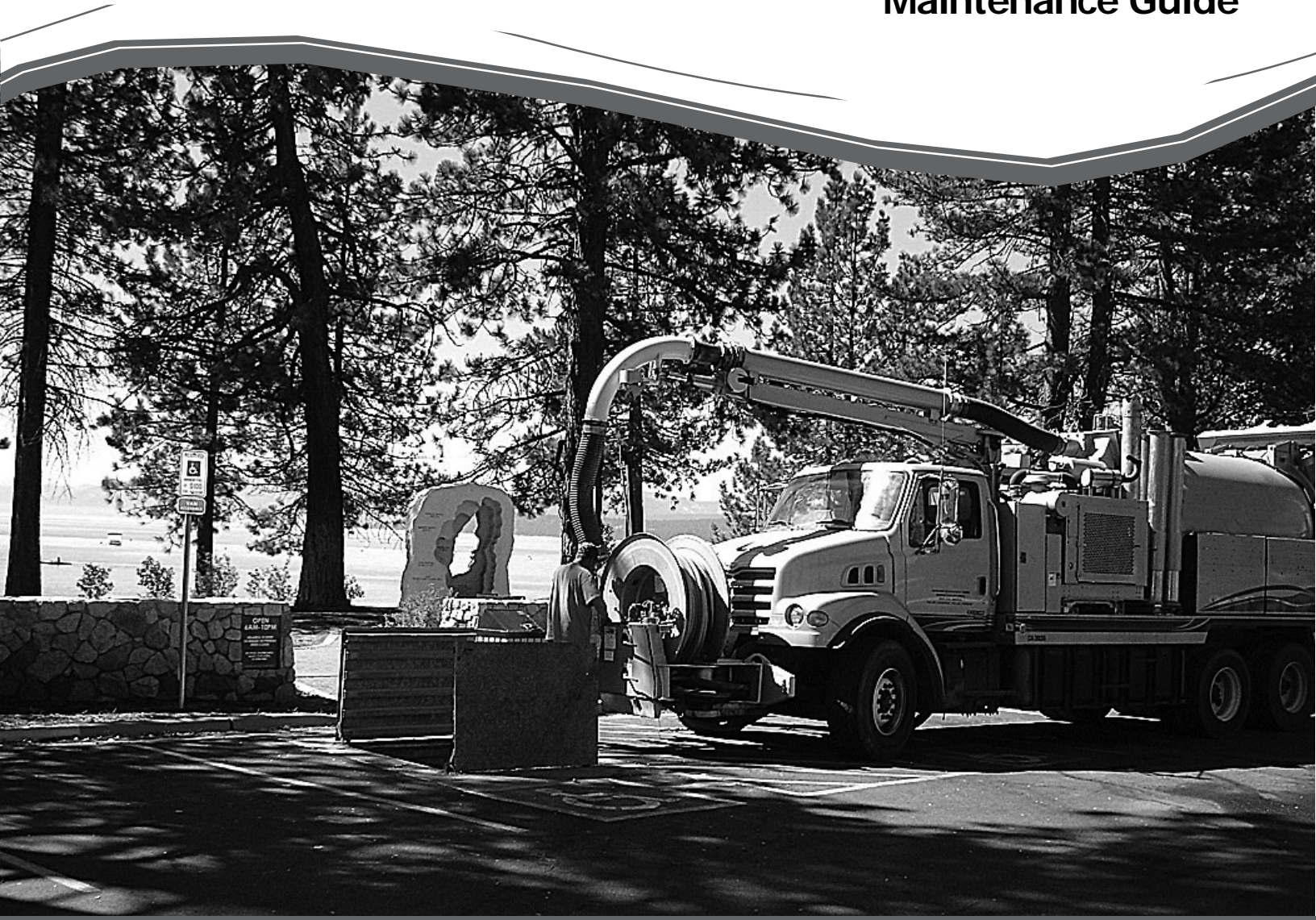
Prepared by:



3121 E. Grand River Howell, MI 48843  
517.546.4836 fax 517.546.1670  
[www.bosseng.com](http://www.bosseng.com)



## Cascade Separator<sup>®</sup> Inspection and Maintenance Guide



## Maintenance

The Cascade Separator® system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects sediment and debris will depend upon on-site activities and site pollutant characteristics. For example, unstable soils or heavy winter sanding will cause the sediment storage sump to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

## Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (i.e. spring and fall). However, more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment wash-down areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

A visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet chamber, flumes or outlet channel. The inspection should also quantify the accumulation of hydrocarbons, trash and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided in this Inspection and Maintenance Guide.

Access to the Cascade Separator unit is typically achieved through one manhole access cover. The opening allows for inspection and cleanout of the center chamber (cylinder) and sediment storage sump, as well as inspection of the inlet chamber and slanted skirt. For large units, multiple manhole covers allow access to the chambers and sump.

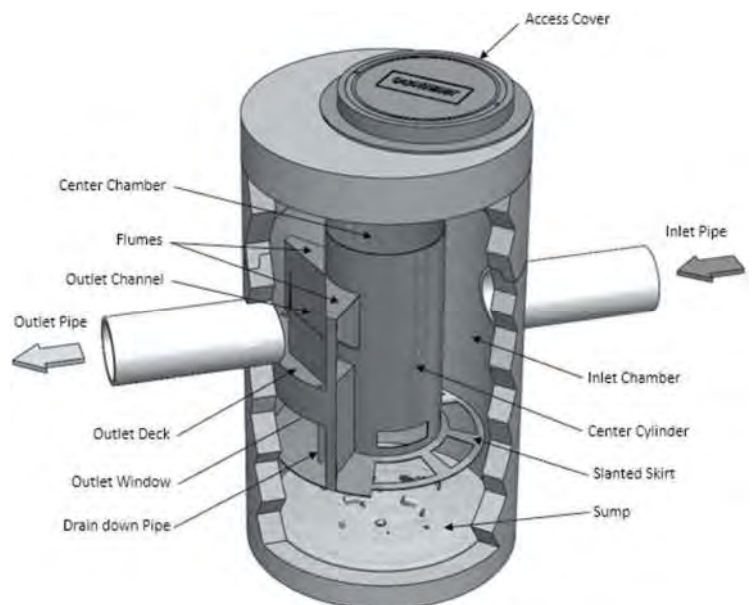
The Cascade Separator system should be cleaned before the level of sediment in the sump reaches the maximum sediment depth and/or when an appreciable level of hydrocarbons and trash has accumulated. If sorbent material is used, it must be replaced when significant discoloration has occurred. Performance may be impacted when maximum sediment storage capacity is exceeded. Contech recommends maintaining the system when sediment level reaches 50% of maximum storage volume. The level of sediment is easily determined by measuring the distance from the system outlet invert (standing water level) to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Finer, silty particles at the top of the pile typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the chart in this document to determine if the height of the sediment pile off the bottom of the sump floor exceeds 50% of the maximum sediment storage.

## Cleaning

Cleaning of a Cascade Separator system should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole cover and insert the vacuum tube down through the center chamber and into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The areas outside the center chamber and the slanted skirt should also be washed off if pollutant build-up exists in these areas.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. Then the system should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and to ensure proper safety precautions. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the Cascade Separator system must be done in accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal. If any components are damaged, replacement parts can be ordered from the manufacturer.



# Cascade Separator® Maintenance Indicators and Sediment Storage Capacities

Model Number	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y <sup>3</sup>	m <sup>3</sup>
CS-3	3	0.9	1.5	0.5	0.4	0.3
CS-4	4	1.2	2.5	0.8	0.7	0.5
CS-5	5	1.3	3	0.9	1.1	0.8
CS-6	6	1.8	3.5	1	1.6	1.2
CS-8	8	2.4	4.8	1.4	2.8	2.1
CS-10	10	3.0	6.2	1.9	4.4	3.3
CS-12	12	3.6	7.5	2.3	6.3	4.8

Note: The information in the chart is for standard units. Units may have been designed with non-standard sediment storage depth.



A Cascade Separator unit can be easily cleaned in less than 30 minutes.



A vacuum truck excavates pollutants from the systems.



## Cascade Separator® Inspection & Maintenance Log

Cascade Model:			Location:		
Date	Depth Below Invert to Top of Sediment <sup>1</sup>	Floatable Layer Thickness <sup>2</sup>	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The depth to sediment is determined by taking a measurement from the manhole outlet invert (standing water level) to the top of the sediment pile. Once this measurement is recorded, it should be compared to the chart in the maintenance guide to determine if the height of the sediment pile off the bottom of the sump floor exceeds 50% of the maximum sediment storage. Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.
2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

### SUPPORT

- Drawings and specifications are available at [www.ContechES.com](http://www.ContechES.com).
- Site-specific design support is available from our engineers.

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# Contech® CMP Detention Inspection and Maintenance Guide

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. The rate at which the system collects pollutants will depend more on-site specific activities rather than the size or configuration of the system.

Inspections should be performed more often in equipment washdown areas, in climates where sanding and/or salting operations take place, and in other various instances in which one would expect higher accumulations of sediment or abrasive/corrosive conditions. A record of each inspection is to be maintained for the life of the system.

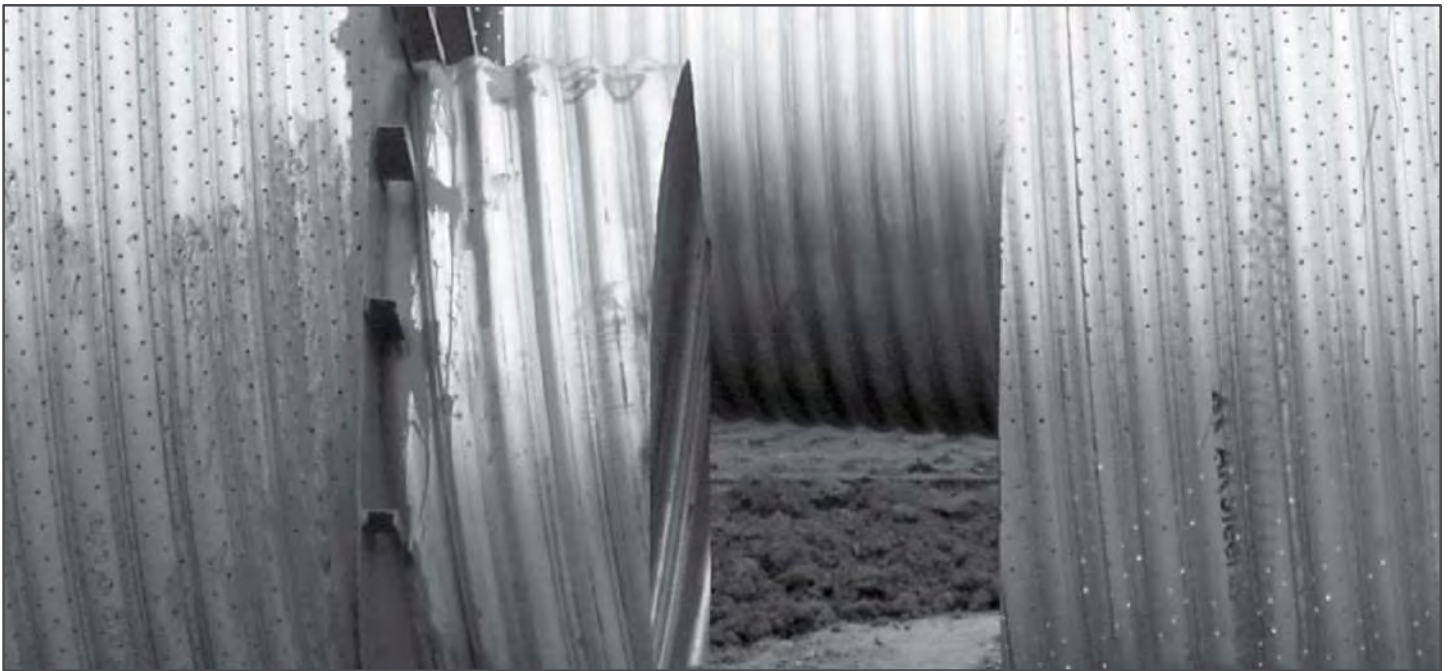
## Maintenance

CMP detention systems should be cleaned when an inspection reveals accumulated sediment or trash is clogging the discharge orifice. Accumulated sediment and trash can typically be evacuated through the manhole over the outlet orifice. If maintenance is not performed as recommended, sediment and trash may accumulate in front of the outlet orifice. Manhole covers should be securely seated following cleaning activities. Contech suggests that all systems be designed with an access/inspection manhole situated at or near the inlet and the outlet orifice. Should it be necessary to get inside the system to perform maintenance activities, all appropriate precautions regarding confined space entry and OSHA regulations should be followed.

Annual inspections are best practice for all underground systems. During this inspection if evidence of salting/de-icing agents is observed within the system, it is best practice for the system to be rinsed, including above the spring line soon after the spring thaw as part of the maintenance program for the system.

Maintaining an underground detention or infiltration system is easiest when there is no flow entering the system. For this reason, it is a good idea to schedule the cleanout during dry weather.

The foregoing inspection and maintenance efforts help ensure underground pipe systems used for stormwater storage continue to function as intended by identifying recommended regular inspection and maintenance practices. Inspection and maintenance related to the structural integrity of the pipe or the soundness of pipe joint connections is beyond the scope of this guide.



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CMP DETENTION SYSTEMS

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Engineering  
& Design

# Traffic Impact Study

December 19, 2023

**Latson Road Commercial Development  
Genoa Township, Livingston County, Michigan**

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Appendix B | Existing Conditions Data

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## Introduction

This report presents the methodologies, analyses, results, and recommendations of a Traffic Impact Study (TIS) for the proposed commercial development project in Genoa Township, Livingston County, Michigan. The project site is located on the east side of Latson Road approximately 500 feet south of Grand River Avenue (I-96 BL) as shown on **Figure 1** and is currently vacant. The proposed development plans include construction of a 2,950 SF coffee-shop with drive-through, 2,700 SF sit-down restaurant, 4,025 SF of general retail space, and automated car wash. Two different site access alternatives were evaluated for the development per the request of LCRC as follows:

1. Alternative 1: A single site driveway to Latson Road aligned with the existing Lowes Drive.
2. Alternative 2: A single site driveway to Latson Road aligned with the existing Lowes Drive and right-in-right-out only driveway to Latson Road at the north end of the subject site.

A representation of the site plan is shown on **Figure 2**.

Latson Road is under jurisdiction of the Livingston County Road Commission (LCRC); whereby access permitting will be subject to LCRC review and standards. In accordance with LCRC standards a Traffic Impact Study (TIS) is required for site access permitting and project approvals. Additionally, the project is subject to Township review and approval as part of the site plan review process.

The purpose of this study is to identify the traffic related impacts, if any, of the proposed project on the adjacent road network. This study therefore includes analysis of the site access points as well as key off-site intersections surrounding the site. Analysis of the site access points will determine appropriate lane configurations as well as traffic control to process site traffic safely and efficiently. Key off-site intersections are analyzed to determine if new site-generated traffic passing through these locations would require improvements to mitigate any impacted traffic operations.

The scope of this study was developed based on Colliers Engineering & Design (CED) knowledge of the study area, understanding of the development program, accepted traffic engineering practice, and information published by the Institute of Transportation Engineers (ITE). Additionally, CED solicited input regarding the proposed scope of work from LCRC. The study analyses were completed using Synchro and SimTraffic, Version 11 traffic analysis software and in accordance with the methodologies and practices published by ITE and the applicable requirements of LCRC and the Township. This report is intended for use by LCRC and the Township to guide decisions related to development project approvals, access permitting, and identifying future roadway improvement needs.





**Latson Commercial Development  
Genoa Township, MI**

Figure 1  
Study Area Map

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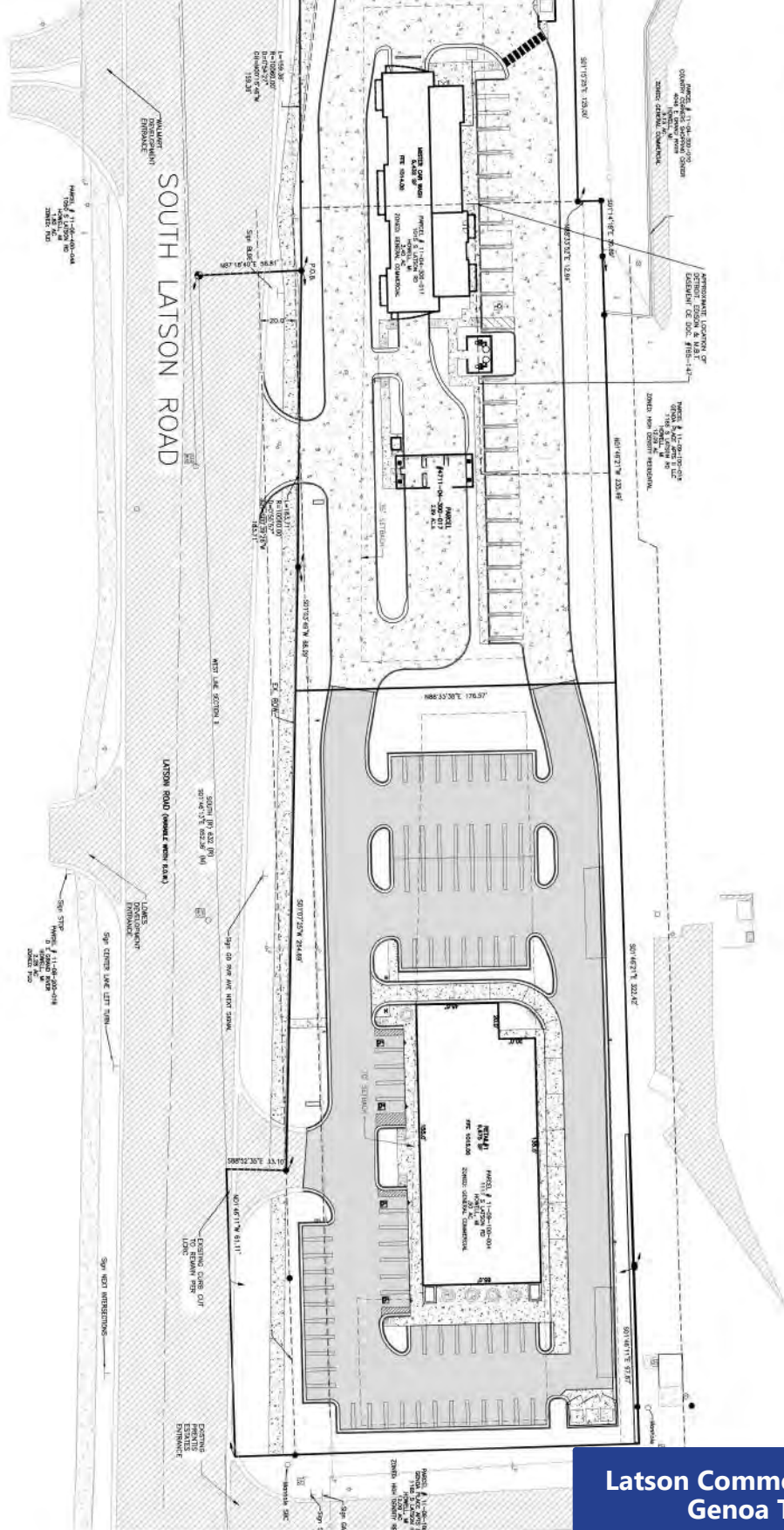






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SOUTH LATSON ROAD



SEE SHEET  
NOTES

# Latson Commercial Development Genoa Township, MI

## Figure 2 Site Plan

PROJECT	MISTER CAR WASH			
PREPARED FOR	CWP WEST LLC 222 E 1500 AVE MADONIA, MI 48068 USA 464 4308			
TITLE	OVERALL SITE PLAN			
DATE	5/17			
REVISION				
NO.	BY	REVISION	PER	DATE
1				
2				
3				
4				
5				

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## Roadway Data

### Road Network

Vehicle transportation for the proposed development will be provided primarily via Latson Road and Grand River Avenue. The study intersections are identified below, and further details on the study roadways are summarized in **Table 1**.

**Table 1: Roadway Summary**

Roadway Data	Grand River Avenue	Latson Road
Functional Class	Principal Arterial	Minor Arterial
Direction	E-W	N-S
Speed Limit (mph)	45	55
Jurisdiction	MDOT	LCRC
Cross Section	5-Lane	5-Lane
AADT	31,000	22,000
AM Peak Hour Volume	2,075	1,380
PM Peak Hour Volume	3,250	2,370

### Study Intersections

#### Grand River Avenue & Latson Road

At the intersection of Grand River Avenue & Latson Road, all approaches have dual left-turn lanes, two through lanes, and an exclusive right-turn lane. The intersection is traffic signal controlled with leading protected only left-turn phasing, and right-turn overlap phasing provided for all approaches. Dynamic “No Turn on Red” signs are also provided for all approaches to prohibit right-turns during the opposing approaches protected left-turn phase. Vehicle and pedestrian actuation are provided for all approaches and movements and marked crosswalks are provided for crossing all legs.



**Figure 3: Grand River Avenue & Latson Road Intersection**

### Latson Road & Grand Oaks Drive

At the intersection of Latson Road & Grand Oaks Drive, the NB and SB approaches have an exclusive left-turn lane, through lane, and shared through/right-turn lane while the EB and WB approaches have an exclusive left-turn lane and shared through/right-turn lane. The intersection is traffic signal controlled with a leading permitted-protected left-turn phasing for the NB approach. Vehicle actuation is provided for all approaches and movements and marked crosswalks are provided for crossing the east, west, and north legs of the intersection with pedestrian actuation provided for the north crossing.

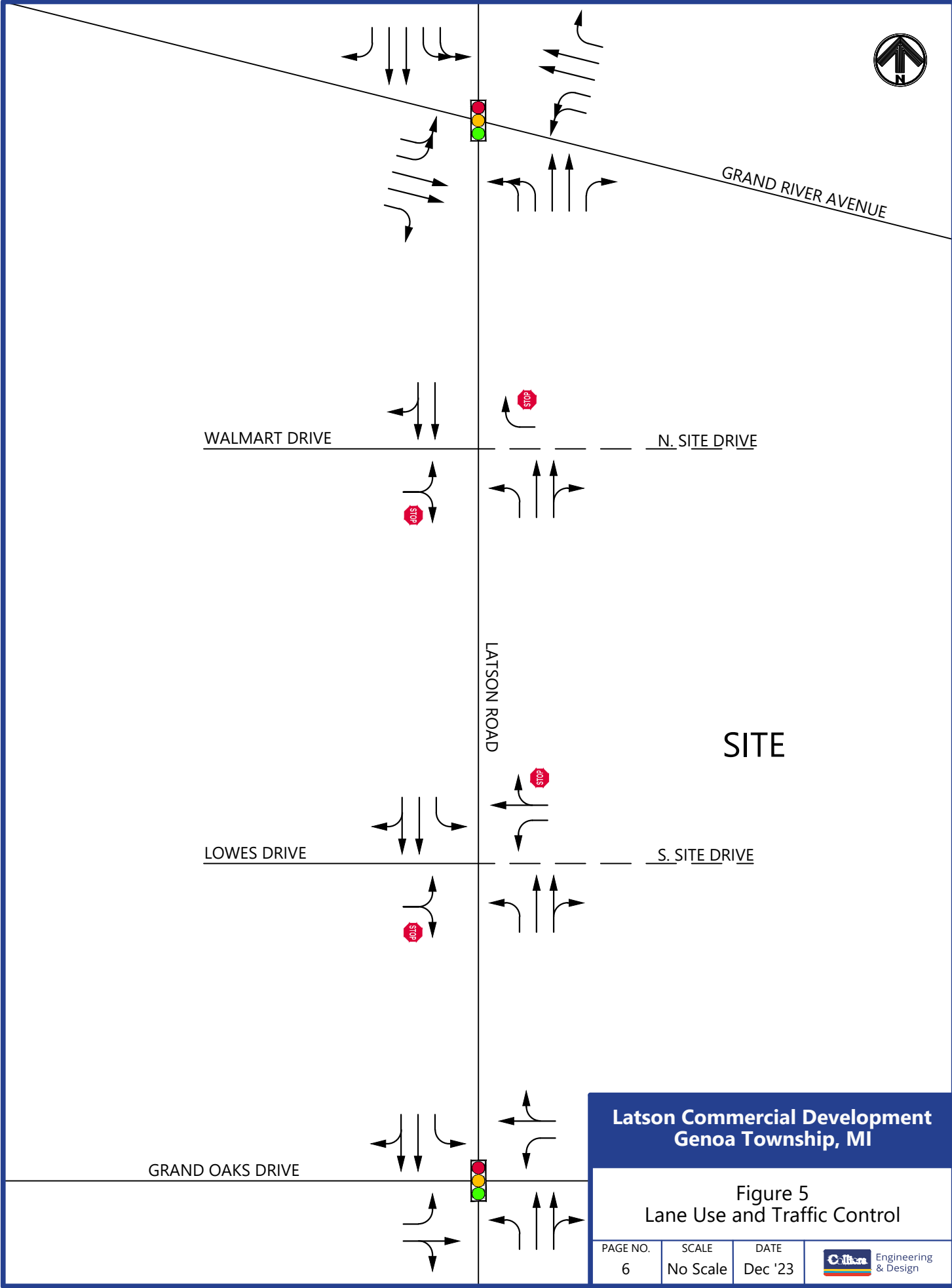


**Figure 4: Latson Road & Grand Oaks Drive Intersection**

### Existing Traffic Data

Existing weekday AM (7:00 to 9:00) and PM (4:00 to 6:00) peak hour turning movement counts were collected by CED at the study intersections. At the signalized intersections of Latson Road with Grand River Avenue and Grand Oaks Drive, counts were collected on Wednesday, November 13<sup>th</sup>, 2019. At the unsignalized Lowe's and Wal-Mart driveways with Latson Road, counts were collected on Thursday, August 10<sup>th</sup>, 2023.

Data were collected in 15-minute intervals to establish the current peak hour traffic volumes. Major weather events, holidays, and other local special events were avoided. During collection of the manual intersection turning movement count, pedestrian data and commercial truck percentages were also recorded and used in the traffic analysis. Peak hour factors (PHFs) and commercial truck percentages were calculated by approach based on the requirements of MDOT's *Electronic Traffic Control Device Guidelines*. Traffic volumes along Latson Road were balanced upward between the Wal-Mart driveway and Grand River Avenue. Between Grand Oaks Drive and the north Lowe's driveway, a dummy node was utilized to account for the large amount of traffic that turns in and out of the south Lowe's driveway. All relevant traffic volume data are included in Appendix A and the resulting 2023 baseline peak hour volumes utilized for this study are summarized on **Figure 6**.



GRAND RIVER AVENUE

WALMART DRIVE

N. SITE DRIVE

LATSON ROAD

SITE

LOWES DRIVE

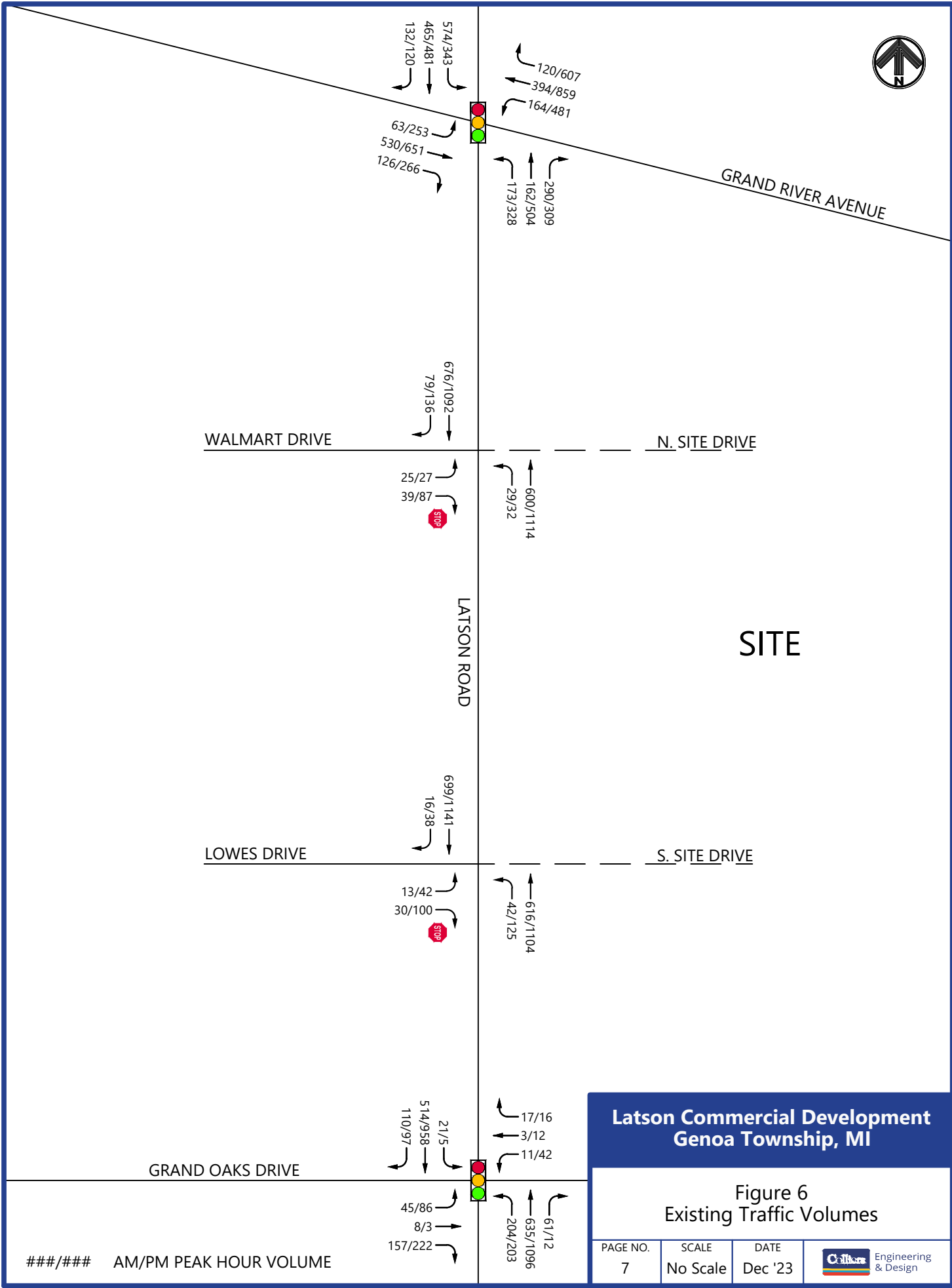
S. SITE DRIVE

GRAND OAKS DRIVE

**Latson Commercial Development  
Genoa Township, MI**

Figure 5  
Lane Use and Traffic Control

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SITE

**Latson Commercial Development  
Genoa Township, MI**

**Figure 6  
Existing Traffic Volumes**

###/### AM/PM PEAK HOUR VOLUME

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## 2023 Existing Conditions

### Analysis Methodologies

The performance of the study intersections was evaluated through a qualitative measure of operating conditions called Levels of Service (LOS). Six LOS are defined with letter designations from A to F with LOS A representing minimal delay, and LOS F indicating failing conditions. Typically, LOS D is considered acceptable in suburban/urban areas.

The LOS measurement for both signalized and unsignalized intersections is average control delay, which is quantified in terms of seconds of delay per vehicle. Control delay includes deceleration delay, stopped delay, queue move-up delay, and acceleration delay. The LOS criteria for unsignalized and signalized intersections taken from the HCM are included in Appendix B.

The LOS and delay calculations are based on the procedures and methodologies outlined in the Transportation Research Board's Highway Capacity Manual, 6th Edition (HCM6) which sets forth nationally accepted standards regarding traffic operations and capacity analysis. Traffic signal timings were modeled per traffic signal timing permits provided by LCRC.

Simulations of the study network were also observed using SimTraffic in order to identify potential issues related to vehicle queuing, traffic flow between intersections, and the overall study network. The existing conditions SimTraffic models were calibrated in accordance with the procedures outlined in the MDOT Electronic Traffic Control Device Guidelines.

### Existing Traffic Conditions

Existing peak hour vehicle delays and LOS were calculated at the study intersections based on the existing lane configurations and traffic control shown on **Figure 5**, the existing traffic volumes shown on **Figure 6**, and the methodologies presented in the HCM. The results of the analysis of existing conditions are presented in **Appendix B**, summarized in **Table 2** and described in further detail below.

The results of the existing conditions analysis indicate that all approaches and movements at the study intersections are currently operating acceptably at a LOS D or better with the exception of the following:

- The NB right-turn movement at the signalized intersection of Grand River Avenue & Latson Road currently operates at a LOS E during the AM peak hour. During the PM peak hour, the NB left-turn movement operates at a LOS E while the WB left, and right-turn movement and SB left-turn movement operate at a LOS F.
- The STOP controlled Lowes Drive approach which currently operates at a LOS E during the PM peak hour.

Observation of peak hour simulations indicates acceptable traffic operations during the AM peak hour and significant vehicle queues are not observed. During the PM peak hour, long vehicle queues are observed for the WB right-turn movement and NB and SB left-turn movements at the

intersection of Grand River Avenue & Latson Road which occupy available storage lengths. A long vehicle queue is also observed for the STOP controlled Lowes driveway approach which lasts throughout the majority of the PM peak hour.

**Table 2: Existing Conditions**

Intersection	Control	Approach	Movement	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.8	D
			Thru	30.8	C	39.6	D
			Right	21.4	C	26.9	C
		WB	Left	49.4	D	64.6	E
			Thru	26.7	C	37.2	D
			Right	12.7	B	56.9	E
		NB	Left	44.3	D	73.0	E
			Thru	36.4	D	39.7	D
			Right	62.3	E	28.1	C
		SB	Left	41.7	D	108.2	F
			Thru	30.1	C	40.8	D
			Right	24.9	C	25.2	C
		<b>Overall</b>				<b>35.9</b>	<b>D</b>
Latson Road & Grand Oaks Drive / Ascension Medical Drive	Signal	EB	Left	30.8	C	27.4	C
			Thru/Right	37.9	D	33.3	C
		WB	Left	37.9	D	37.1	D
			Thru/Right	28.9	C	24.5	C
		NB	Left	8.4	A	15.2	B
			Thru/Right	6.0	A	10.3	B
		SB	Left	10.2	B	12.8	B
			Thru/Right	13.0	B	21.7	C
		<b>Overall</b>				<b>13.0</b>	<b>B</b>
Latson Road & Wal-Mart Drive	STOP (Minor)	EB	Left/Right	16.0	C	24.6	C
		NB	Left	10.1	B	12.2	B
			Thru	Free		Free	
SB	Thru/Right	Free		Free			
Latson Road & Lowes Drive	STOP (Minor)	EB	Left/Right	15.0	C	42.2	E
		NB	Left	10.0	B	13.5	B
			Thru	Free		Free	
		SB	Thru/Right	Free		Free	

## No-Build Conditions

### No-Build Traffic Volumes

Traffic impact studies typically include an evaluation of traffic operations in the future as they would be without the proposed development. This no-build condition serves to identify any mitigation that may be required, regardless of the project, and as a baseline for comparison of future buildout conditions. This scenario is comprised of existing traffic conditions, plus ambient traffic growth, plus traffic from approved developments in the study area that have yet to be constructed. At the time of this study the following developments were identified within the study area and immediate vicinity that have yet to be constructed or were currently under construction:

1. Versa Mixed-Use Development
2. Westbury Phase II Residential Development
3. SJMHS Hospital Expansion
4. Forest Ridge Residential Development
5. Pine Creek Residential Development

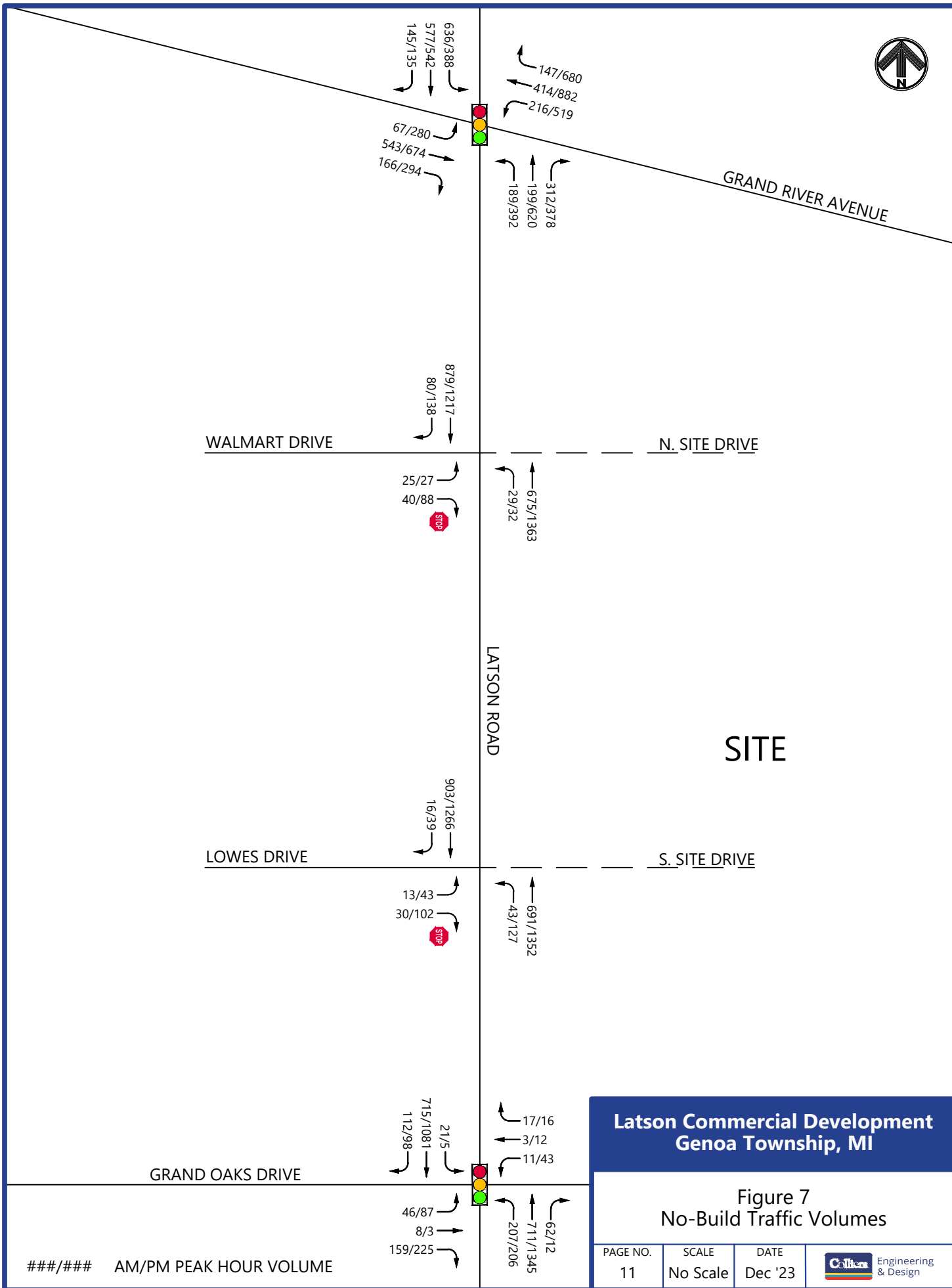
The vehicle trips that would be generated by the background developments were assigned to the study intersections based on the respective traffic study completed for each development. Where a traffic study was not completed for the development or the traffic study did not include the same intersections or time periods as this study, the number of vehicle trips was forecast based on data published by ITE in *Trip Generation, 11<sup>th</sup> Edition* and assigned to the study road network based on existing traffic patterns.

In addition to background developments, an ambient growth factor is applied to existing traffic volumes to account for future projects in the study area and population increases, as well as growth in regular traffic volumes due to development projects outside the study area. The recent construction of the I-96 & Latson Road interchange has resulted in significant changes in traffic patterns throughout the study area. As a result, historical traffic volumes do not provide an accurate representation of traffic growth in the area. Therefore, publicly available data from the Southeast Michigan Council of Governments (SEMCOG), including population and employment forecasts for Genoa Township were referenced.

The SEMCOG data indicates annual population and employment growths ranging from 0.35% to 1.64% between 2015 and 2045 as shown in **Table 3**. Therefore, an ambient background growth rate of 0.75% per year will be utilized for this study. The ambient growth rate and trips from the background developments were applied to the existing 2023 traffic volumes for a period of two years to forecast the no-build traffic volumes ***without the proposed development***. The resultant 2025 no-build traffic volumes are summarized on **Figure 7**.

**Table 3: Community Annual Growth Rate**

Community	Measure	Growth
Genoa Township	Employment	0.38%
	Population	1.54%
Howell	Employment	0.35%
	Population	0.57%
Brighton	Employment	0.47%
	Population	0.69%
Brighton Township	Employment	0.63%
	Population	1.64%
<b>Average</b>		<b>0.78%</b>



**Latson Commercial Development  
Genoa Township, MI**

**Figure 7  
No-Build Traffic Volumes**

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## No-Build Traffic Conditions

No-build peak hour vehicle delays and LOS were calculated at the study intersections based on the existing lane configurations and traffic control shown on **Figure 5**, the no-build traffic volumes shown on **Figure 7**, and the methodologies presented in the HCM. The results of the analysis of no-build conditions are presented in Appendix C, summarized in **Table 4**, and described in further detail below.

**Table 4: No-Build Traffic Conditions**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour			
				Existing		No-Build		Existing		No-Build	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.5	D	43.8	D	44.9	D
			Thru	30.8	C	33.0	C	39.6	D	42.5	D
			Right	21.4	C	23.2	C	26.9	C	28.7	C
		WB	Left	49.4	D	74.1	E	64.6	E	83.4	F
			Thru	26.7	C	28.3	C	37.2	D	42.2	D
			Right	12.7	B	13.2	B	56.9	E	104.3	F
		NB	Left	44.3	D	43.9	D	73.0	E	126.4	F
			Thru	36.4	D	37.5	D	39.7	D	47.6	D
			Right	62.3	E	71.9	E	28.1	C	31.7	C
		SB	Left	41.7	D	43.4	D	108.2	F	158.9	F
			Thru	30.1	C	31.5	C	40.8	D	44.4	D
			Right	24.9	C	24.6	C	25.2	C	24.8	C
		<b>Overall</b>				<b>35.9</b>	<b>D</b>	<b>39.4</b>	<b>D</b>	<b>48.7</b>	<b>D</b>
Latson Road & Grand Oaks Drive / Ascension Medical Drive	Signal	EB	Left	30.8	C	30.7	C	27.4	C	27.2	C
			Thru/Right	37.9	D	37.8	D	33.3	C	33.1	C
		WB	Left	37.9	D	37.9	D	37.1	D	37.1	D
			Thru/Right	28.9	C	28.8	C	24.5	C	24.3	C
		NB	Left	8.4	A	10.1	B	15.2	B	18.0	B
			Thru/Right	6.0	A	6.3	A	10.3	B	12.4	B
		SB	Left	10.2	B	10.4	B	12.8	B	16.2	B
			Thru/Right	13.0	B	14.9	B	21.7	C	24.8	C
<b>Overall</b>				<b>13.0</b>	<b>B</b>	<b>13.8</b>	<b>B</b>	<b>18.3</b>	<b>B</b>	<b>20.0</b>	<b>C</b>
Latson Road & Wal-Mart Drive	STOP (Minor)	EB	Left/Right	16.0	C	19.9	C	24.6	C	30.2	D
		NB	Left	10.1	B	11.4	B	12.2	B	13.1	B
			Thru	Free		Free		Free		Free	
		SB	Thru/Right	Free		Free		Free		Free	
Latson Road & Lowes Drive	STOP (Minor)	EB	Left/Right	15.0	C	18.4	C	42.2	E	65.1	F
		NB	Left	10.0	B	11.3	B	13.5	B	15.0	B
			Thru	Free		Free		Free		Free	
		SB	Thru/Right	Free		Free		Free		Free	

The results of the no-build conditions analysis indicate that all approaches and movements would continue to operate similar to existing conditions during both peak hours with the exception of the signalized intersection of Grand River Avenue & Latson Road which would be reduced to an overall LOS E during the PM peak hour. Additionally, several approaches and movements would be reduced to a LOS E or F including the WB left-turn movement during the AM peak hour and WB left

and right-turn movements and NB left-turn movement during the PM peak hour. At all other study intersections, no-build conditions remain acceptable and/or similar to existing conditions.

Review of network simulations continue to indicate acceptable traffic operations during the AM peak hour and significant vehicle queues are not observed. During the PM peak hour, long vehicle queues and cycle failures occur with increased frequency at the intersection of Grand River Avenue & Latson Road, as compared to existing conditions. Specifically, a long vehicle queue is observed for the SB left-turn movement and WB right-turn movement which exceeds available storage length throughout the majority of the PM peak hour. It should be noted that these operations reflect modeled prohibition of all right turns on red at this intersection. The dynamic case signs allow for additional right turn demand processing and would result in shorter queues for actual field conditions.

### No-Build Improvements

In order to improve traffic operations in the no-build conditions, mitigation measures were investigated. At the intersection of Grand River Avenue & Latson Road, recent improvements were made as part of the I-96 & Latson Road interchange project to provide dual left-turn lanes and right turn overlap phasing on all approaches, as well as additional travel lanes along Latson Road. The intersection of Grand River Avenue & Latson Road is considered to be built out, and additional physical capacity improvements (i.e., additional lanes) at this intersection are constrained by available right-of-way. Therefore, further geometric improvements at the intersection to mitigate all movements to a LOS D or better are considered to be regional and beyond the scope and context of this study.

As a result, improvements at Grand River Avenue & Latson Road are limited to signal timing and traffic control modifications. Signal cycle length and timing changes were therefore evaluated. The results of this analysis indicate that optimized timings with a 90 second cycle length during both peak hours would result in improved traffic operations; however, several intersection approaches and movements would continue to operate at a LOS E or F during the peak hours (noting modeling constraints for dynamic right turn on red). The results of the no-build conditions analysis with the optimized signal timings are summarized in **Table 5**.

Although these improvements are needed to help mitigate no-build operations; these improvements are not included in any planned roadway improvements. Therefore, the build conditions analysis for this study evaluates traffic operations with the existing traffic signal timings and geometrics at the intersections.

**Table 5: No-Build Traffic Conditions with Improvements**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour			
				No-Build		No-Build IMP		No-Build		No-Build IMP	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.5	D	44.9	D	48.4	D
			Thru	33.0	C	32.8	C	42.5	D	47.1	D
			Right	23.2	C	23.7	C	28.7	C	27.5	C
		WB	Left	74.1	E	47.1	D	83.4	F	63.4	E
			Thru	28.3	C	26.8	C	42.2	D	41.5	D
			Right	13.2	B	13.2	B	104.3	F	78.4	F
		NB	Left	43.9	D	47.2	D	126.4	F	64.3	E
			Thru	37.5	D	37.5	D	47.6	D	65.8	E
			Right	71.9	E	58.6	E	31.7	C	33.5	C
		SB	Left	43.4	D	54.7	D	158.9	F	80.0	F
			Thru	31.5	C	32.5	C	44.4	D	57.3	E
			Right	24.6	C	25.3	C	24.8	C	26.8	C
		<b>Overall</b>			<b>39.4</b>	<b>D</b>	<b>38.6</b>	<b>D</b>	<b>65.5</b>	<b>E</b>	<b>55.2</b>

## Build Conditions

The proposed development plan includes construction of a 2,950 SF coffee-shop with drive-through, 2,700, SF sit-down restaurant, 4,025 SF of general retail space, and automated car wash. Two different site access alternatives were evaluated for the development per the request of LCRC. Alternative 1 analyzes a single site driveway to Latson Road aligned with the existing Lowes Drive. Alternative 2 includes an additional right-in-right-out only driveway to Latson Road at the north end of the subject site.

## Site Trip Generation

The number of AM and PM peak hour vehicle trips that will be generated by the proposed development will be forecast based on the rates and equations published by ITE in *Trip Generation, 11<sup>th</sup> Edition*. The proposed development plans include a 2,950 SF coffee-shop with drive-through, 2,700 SF sit-down restaurant, 4,025 SF of general retail space, and automated car wash.

The proposed uses were matched to the ITE land use category that most closely matches their proposed operation. For this study, ITE *Land Use #822, Strip Retail Plaza* was utilized for the retail space, *Land Use #932, High-Turnover Sit-Down Restaurant*, was utilized for the proposed restaurant, *Land Use #937, Coffee-Shop with Drive-Through* was utilized for the coffee-shop, and *Land Use #948, Automated Car Wash* was utilized for the carwash. For Land Use #948, trip generation data is not available during the AM peak hour as most carwashes are closed during this time frame or generate small amounts of traffic; however, to provide a conservative approach, AM peak hour trips were forecast to be 25% of the PM peak hour trips for this study.

As is typical of most retail and restaurant uses, a portion of the site-generated trips are already present on the adjacent road network and are interrupted to visit the site. These trips are known as 'pass-by' trips, which create turning movements at the site driveways, but do not increase traffic volumes on the adjacent road network or off-site intersections. Similar to pass-by trips, a portion of

the site-generated trips are vehicles that are traveling on the adjacent roadway that alter their direction of travel to visit the site then return to their original route. These trips are known as “diverted-link” trips. For the purposes of this study, pass-by trips were assumed to follow existing traffic patterns along Latson Road. Diverted link trips were applied to turning movements patterns at the intersection of Grand River Avenue & Latson Road.

ITE publishes pass-by rates for various commercial land uses in the *Trip Generation Handbook*. For Land Use #822 and #932, 34% and 43% of trips are expected to be pass-by in nature. ITE does not publish pass-by data for Land Use #937 or #948. For Land Use #937, 50% of trips were assumed to be pass-by in nature consistent with other fast-food with drive-through uses. For Land Use #948, 35% of trips were assumed to be pass-by in nature based on data for drive-in banks and other retail uses. The diverted-link trips are assumed to represent a portion of the pass-by trips, not an additional reduction to overall site trip generation. These trips are already present at the intersection of Grand River Avenue & Latson Road but divert to visit the site. The number of pass-by and diverted-link vehicle trips was subtracted from the total number of site-generated trips to determine the number of new peak hour trips for the overall development. The resultant trip generation forecast for the proposed development is shown in **Table 6**.

**Table 6: Site Trip Generation**

Land Use	ITE Code	Amount	Units	ADT	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Strip Retail Plaza	822	4,025	SF	400	9	6	15	21	20	41
		Pass-By (34% PM)		136	0	0	0	7	7	14
		New Trips		264	9	6	15	14	13	27
High-Turnover (Sit-Down) Restaurant	932	2,700	SF	289	14	12	26	15	9	24
		Pass-By (43%)		124	5	5	10	5	5	10
		New Trips		165	9	7	16	10	4	14
Coffee Shop with Drive-Through	937	2,950	SF	1,574	129	124	253	58	57	115
		Pass-By (50%)		787	63	63	126	29	29	58
		New Trips		787	66	61	127	29	28	57
Automated Car Wash	948	1	Tunnel	0	10	10	20	39	39	78
		Pass-By (35%)		0	3	3	6	13	13	26
		New Trips		0	7	7	14	26	26	52
Total		<b>Total Trips</b>		<b>2,263</b>	<b>162</b>	<b>152</b>	<b>314</b>	<b>133</b>	<b>125</b>	<b>258</b>
		<b>Pass-By Trips</b>		<b>1,047</b>	<b>71</b>	<b>71</b>	<b>142</b>	<b>54</b>	<b>54</b>	<b>108</b>
		<b>New Trips</b>		<b>1,216</b>	<b>91</b>	<b>81</b>	<b>172</b>	<b>79</b>	<b>71</b>	<b>150</b>

### Trip Distribution

The vehicle trips that would be generated by the proposed development were assigned to the study road network based on existing peak hour traffic patterns, local population densities, and ITE methodologies. These methods indicate that pass-by trips enter and exit the development in their original direction of travel and new trips will return to their direction of origin. Peak hour traffic volumes on Grand River Avenue and Latson Road were reviewed together with local population densities to determine the origin and destinations of new site-generated traffic. Pass-by traffic was



assumed to follow existing traffic patterns along Latson Road and at the intersection of Grand River Avenue & Latson Road. The resultant site trip distribution is summarized in **Table 7**.

Site-generated trips were assigned to the site driveways based on these trip distribution percentages and the proposed site access plan for each alternative. For Alternative 1, all trips were assigned to enter and exit the site via the single site driveway. For Alternative 2, the north site driveway is expected to service both the carwash and retail uses while the south site driveway is expected to primarily service the retail / restaurant uses. Therefore, all retail / restaurant traffic was assumed to utilize the south site driveway while all car-wash traffic was assumed to utilize the north site driveway with the exception of restricted turning movements at the north site driveway. Traffic for these movements was assumed to utilize the south site driveway.

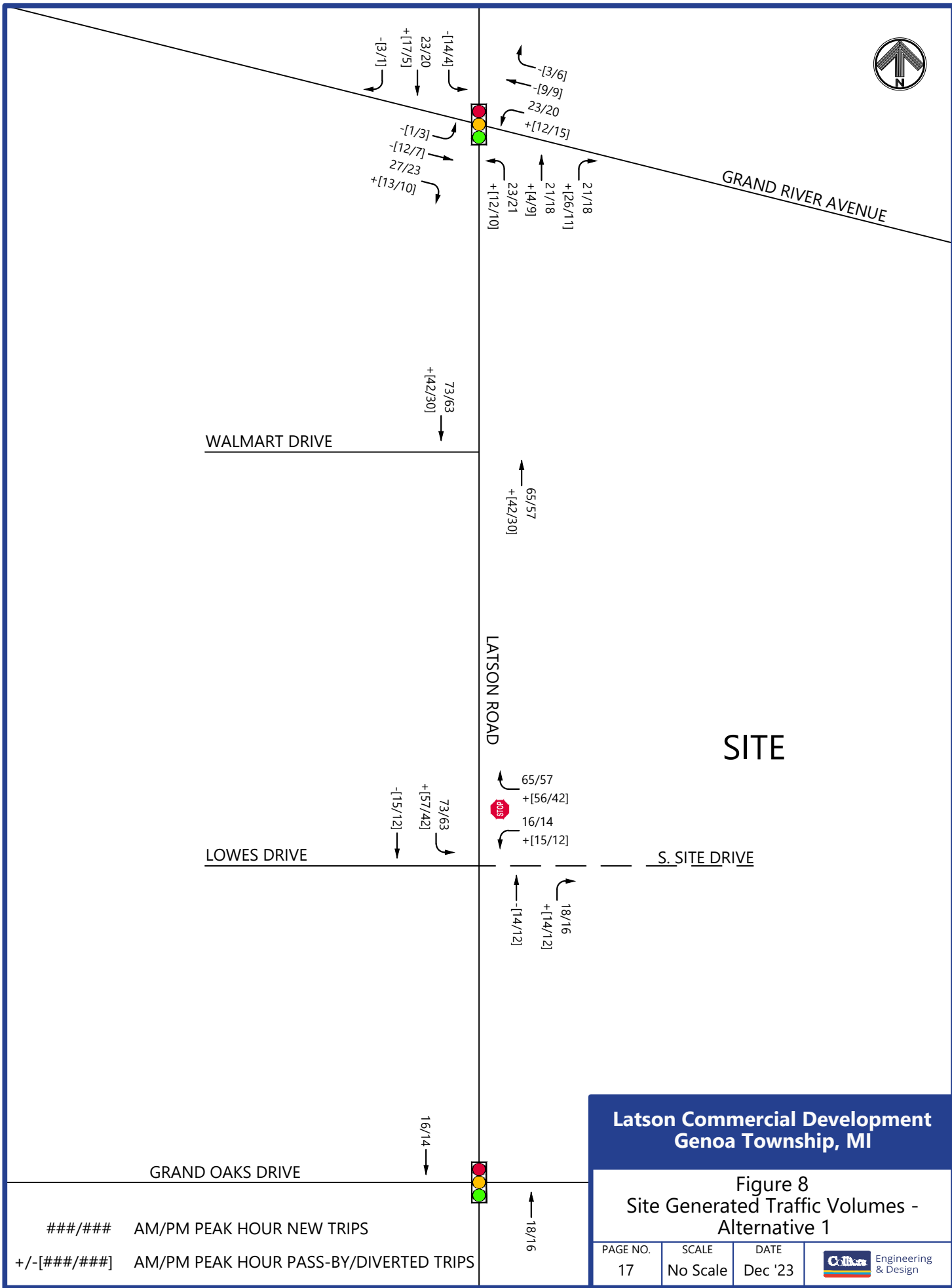
**Table 7: Site Trip Distribution**

NEW TRIPS			PASS-BY / DIVERTED TRIPS				
To/From	Via	AM/PM	From	To	Via	AM	PM
North	Latson Road	25%	South	North	Latson Road	19%	22%
South	Latson Road	20%	North	South	Latson Road	22%	22%
East	Grand River Avenue	25%	North	East	Grand River Avenue	19%	7%
West	Grand River Avenue	30%	North	West	Grand River / Latson	4%	2%
			West	North	Grand River / Latson	2%	12%
			West	East	Grand River / Latson	17%	17%
			East	North	Grand River / Latson	4%	5%
			East	West	Grand River / Latson	13%	13%
<b>Total</b>		<b>100%</b>	<b>Total</b>			<b>100%</b>	<b>100%</b>

The site-generated vehicle trips were assigned to the study network as shown on **Figure 8** and **Figure 9**. These trips were added to the 2025 no-build traffic volumes shown on **Figure 7** to calculate the future build traffic volumes shown on **Figure 10** and **Figure 11**.

### Build Conditions – Alternative 1


Future build peak hour vehicle delays and LOS with the proposed development were calculated based on existing lane configurations and traffic control shown on **Figure 5**, build traffic volumes shown on **Figure 10**, and HCM methodologies. SimTraffic simulations were also utilized to evaluate traffic flow and vehicle queues throughout the study network. The build conditions results for site access Alternative 1 are included in **Appendix D** and summarized in **Table 8**.

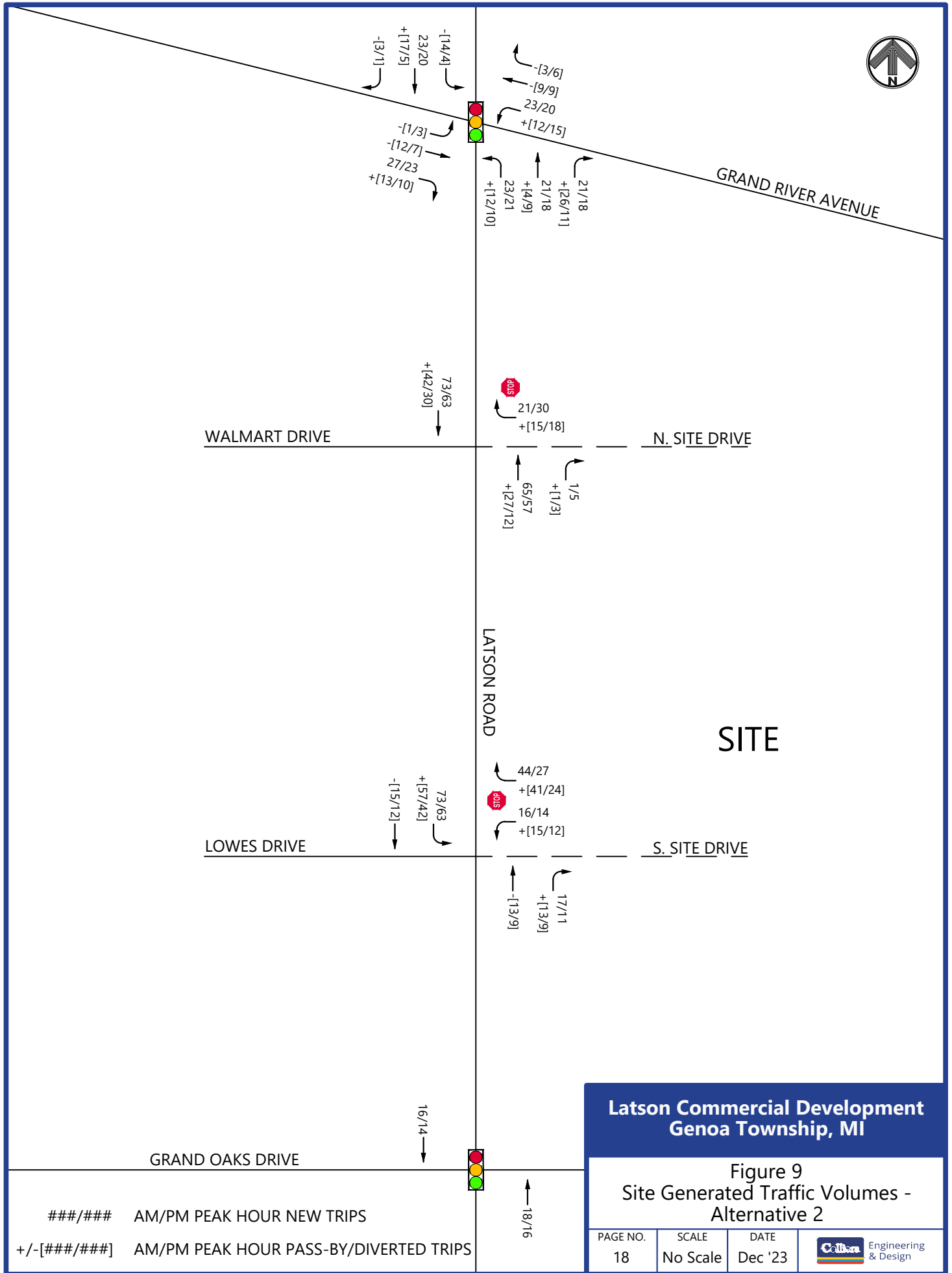


###/### AM/PM PEAK HOUR NEW TRIPS  
 +/-[###/###] AM/PM PEAK HOUR PASS-BY/DIVERTED TRIPS

**Latson Commercial Development  
 Genoa Township, MI**

**Figure 8  
 Site Generated Traffic Volumes -  
 Alternative 1**

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**Latson Commercial Development  
Genoa Township, MI**

**Figure 9  
Site Generated Traffic Volumes -  
Alternative 2**

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###/### AM/PM PEAK HOUR NEW TRIPS  
+/-[###/###] AM/PM PEAK HOUR PASS-BY/DIVERTED TRIPS



GRAND RIVER AVENUE

622/384  
617/567  
142/134

144/674  
405/873  
251/554

66/277  
531/667  
206/327

359/407  
224/647  
224/423

WALMART DRIVE

994/1310  
80/138

25/27  
40/88

782/1450  
29/32

LATSON ROAD

LOWES DRIVE

130/105  
888/1254  
16/39

121/99  
31/26

S. SITE DRIVE

13/43  
30/102

32/28  
677/1340  
43/127

GRAND OAKS DRIVE

21/5  
731/1095  
112/98

17/16  
3/12  
11/43

46/87  
8/3  
159/225

62/12  
729/1361  
207/206

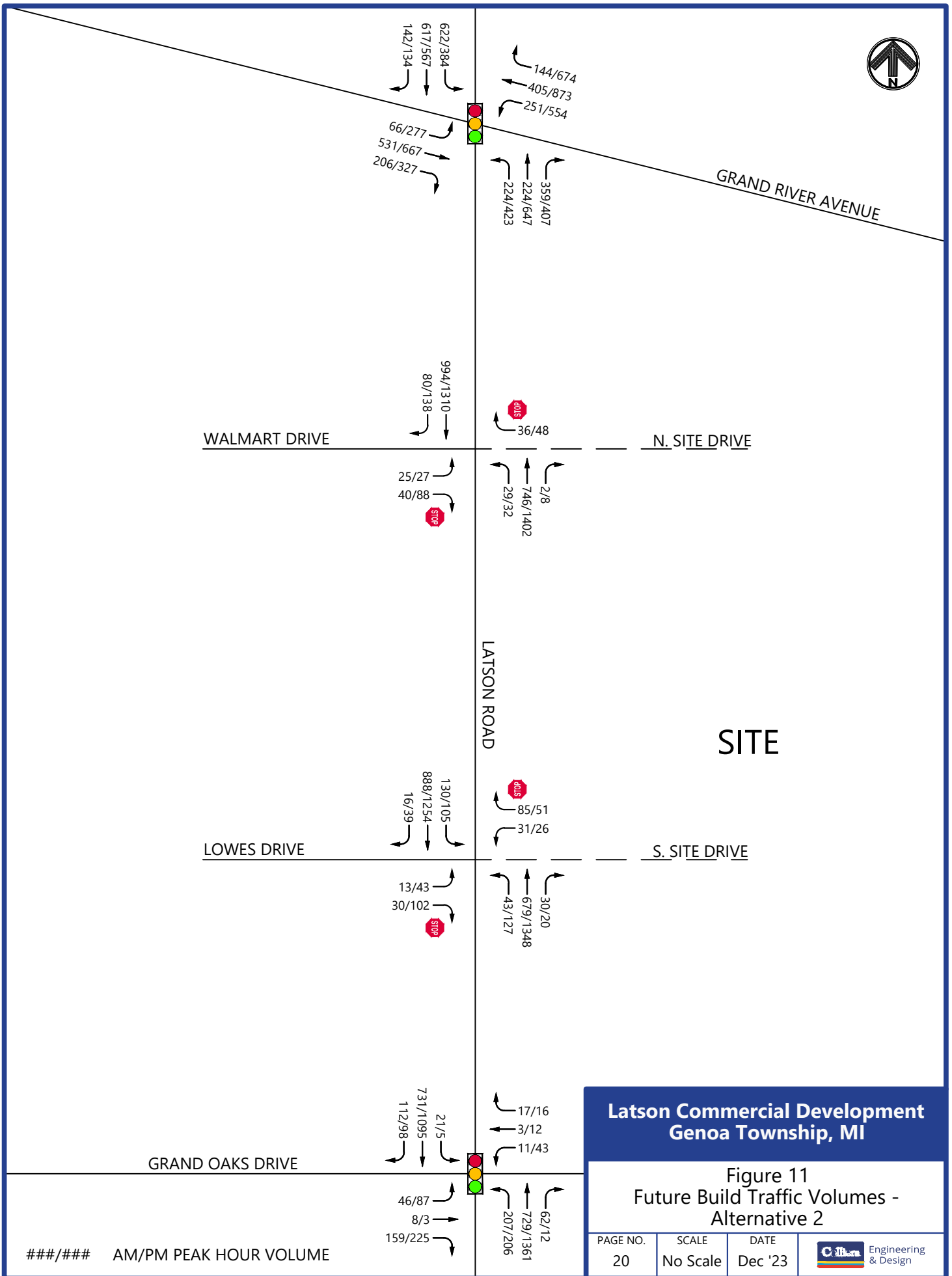
SITE

### Latson Commercial Development Genoa Township, MI

### Figure 10 Future Build Traffic Volumes - Alternative 1

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###/### AM/PM PEAK HOUR VOLUME



GRAND RIVER AVENUE

WALMART DRIVE

N. SITE DRIVE

LOWES DRIVE

S. SITE DRIVE

GRAND OAKS DRIVE

LATSON ROAD

SITE

**Latson Commercial Development  
Genoa Township, MI**

**Figure 11  
Future Build Traffic Volumes -  
Alternative 2**

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###/### AM/PM PEAK HOUR VOLUME

**Table 8: Build Traffic Conditions - ALT 1**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour			
				No-Build		Build - ALT 1		No-Build		Build - ALT 1	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.5	D	44.9	D	44.8	D
			Thru	33.0	C	32.4	C	42.5	D	41.9	D
			Right	23.2	C	23.1	C	28.7	C	30.9	C
		WB	Left	74.1	E	114.2	F	83.4	F	105.0	F
			Thru	28.3	C	27.8	C	42.2	D	41.2	D
			Right	13.2	B	13.1	B	104.3	F	99.3	F
		NB	Left	43.9	D	43.1	D	126.4	F	159.3	F
			Thru	37.5	D	38.4	D	47.6	D	51.4	D
			Right	71.9	E	111.3	F	31.7	C	34.0	C
		SB	Left	43.4	D	42.9	D	158.9	F	153.5	F
			Thru	31.5	C	34.6	C	44.4	D	47.2	D
			Right	24.6	C	25.9	C	24.8	C	24.8	C
		<b>Overall</b>				<b>39.4</b>	<b>D</b>	<b>47.0</b>	<b>D</b>	<b>65.5</b>	<b>E</b>
Latson Road & Grand Oaks Drive / Ascension Medical Drive	Signal	EB	Left	30.7	C	30.7	C	27.2	C	27.2	C
			Thru/Right	37.8	D	37.8	D	33.1	C	33.1	C
		WB	Left	37.9	D	37.9	D	37.1	D	37.1	D
			Thru/Right	28.8	C	28.8	C	24.3	C	24.3	C
		NB	Left	10.1	B	10.3	B	18.0	B	18.4	B
			Thru/Right	6.3	A	6.4	A	12.4	B	12.6	B
		SB	Left	10.4	B	10.4	B	16.2	B	16.4	B
			Thru/Right	14.9	B	15.1	B	24.8	C	25.2	C
<b>Overall</b>				<b>13.8</b>	<b>B</b>	<b>13.8</b>	<b>B</b>	<b>20.0</b>	<b>C</b>	<b>20.2</b>	<b>C</b>
Latson Road & Wal-Mart Drive	STOP (Minor)	EB	Left/Right	19.9	C	23.1	C	30.2	D	35.3	E
		NB	Left	11.4	B	12.3	B	13.1	B	13.9	B
			Thru	Free		Free		Free		Free	
SB	Thru/Right	Free		Free		Free		Free			
Latson Road & Lowes Drive / Site Drive	STOP (Minor)	EB	Left	18.4	C	316.2	F	65.1	F	4,441.6	F
			Thru/Right			13.2	B			18.0	C
		WB	Left			296.3	F			2,842.9	F
			Thru/Right			13.2	B			18.4	C
		NB	Left	11.3	B	11.2	B	15.0	B	14.8	B
			Thru	Free		Free		Free		Free	
		SB	Left			10.8	B			14.8	B
			Thru/Right	Free		Free		Free		Free	

The results of the build conditions analysis indicate that the proposed development will not have a significant impact on the adjacent road network. All approaches and movements at the signalized intersections will continue to operate in a manner similar to no-build conditions and LOS for all movements will remain unchanged with the exception of the WB left-turn movement and NB right-turn movements at the intersection of Grand River Avenue & Latson Road which will be reduced from a LOS E to LOS F during the AM peak hour.

Most approaches will continue to operate acceptably at a LOS D or better during both peak hours. The signalized intersection of Grand River Avenue & Latson Road will continue to worsen with the

addition of site-generated traffic if those movements operating at a LOS E or F are not improved under no-build conditions.

At the proposed site driveway under site access Alternative 1, all approaches and movements will operate acceptably with the exception of the STOP controlled site driveway and Lowes Driveway left-turn movements which will operate at a LOS F during both peak hours. Review of peak hour simulations also indicate future build traffic operations which are similar to no-build conditions. Acceptable traffic operations are continued to be observed during the AM peak hour with no significant vehicle queues. Long vehicle queues and cycle failures are continued to be observed at the intersection of Grand River Avenue & Latson Road during the PM peak hour with queues for the NB, WB, and SB left-turn movements and WB right-turn movement exceeding available storage length. Additionally, brief periods of long vehicle queues are observed for the STOP controlled Lowes and site driveway approaches during the PM peak hour.

Vehicle queue lengths were also calculated and evaluated with respect to the proposed site driveways. On Latson Road, the NB approach queue from the signalized intersection of Grand River Avenue & Latson Road is critical to ingress and egress operation from the proposed site driveway. The queue length calculations based on SimTraffic simulations indicate queues from the intersection of Grand River Avenue & Latson Road will not block the site driveway during the AM peak hour; however, the NB left-turn queue will block the site driveway for approximately five minutes of the PM peak hour.

## Build Improvements

In order to improve traffic operations in the build conditions, the mitigation measures previously identified under no-build conditions were investigated at the intersection of Grand River Avenue & Latson Road. Additionally, a traffic signal warrant analysis was investigated at the proposed site driveway / Lowes Driveway intersection with Latson Road to improve site egress operations. The *Michigan Manual on Uniform Traffic Control Devices (MMUTCD)* documents the standards, support, and guidance to determine whether installation of a traffic control signal is justified at a particular location. For this analysis, Warrant 1 – Eight Hour Vehicular Volume and Warrant 2 – Four Hour Vehicular volume were evaluated. Warrant 1 and 2 are intended for application at locations where (Condition A) there is a large volume of intersecting traffic, or (Condition B) traffic volumes on a major street are so heavy that traffic on a minor approach suffers excessive delay or conflict in entering the major street.

The MMTUCD provides an option to analyze reduced volume (70%) thresholds in cases where the speed on the major street exceeds 40 mph. As the speed limit on Latson Road is 50 mph, the 70% threshold volumes were utilized in the analysis. The future traffic forecast for this study includes traffic volumes for only two hours (AM and PM peak hours). In order to evaluate the 8-hour traffic signal warrant, hourly variations for trip generation of each of the proposed uses and existing Lowes / Wal-Mart uses published by ITE were referenced. These variation rates were applied to the PM peak hour forecasts to determine future site traffic volumes for 24-hours. Existing traffic volumes along Latson Road were determined from 24-hour count data collected in October, 2021.



For this analysis, the existing Wal-Mart Drive intersection to the north was assumed to be restricted to a right-in-right-out only driveway with all left-turns reassigned to the Lowes driveway. Currently, a pork chop island is constructed within the driveway suggesting that turns were intended to be prohibited; however, there is no existing signage to actually prohibit turns from occurring. Additionally, the MMUTCD states that right-turn traffic should not be included in the minor street volume if the movement enters the major street with minimal conflicts. If a signal were to be installed at the intersection, separate lanes for left and right-turns should be provided on both the Lowes and site driveway approaches. Therefore, a 45% reduction to right-turn volumes on these approaches was utilized in accordance with the MDOT signal warrants spreadsheet.

The traffic signal warrant analysis results show that a signal is warranted at the intersection of Latson Road & Lowes Drive / Site Drive, as Warrant 1A would be met for eleven (11) hours of the day. Therefore, an actuated-coordinated traffic signal could be installed at the intersection with vehicle detection provided for the minor road approaches and movements. Additionally, permissive-protected left-turn phase is recommended for the NB and SB left-turn movements at the intersection. The relevant signal warrant analysis spreadsheets are included in **Appendix D**.

With the installation of a traffic signal at the intersection, all traffic signals along Latson Road from Grand River Avenue through the I-96 interchange should run on a 90 second cycle length to provide progression along Latson Road between the closely spaced intersections. The results of the build conditions analysis with these improvements are summarized in **Table 9** below and indicate improved operations at the intersection of Grand River Avenue & Latson Road; however, several approaches and movements will continue to operate at a LOS E or F during the peak hours. As previously discussed, this intersection is considered to be built out, and additional physical capacity improvements (i.e., additional lanes) are constrained by available right-of-way. Therefore, further geometric improvements at the intersection to mitigate all movements to a LOS D or better are considered to be regional and beyond the scope and context of this study.

At the intersection of Latson Road & Lowes Drive / site driveway, the installation of a traffic signal would result in all approaches and movements operating at a LOS D or better during both peak hours. Review of network simulations also indicates acceptable traffic operations at all study intersections with the exception of the Grand River Avenue & Latson Road intersection where long vehicle queues are continued to be observed for the WB approach during portions of the PM peak hour. However, simulations indicate that traffic is able to progress through the traffic signals along Latson Road with no queue spillback between the closely spaced intersections.

**Table 9: Build Traffic Conditions with Improvements – ALT 1**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour					
				Build - ALT 1		Build IMP		Build - ALT 1		Build IMP			
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.5	D	44.8	D	48.3	D		
			Thru	32.4	C	33.9	C	41.9	D	52.6	D		
			Right	23.1	C	24.9	C	30.9	C	30.9	C		
		WB	Left	114.2	F	49.8	D	105.0	F	79.3	E		
			Thru	27.8	C	26.6	C	41.2	D	44.8	D		
			Right	13.1	B	13.1	B	99.3	F	85.0	F		
		NB	Left	43.1	D	51.1	D	159.3	F	81.9	F		
			Thru	38.4	D	42.5	D	51.4	D	63.5	E		
			Right	111.3	F	77.2	E	34.0	C	35.7	D		
		SB	Left	42.9	D	51.6	D	153.5	F	77.1	E		
			Thru	34.6	C	35.2	D	47.2	D	53.8	D		
			Right	25.9	C	26.2	C	24.8	C	25.9	C		
		<b>Overall</b>				<b>47.0</b>	<b>D</b>	<b>41.5</b>	<b>D</b>	<b>69.4</b>	<b>E</b>	<b>59.1</b>	<b>E</b>
Latson Road & Grand Oaks Drive / Ascension Medical Drive	Signal	EB	Left	30.7	C	34.8	C	27.2	C	32.4	C		
			Thru/Right	37.8	D	50.1	D	33.1	C	46.4	D		
		WB	Left	37.9	D	42.9	D	37.1	D	44.9	D		
			Thru/Right	28.8	C	32.6	C	24.3	C	28.9	C		
		NB	Left	10.3	B	7.1	A	18.4	B	9.3	A		
			Thru/Right	6.4	A	6.2	A	12.6	B	11.1	B		
		SB	Left	10.4	B	0.3	A	16.4	B	0.9	A		
			Thru/Right	15.1	B	1.6	A	25.2	C	4.0	A		
		<b>Overall</b>				<b>13.8</b>	<b>B</b>	<b>9.3</b>	<b>A</b>	<b>20.2</b>	<b>C</b>	<b>12.6</b>	<b>B</b>
		Latson Road & Lowes Drive / Site Drive	Signal	EB	Left	316.2	F	42.5	D	4,441.6	F	52.2	D
Thru/Right	13.2				B	34.9	C	18.0	C	51.0	D		
WB	Left			296.3	F	36.6	D	2,842.9	F	44.0	D		
	Thru/Right			13.2	B	39.5	D	18.4	C	46.6	D		
NB	Left			11.2	B	6.0	A	14.8	B	5.3	A		
	Thru			Free		1.0	A	Free		2.1	A		
SB	Left			10.8	B	6.1	A	14.8	B	5.1	A		
	Thru/Right			Free		1.5	A	Free		2.0	A		
<b>Overall</b>						<b>5.7</b>	<b>A</b>			<b>6.9</b>	<b>A</b>		

### Build Conditions – Alternative 2

Future build peak hour vehicle delays and LOS with the proposed development were calculated based on existing lane configurations and traffic control shown on **Figure 5**, build traffic volumes shown on **Figure 11**, and HCM methodologies. SimTraffic simulations were also utilized to evaluate traffic flow and vehicle queues throughout the study network. As traffic volumes would remain the same at the off-site intersections under both site access alternatives, this section only summarizes results at the proposed site driveways along Latson Road. The build conditions results for site access Alternative 2 are included in **Appendix E** and summarized in **Table 10**.

The results of the build conditions analysis for site access Alternative 2 indicate that the STOP controlled left-turn movements from the Lowes Driveway and S. site driveway would continue to

operate at a LOS F during the peak hours; however, the proposed right-in-right-out only driveway would help to reduce vehicular delays and queues. Additionally, although the results of Alternative 1 demonstrate acceptable traffic operations with the installation of a traffic signal at the Lowes Driveway / S. site driveway intersection with Latson road, another closely spaced traffic signal along Latson Road may result in increased crashes along the corridor. The addition of a right-in-right-out only driveway would have minimal impact to traffic operations and safety along the corridor if designed and signed properly and would provide a remedial measure prior to installing a new traffic signal along the corridor. Therefore, site access Alternative 2 is recommended for the development.

**Table 10: Build Traffic Conditions – ALT 2**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour			
				Build - ALT 1		Build - ALT 2		Build - ALT 1		Build - ALT 2	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<b>Latson Road &amp; Wal-Mart Drive / RIRO Site Drive</b>	STOP (Minor)	EB	Left/Right	23.1	C	27.9	D	35.3	E	48.1	E
		WB	Right			13.4	B			19.6	C
		NB	Left	12.3	B	12.3	B	13.9	B	13.9	B
			Thru	Free		Free		Free		Free	
SB	Thru/Right	Free		Free		Free		Free			
<b>Latson Road &amp; Lowes Drive / Site Drive</b>	STOP (Minor)	EB	Left	316.2	F	265.3	F	4,441.6	F	3,752.1	F
			Thru/Right	13.2	B	13.2	B	18.0	C	18.0	C
		WB	Left	296.3	F	296.3	F	2,842.9	F	2,842.9	F
			Thru/Right	13.2	B	12.6	B	18.4	C	16.3	C
		NB	Left	11.2	B	11.2	B	14.8	B	14.8	B
			Thru	Free		Free		Free		Free	
		SB	Left	10.8	B	10.8	B	14.8	B	14.8	B
			Thru/Right	Free		Free		Free		Free	

## Conclusions

The Conclusions related to this Traffic Impact Study and relative analyses are as follows:

1. Existing weekday AM (7:00 to 9:00) and PM (4:00 to 6:00) peak hour turning movement counts were collected by CED at the study intersections. At the signalized intersections of Latson Road with Grand River Avenue and Grand Oaks Drive, counts were collected on Wednesday, November 13<sup>th</sup>, 2019. At the unsignalized Lowes and Wal-Mart driveways with Latson Road, counts were collected on Thursday, August 10<sup>th</sup>, 2023.
2. All study intersection approaches and movements currently operate acceptably at a LOS D or better during both peak hours with the exception of the following:
  - a. The NB right-turn movement at the signalized intersection of Grand River Avenue & Latson Road currently operates at a LOS E during the AM peak hour. During the PM peak hour, the NB left-turn movement operates at a LOS E while the WB left, and right-turn movement and SB left-turn movement operate at a LOS F.
  - b. The STOP controlled Lowes Drive approach which currently operates at a LOS E during the PM peak hour.

3. Ambient traffic growth of 0.75% was applied to establish 2025 no-build traffic volumes without the proposed development. Several background developments were also identified in the study area and included in this study.
4. No-build conditions analyses indicate that several movements at the intersection of Grand River Avenue & Latson Road will experience degraded operations.
5. Future build conditions analyses indicate that most study intersection approaches and movements will continue to operate acceptably; however, there are several movements with undesirable or failing conditions at the intersection of Grand River Avenue & Latson Road that are expected to worsen in the future if those movements operating at a LOS E or F are not improved under no-build conditions.
6. Under site access Alternative 1, a traffic signal is warranted at the intersection of Latson Road & Lowes Drive / Site Drive and would operate acceptably during the peak hours.
7. Under site access Alternative 2, the addition of a right-in-right-out only driveway would help to alleviate vehicular delays at the intersection of Latson Road & Lowes Drive / Site Drive and would provide a remedial measure prior to installing another traffic signal along Latson Road. Therefore, site access Alternative 2 is recommended.
8. With the improvements outlined below, all study network intersections and site driveways will operate acceptably, or in a manner similar or improved compared to no-build conditions during the peak hours.

Based on the results of this study, the following should be considered to provide acceptable traffic operations with the proposed development project:

1. Optimize signal timings at the intersection of Grand River Avenue & Latson Road.
2. Construct two driveways to Latson Road with the S. site driveway aligned with the existing Lowes driveway and the N. site driveway restricted to right-in-right-out only.



## Engineering & Design

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*Civil/Site • Traffic/Transportation • Governmental • Survey/Geospatial  
Infrastructure • Geotechnical/Environmental • Telecommunications • Utilities/Energy*



**PROPERTY DESCRIPTION:**

PROPERTY DESCRIPTION PER METRO CONSULTING ASSOCIATES  
 PROJECT #1037-17-8480 DATED 01-19-18 PARCEL  
 #4711-04-300-017

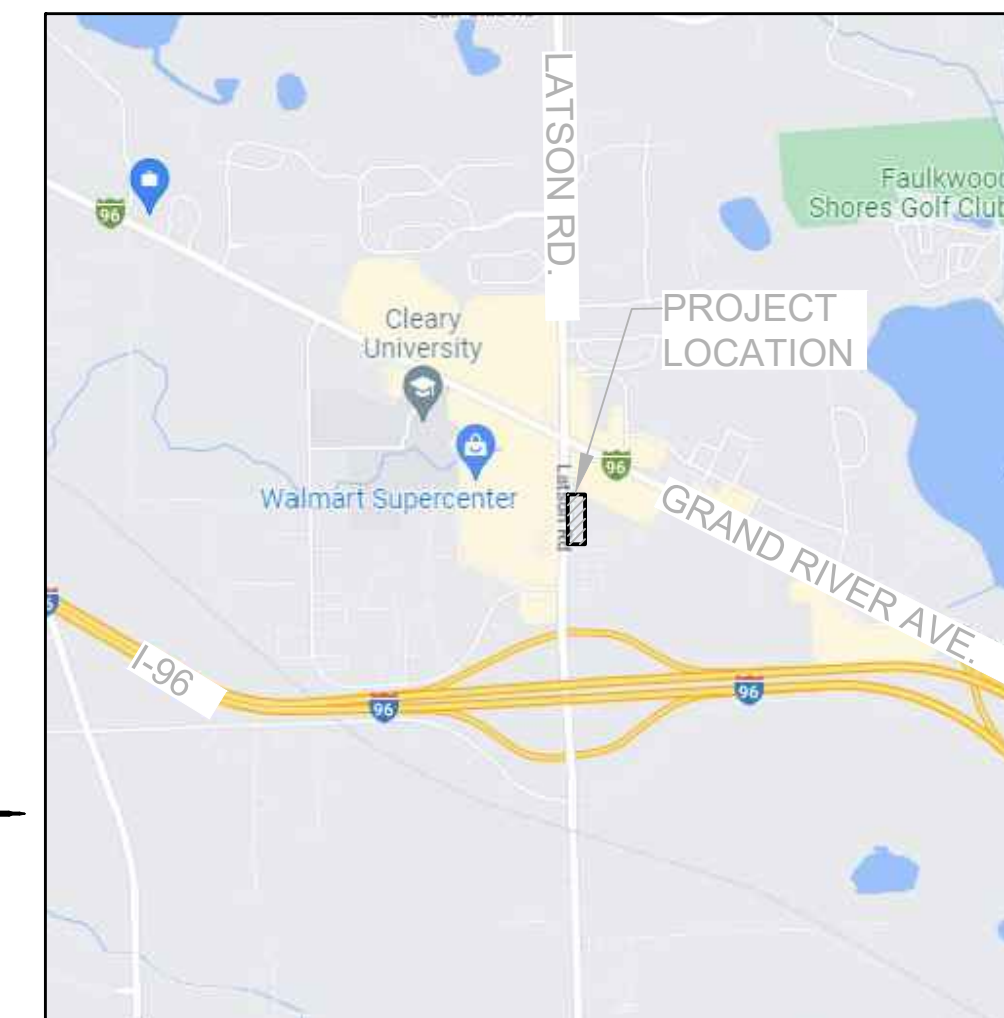
Commencing at the Southwest Corner of Section 4, Town 2 North, Range 5 West, Genoa Township, Livingston County, Michigan, said corner being N01°46'11"W 19.43 feet from a point referenced in Quit Claim Deed dated January 29, 1957, recorded April 4, 1961 in Liber 391, Page 382, Livingston County Records; thence N87°18'40"E 56.81 feet along the North line of said Section 9 and the South line of said Section 4, as established and approved by the Livingston County Remuneration Fee Group, dated June 6, 2002 and recorded in LSC# 177166, Livingston County Records to the POINT OF BEGINNING; thence 159.36 feet along the arc of a 10,060.00 foot radius non-tangential circular curve to the left, having a central angle of 0°54'27" having a chord which bears N00°15'46"W 159.36 feet along the East line of MDOT Right-of-Way as recorded in Instrument # 2011R-023812, Livingston County Records; thence N88°33'52"E 12.94 feet along the South line of Parcel 3 as described in a Warranty Deed recorded June 6, 2016, in Instrument # 2016R-019204 and the North line of the Consumers Power Company land per Warranty Deed recorded in 539, Page 13, Livingston County Records; thence 501°15'25"E 125.00 feet along said Consumers Power Company land and parallel with the West line of said Section 4; thence the following four (4) courses along the North, East and South line of a Quit-Claim Deed to Consumers Power Company, recorded in Liber 391, Page 382, Livingston County Records: (1) N88°33'52"E 12.94 feet (recorded as 13.00 feet), (2) S01°14'18"E 30.69 feet to the South line of said Section 4, (3) S01°14'18"E 30.69 feet and (4) S88°33'38"W 177.83 feet along the North line of the South 97.67 feet as stated in Warranty Deed recorded in Liber 232, Page 199, Livingston County Records; thence N01°46'11"W 61.11 feet along the West line of said Section 9 and within the Right-of-Way of Latson Road (Variable width); thence S88°33'52"E 33.10 feet along the South line of MDOT Right-of-Way as recorded in Instrument # 2011R-023812; thence the following two (2) courses along said Right-of-Way: (1) N01°07'25"E 93.32 feet and (2) 163.71 feet along the arc of a 10,060.00 foot radius circular curve to the left, with a central angle of 0°55'57", having a chord which bears N00°39'28"E 163.71 feet to the POINT OF BEGINNING. Containing 2.09 acres of land, more or less. Being part of the SW 1/4 of the SW 1/4 of Section 4 and part of the NW 1/4 of Section 9, Town 2 North, Range 5 East, Genoa Township, Livingston County, Michigan. Subject to the right of the Public over the West 33.00 feet thereof, as occupied by Latson Road (Variable Width), being subject to any other Easement and restrictions of record, if any.

**RESULTANT PARCEL PROPOSED PARCEL 1 (NORTH):**  
 Part of the Northwest 1/4 of Section 9 and Part of the Southwest 1/4 of Section 4, T2N-R5E, Genoa Township, Livingston County, Michigan, more particularly described as follows: Commencing at the Northwest Corner of Section 9, also being the Southwest 1/4 of Section 4, said corner being North 01 degree 46 minutes 11 seconds West, 19.43 feet from a point referenced in Quit Claim Deed, dated January 29, 1957, recorded April 4, 1961 in Liber 391, Page 382, Livingston County Records; thence along the North line of Section 9 and the South line of Section 4, N 87°18'40" E, 56.81 feet, to the POINT OF BEGINNING of the Parcel to be described; thence along the East line of MDOT Right-of-Way for Latson Road, as recorded in Instrument # 2011R-023812, Livingston County Records, Northerly along an arc right, having a length of 159.36 feet, a radius of 10,060.00 feet, a central angle of 0°54'27", and a long chord which bears N 00°15'46" W, 159.36 feet; thence N 88°33'52" E, 12.94 feet; thence S 01°15'25" E, 125.00 feet; thence N 88°33'52" E, 12.94 feet; thence S 01°14'18" E, 30.69 feet, to a point on the South line of Section 4 and the North line of Section 9; thence S 01°14'18" E, 30.69 feet; thence S 88°33'38" W, 177.83 feet; thence along the East line of MDOT Right-of-Way for Latson Road, as recorded in Instrument # 2011R-023812, Livingston County Records, the following two (2) courses: 1) N 01°07'25" E, 93.32 feet; 2) Northerly along an arc right, having a length of 163.71 feet, a radius of 10,060.00 feet, a central angle of 0°55'57", and a long chord which bears N 00°39'28" E, 163.71 feet, to the POINT OF BEGINNING, containing 1.58 acres, more or less, and including the use of Latson Road. Also subject to any other easements or restrictions of record.

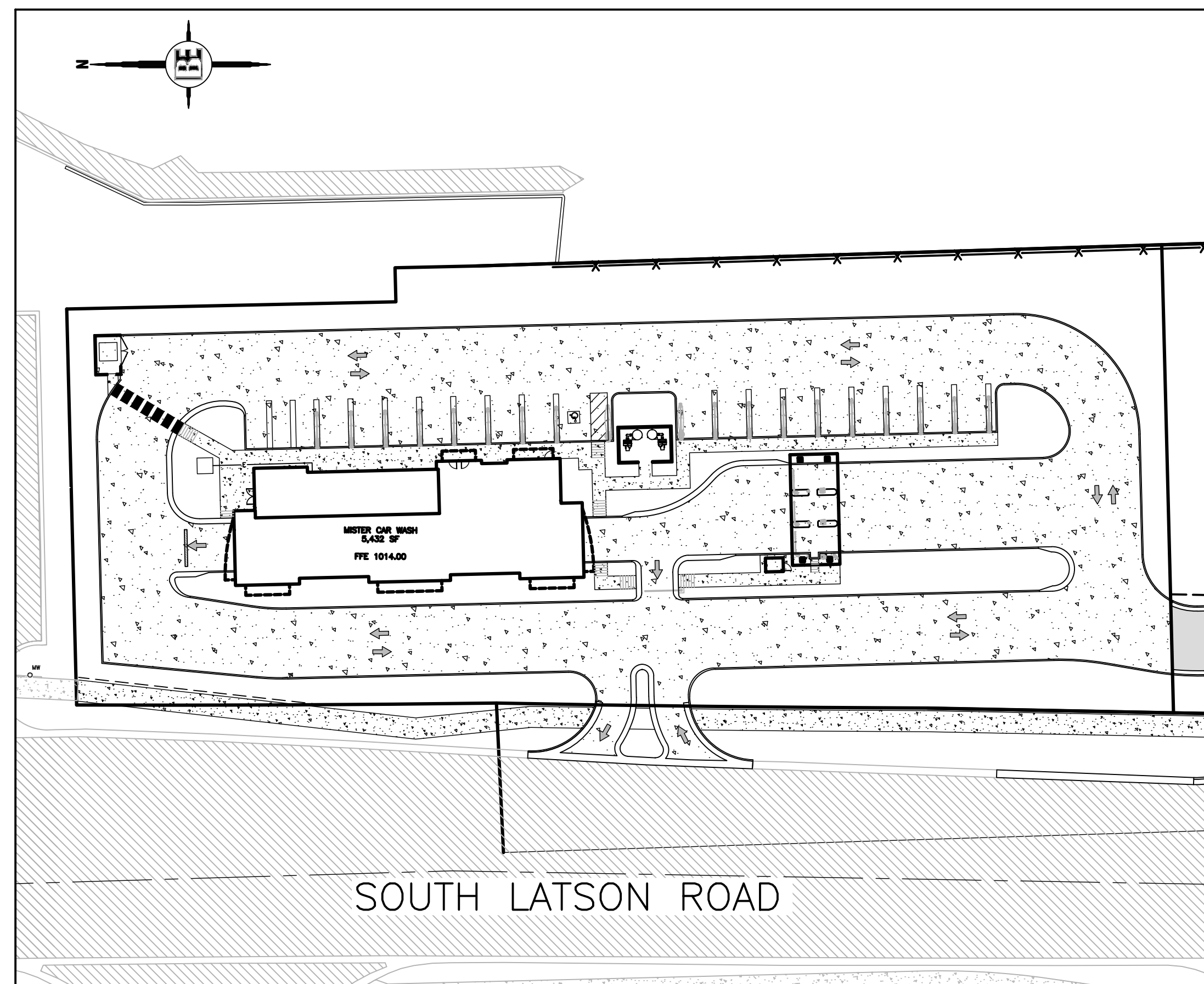
Bearings are based on Michigan State Plane Coordinate System, South Zone and legal description per Chicago Title Insurance Company, File No.: 21040145- C, Policy No.: 7430600-224063018, dated 6-4-21:

# SITE PLAN FOR MISTER CAR WASH

## PART OF NW QUARTER, SECTION 4 GENOA CHARTER TOWNSHIP, LIVINGSTON COUNTY, MI



**LOCATION MAP**  
NO SCALE



**OVERALL SITE MAP**  
NO SCALE

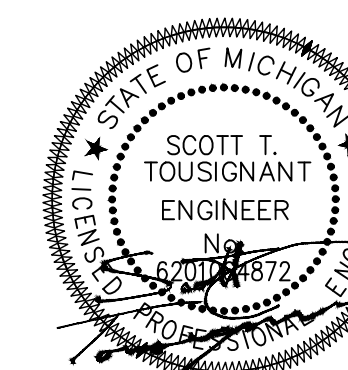
SHEET INDEX	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES & LEGEND
3	EXISTING CONDITIONS, DEMOLITION, & NATURAL FEATURES PLAN
4	OVERALL SITE PLAN
5	SITE PLAN
6	GRADING & DRAINAGE PLAN
7	SOIL EROSION & SEDIMENTATION CONTROL PLAN
8	UTILITY PLAN
9	LANDSCAPE PLAN
10	CONSTRUCTION DETAILS
11	BASIN DETAILS
12	UNDERGROUND DETENTION DETAILS
13-16	MHOG DETAILS
PLANS BY OTHERS	
PRE-01	PRELIMINARY DUMPSTER ENCLOSURE PLAN & ELEVATIONS
PRE-02	PRELIMINARY VACUUM EQUIPMENT ENCLOSURE PLAN & ELEVATIONS
PRE-03	PRELIMINARY ATTENDANT SHELTER PLANS & DETAILS
PRE-04	PRELIMINARY CANOPY PLANS & DETAILS
PRE-10R	PRELIMINARY EXTERIOR ELEVATIONS
PRE-11R	PRELIMINARY EXTERIOR ELEVATIONS
PRE-50R	PRELIMINARY FLOOR PLAN
PXP	ELECTRICAL SITE PLAN - PHOTOMETRIC

PERMITS & APPROVALS		
AGENCY	DATE SUBMITTED	DATE APPROVED
• TOWNSHIP ENGINEERING APPROVAL	--	--
• LCRC	--	--
• LCDC SESC	--	--
• EGLE - ACT 399	--	--

**APPLICANT:**  
 CWP WEST LLC  
 222 E 5TH AVE  
 TUCSON, AZ 85705  
 CONTACT: NICOLE KASTERN  
 PHONE: 206.664.1303  
 EMAIL: NKASTERN@MISTERCARWASH.COM

**OWNER:**  
 1015 LATSON ROAD LLC  
 29592 BECK RD  
 WIXOM, MI 48393  
 CONTACT: KEVIN BAHNAM  
 PHONE: 248.767.5337  
 EMAIL: KBAHNAM@USA2GOQUICKSTORES.COM

**PREPARED BY:**  
**BEBOSS**  
 Engineering  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670  
 CONTACT: SCOTT TOUSIGNANT, P.E.  
 EMAIL: SCOTT@BOSSENG.COM



**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.

FOR SITE PLAN APPROVAL ONLY!  
NOT FOR CONSTRUCTION

NO	BY	CK	REVISION	DATE	JOB NO:
3	ST	ST	LAYOUT MODIFICATIONS	01-16-24	<b>1</b>
2	ST	ST	PER P.C. MEETING	12-11-23	
1	ST	ST	PER TOWNSHIP COMMENTS	10-25-23	
				ISSUE DATE: 10/04/23	
				DATE	



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.
3. IF DUST PROBLEM OCCURS DURING CONSTRUCTION, CONTROL WILL BE PROVIDED BY AN APPLICATION OF WATER, EITHER BY SPRINKLER OR TANK TRUCK.
...
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.
...
11. ALL EXCAVATION UNDER OR WITHIN 3 FEET OF PUBLIC PAVEMENT, EXISTING OR PROPOSED SHALL BE BACKFILLED AND COMPACTED WITH SAND (MDOOT 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 ANSI 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, & 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.
...
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 - ADLPHI, 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-SEEDDED AND SUCH RE-SEEDING SHALL CONTINUE UNTIL A DENSE LAWN IS ESTABLISHED. DAMAGE TO SEEDDED AREAS RESULTING FROM EROSION SHALL BE REPAIRED BY THE CONTRACTOR.
...
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.

GENERAL UTILITY NOTES

- 1. BEDDING SHALL EXTEND A MINIMUM OF 4" BELOW THE PIPE, UNLESS OTHERWISE NOTED ON THE PLANS. BEDDING SHALL BE OF UNIFORM GRADATION MDOOT 6AA STONE OR MDOOT CLASS II GRANULAR MATERIAL FOR SANITARY AND STORM PIPE AND MDOOT CLASS II GRANULAR MATERIAL ONLY FOR WATERMAIN.
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 OF GRANULAR MATERIAL MDOOT CLASS II TO A POINT 12" ABOVE THE TOP OF THE PIPE AND THE TRENCH IS NOT WITHIN THE INFLUENCE OF THE ROAD, SUITABLE SITE MATERIAL MAY BE COMPACTED AND UTILIZED FROM A POINT 12" ABOVE THE PIPE TO GRADE. WHERE THE TRENCH IS WITHIN A 1:1 INFLUENCE OF THE ROAD, GRANULAR MATERIAL, MDOOT CLASS II OR III, IS TO BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 12" IN THICKNESS. COMPACTION SHALL BE 95% AS DETERMINED BY AASHTO 199.
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 MATERIALS SHALL BE AS FOLLOWS:
2.1. RCP(REINFORCED CONCRETE PIPE); SHALL MEET THE REQUIREMENTS OF ASTM C76 WITH MODIFIED GROOVED TONGUE AND RUBBER GASKETS MEETING THE REQUIREMENTS OF ASTM C443. RCP TO BE EITHER CLASS IV OR V AS CALLED OUT ON THE PLANS.
2.2. HDPE(HIGH DENSITY POLYETHYLENE); SHALL MEET THE REQUIREMENTS OF ASTM F2648.
2.3. PP(POLYPROPYLENE); SHALL MEET THE REQUIREMENTS OF ASTM F2881.
2.4. PVC(POLYVINYL CHLORIDE); SHALL MEET THE REQUIREMENTS OF ASTM D3034.
3. STORM PIPE JOINTS SHALL MEET THE REQUIREMENTS OF ASTM D3212. HDPE AND PP PIPE GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F477.
...
9. STORM DRAINAGE STRUCTURE COVERS SHALL BE OF THE FOLLOWING (OR APPROVED EQUAL):
TYPE LOCATION FRAME COVER/INLET
'MH' ALL 1040 SANITARY-SOLID SELF-SEALING STORM-VENTED
'CB' TYPE A CURB 7000-T1-M FLAT GRATE WITH VERT. OPEN BACK
'CB' TYPE B CURB 7065-T1-M FLAT GRATE WITH ROLL BACK
'CB' PAVEMENT/SHOULDER 1020-M1 FLAT GRATE
'CB' OPEN AREA 1020-01 BEEHIVE GRATE 4" HIGH
'CB' GUTTER 5100 CONCAVE INLET

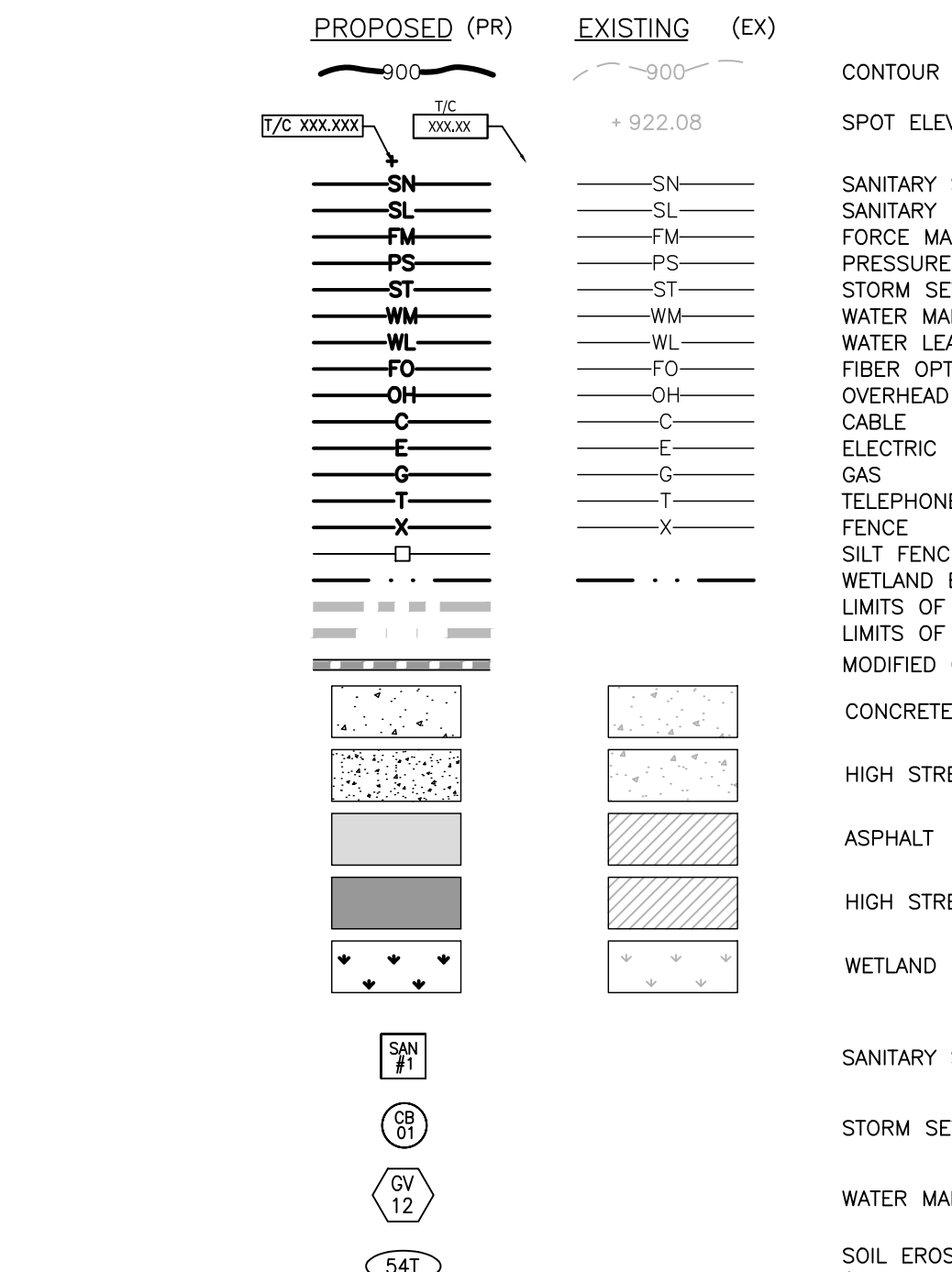
GENERAL SANITARY NOTES

- 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.
...
13. PUBLIC SANITARY SEWER SHALL BE CENTERED WITHIN A 20 FOOT WIDE SANITARY SEWER EASEMENT.

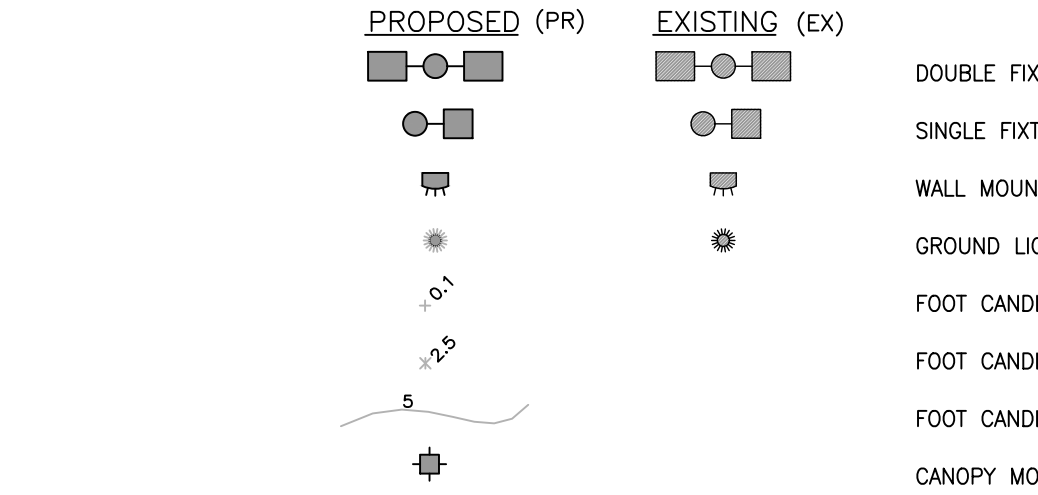
GENERAL WATERMAIN NOTES

- 1. WATERMAIN PIPE MATERIALS SHALL BE AS FOLLOWS:
1.1. D.I.P. CL52 (WATERMAIN)
1.2. TYPE 'K' COPPER (WATER LATERAL - MAIN TO CURB STOP)
1.3. HDPE DR-9 (WATER LATERAL - CURB STOP TO STUB)
2. WATERMAIN FITTINGS SHALL BE OF DUCTILE IRON WITH CEMENT MORTAR LINING AND MECHANICAL JOINTS CONFORMING TO AWWA C110.
3. WATERMANS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. BAC-T 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.
...
13. PUBLIC WATERMAIN SHALL BE CENTERED WITHIN A 25 FOOT WIDE WATERMAIN EASEMENT.

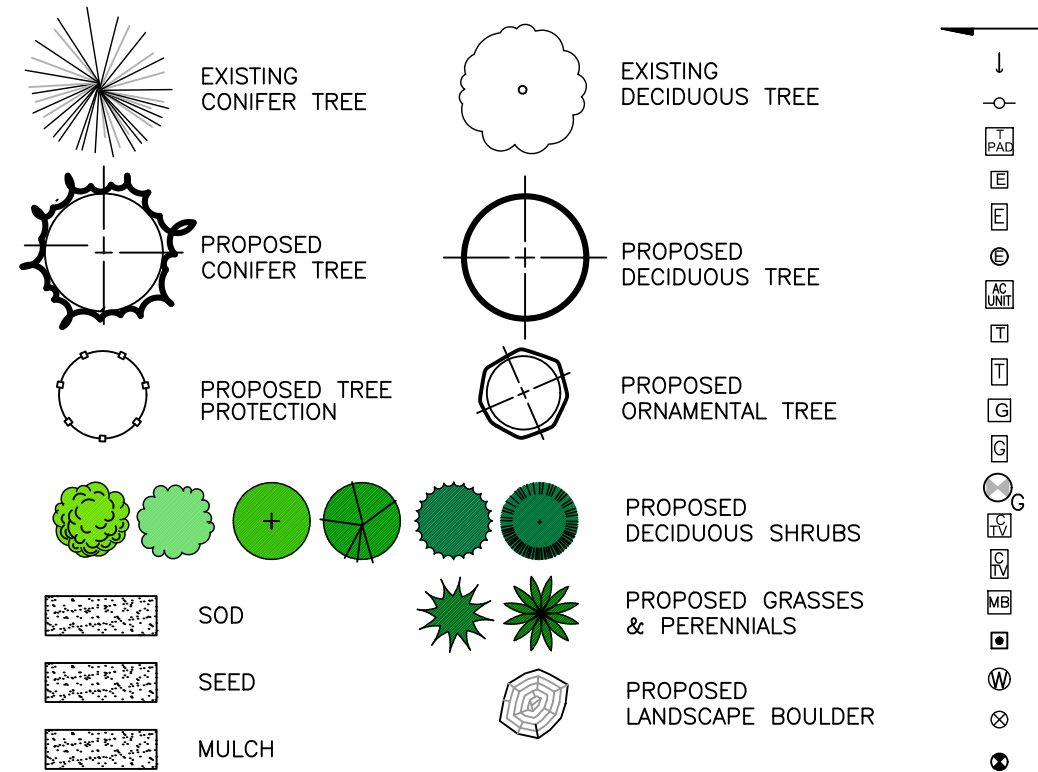
LINES & HATCHES LEGEND



LIGHTING LEGEND



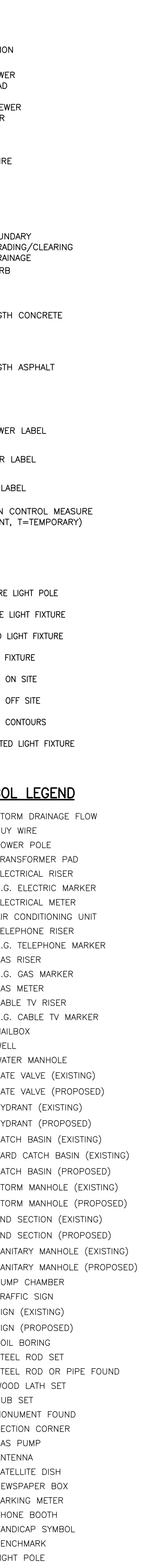
LANDSCAPE LEGEND



ABBREVIATIONS

Table with columns for abbreviation and description, including terms like FFE, BFE, GFE, FG, T/A, T/C, T/W, T/P, B/P, F/L, RIM, INV, MH, CB, RY, YD, RD, FES, CMP, GPP, RCP, HDPE, PVC, DIP, GV, GVV, HYD, FDC, UP, NFV, TR, L, LIB, P, L.C.R., (M&R), L.O.B.

SYMBOL 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 APPROPRIATE UTILITY CROSSINGS IN THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS.

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

PROJECT INFORMATION TABLE with columns for PROJECT, PREPARED FOR, TITLE, DATE, LAYOUT MODIFICATIONS, PER P.C. MEETING, PER TOWNSHIP COMMENTS, REVISION PER, DESIGNED BY, DRAWN BY, CHECKED BY, SCALE, JOB NO, DATE, SHEET NO.



SANITARY SEWER INVENTORY:		STORM SEWER INVENTORY:		STORM SEWER INVENTORY:	
SM1	RM=1009.24 INV. N=1002.04 (8") INV. S=1002.14 (8")	LT2B	RM=1009.05 M INV. S=1003.27 R (15")	LT21	RM=1011.78 M INV. S=1001.10 R (24") INV. N=1001.10 R (24")
SM2	RM=1011.15 INV. N=1004.05 (8") INV. S=1004.15 (8")	LT2A	RM=1009.36 M INV. S=1002.78 R (18") INV. N=1002.85 R (15") INV. E=1006.00 R (12")	LT21A	RM=1011.61 M INV. N=1011.90 R (24") INV. S=1008.20 R (12")
SM3	RM=1012.06 INV. N=1005.11 (8") INV. S=1005.16 (8")	LT2A	RM=1009.51 R INV. W=1006.50 (12")	LT2A	RM=1012.23 M INV. S=1009.90 R (24") INV. N=1003.30 R (24") INV. E=1007.00 R (12")
SM4	RM=1013.91 INV. N=1006.81 (8") INV. S=1006.91 (8") INV. E=1008.91 (8")	LT24A	RM=1009.12 M INV. W=1006.50 (12")	LT2A	RM=1012.23 M INV. S=1009.90 R (24") INV. N=1003.30 R (24") INV. E=1007.00 R (12")
		LT24B	RM=1009.64 M INV. S=1007.00 R (12")	LT20A	RM=1011.93 M INV. W=1008.00 R (12") INV. N=1008.00 R (12")
				LT22A	RM=1010.48 M INV. W=1007.10 R (12") INV. N=1007.20 R (12")
				LT22B	RM=1010.40 M INV. S=1007.30 R (12")
				LT22C	RM=1010.46 M INV. S=1007.00 R (12")
				LT22D	RM=1010.83 R INV. S=1007.00 R (12")
				LT22E	RM=1013.17 M INV. S=1000.00 R (30") INV. N=1000.50 R (24") INV. E=1008.50 R (12")
				LT22F	RM=1013.07 M INV. W=1009.50 R (12")
				LT22G	RM=1012.86 M INV. S=1001.13 R INV. N=1000.70 R (24") INV. E=1008.00 R (12")
				LT22H	RM=1012.94 R INV. W=1009.00 R (12")

**GENERAL SURVEY NOTES:**

- BEARINGS WERE ESTABLISHED FROM METRO CONSULTING ASSOCIATES, JOB NO. SG-19193, DATED 01/19/2018.
- SUBSURFACE UTILITIES NOT LOCATED FOR THIS SURVEY MAY EXIST. IT IS THE RESPONSIBILITY OF THE OWNER OF THE RESPECTIVE UTILITY TO ACCURATELY LOCATE SUCH UTILITIES.
- EASEMENTS OR RESTRICTIONS OF RECORD NOT DEPICTED ON THIS DRAWING MAY EXIST.
- ELEVATIONS WERE ESTABLISHED WITH GPS USING OPUS GPS POST-PROCESSING. (NAVD83 DATUM)
- CONTOURS ARE SHOWN AT 1 FOOT INTERVALS.
- THE LOCATIONS OF STORM SEWER, SANITARY SEWER & WATERMAIN, AS SHOWN ON THIS DRAWING ARE APPROXIMATE. THE LOCATIONS ARE BASED ON PHYSICAL FIELD LOCATIONS OF STRUCTURES ALONG WITH DRAWINGS SUPPLIED BY MDOT AND MHOC.
- ALL WORK SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY, THE COUNTY, AND THE STATE OF MICHIGAN.
- ALLOW THREE WORKING DAYS BEFORE YOU DIG, CALL MISS DIG TOLL FREE 1-800-482-7171.
- THERE WAS SNOW ON THE GROUND AT THE TIME OF FIELDWORK FOR THIS SURVEY.

**SOIL NOTES:**

THE PROJECT SITE IS COMPRISED OF THE FOLLOWING SOIL TYPE ACCORDING TO THE USDA NATURAL RESOURCES CONSERVATION SERVICE:  
 Cvrab -- CONOVER LOAM, 0 TO 4 % SLOPES  
 MoB -- MIAMI LOAM, 2 TO 6 % SLOPES  
 Wh -- WASHTENAW SILT LOAM

**SITE BENCHMARKS (NAVD83):**

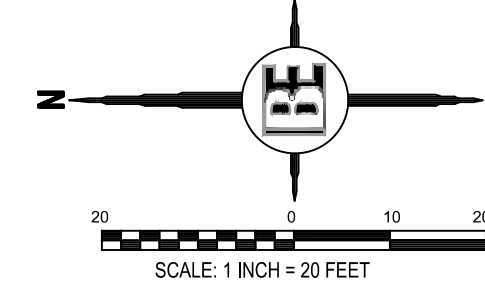
- BM #200 = NAIL/TAG S/S POWER POLE ELEV.=1013.34
- BM #201 = NAIL/TAG NE/S POWER POLE ELEV.=1014.28
- BM #202 = NAIL/TAG NE/S POWER POLE ELEV.=1013.57
- BM #203 = NORTH EAST CORNER TRANS-PAD ELEV.=1011.58

**NATURAL FEATURES NARRATIVE:**

NATURAL FEATURES WERE IDENTIFIED DURING AN ON-SITE VISIT TO THE PROPERTY ON SEPTEMBER 28, 2023. SITE IS VACANT AND PRIMARILY CAN BE DESCRIBED AS UNMANICURED TALL GRASS.

ENTIRE SITE IS RELATIVELY FLAT, WITH A LOWER ELEVATION AT LATSON ROAD. SITE SLOPES WESTERLY TO LATSON ROAD AT SLOPES OF 2-4%. SOILS ARE ALSO UNIFORM PER USDA NRCS SOILS DATA CONSISTING OF MIAMI LOAM FOR ABOUT 80% OF THE SITE. THE REMAINDER IS STATED AS WASHTENAW SILT LOAM AT THE EAST SIDE OF THE SITE AND A SMALL AREA OF CONOVER LOAM AT THE NORTHWEST CORNER OF THE SUBJECT SITE.

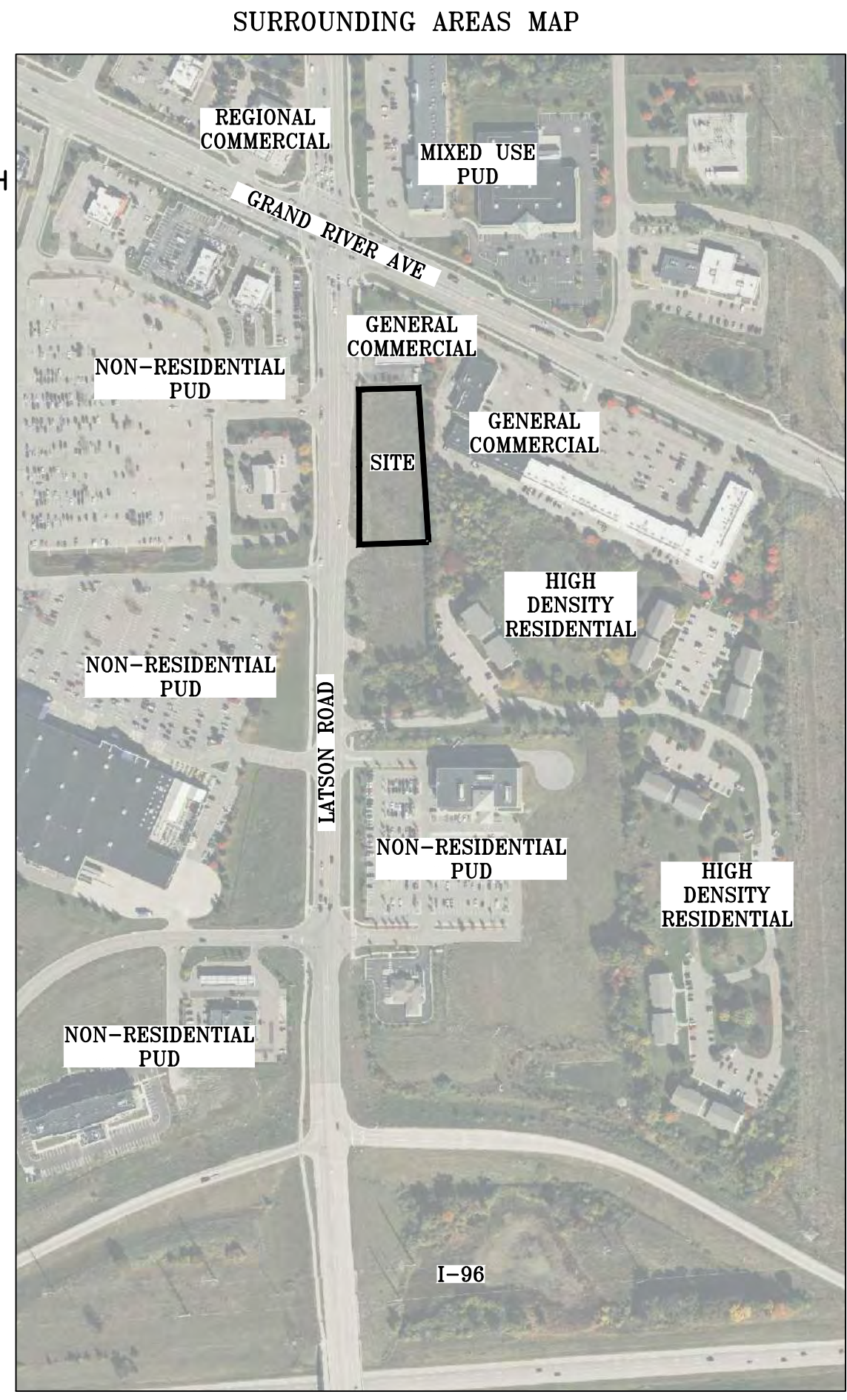
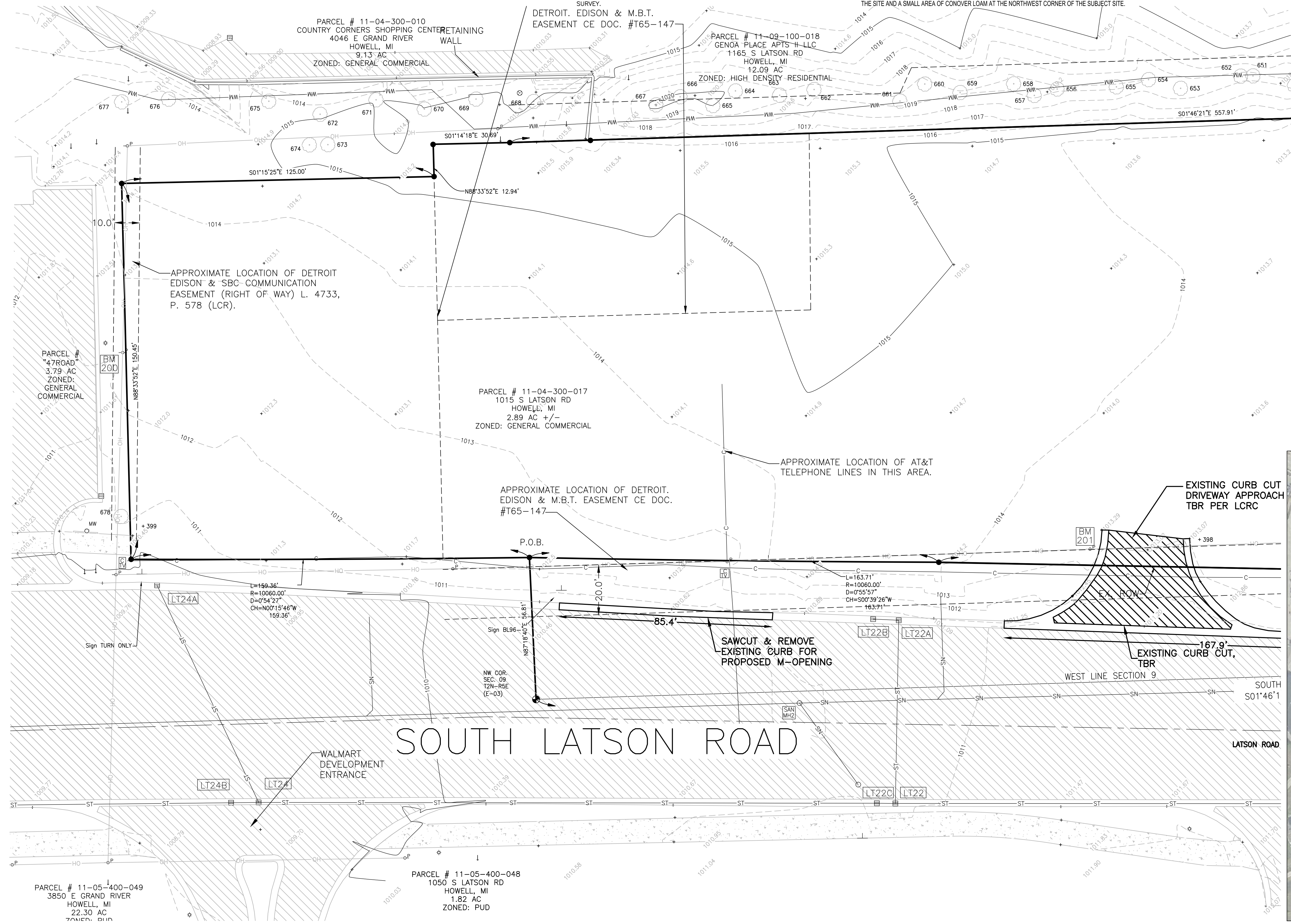
SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



Tag #	Botanical Name	Common Name	Size	Condition
651	Pinus resinosa	Red Pine	11', 15"	fair
652	Pinus resinosa	Red Pine	15"	fair
653	Pinus resinosa	Red Pine	10', 15", 17"	good
654	Pinus resinosa	Red Pine	10", 11"	good
655	Pinus resinosa	Red Pine	24"	good
656	Pinus sylvestris	Scotch Pine	20"	good
657	Pinus resinosa	Red Pine	21"	good
658	Pinus resinosa	Red Pine	16"	good
659	Pinus resinosa	Red Pine	11', 11"	good
660	Pinus resinosa	Red Pine	16"	good
661	Pinus resinosa	Red Pine	16"	good
662	Pinus resinosa	Red Pine	16"	poor
663	Pinus resinosa	Red Pine	16"	poor
664	Pinus resinosa	Red Pine	16"	poor
665	Pinus resinosa	Red Pine	16"	fair
666	Pinus resinosa	Red Pine	16"	fair
667	Pinus resinosa	Red Pine	16"	poor
668	Acer rubrum	Red Maple	6"	good
669	Acer rubrum	Red Maple	6.5"	good
670	Pyrus calleryana	Callery Pear	12"	good
671	Pyrus calleryana	Callery Pear	8"	good
672	Pyrus calleryana	Callery Pear	12"	good
673	Prunus avium	Sweet Cherry	12' 5", 6.5"	good
674	Pinus avium	Sweet Cherry	8', 11"	good
675	Acer rubrum	Red Maple	7.5"	good
676	Acer rubrum	Red Maple	11"	good
677	Acer rubrum	Red Maple	5.5"	good
678	Acer saccharinum	Silver Maple	7.5"	good

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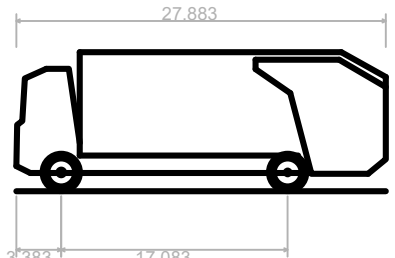
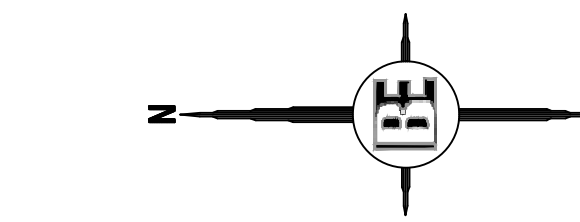
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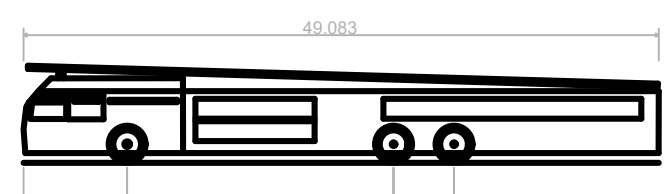
PROJECT	MISTER CAR WASH
PREPARED FOR	CWP WEST LLC 232 E 5TH AVE TUCSON, AZ 85705 206.664.1303
TITLE	EXISTING CONDITIONS, DEMO & NATURAL FEATURES PLAN
DATE	10-25-23
DESIGNED BY:	ST
DRAWN BY:	ST
CHECKED BY:	
SCALE:	1" = 20'
JOB NO:	21-519
DATE:	10/04/2023
SHEET NO.	3



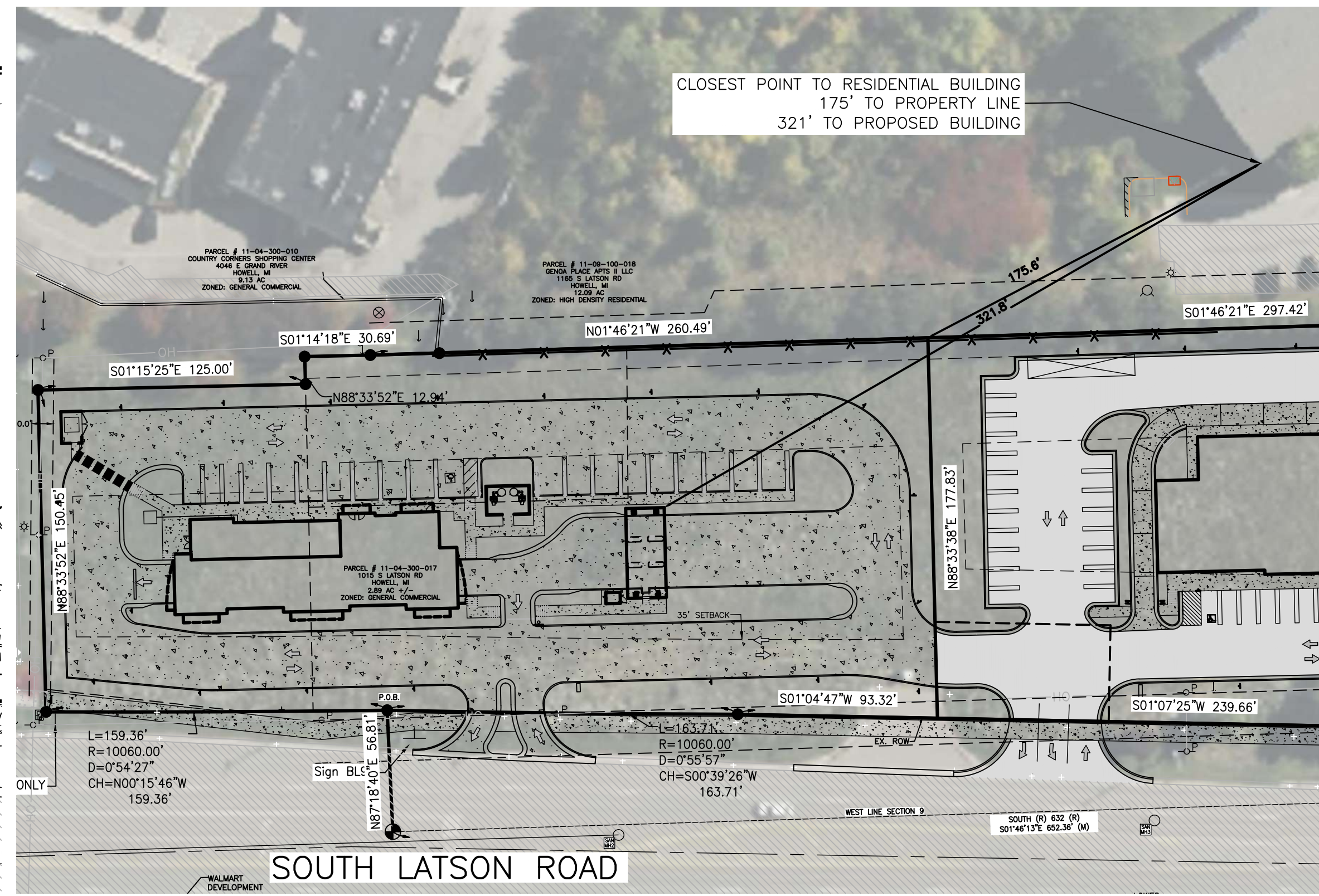
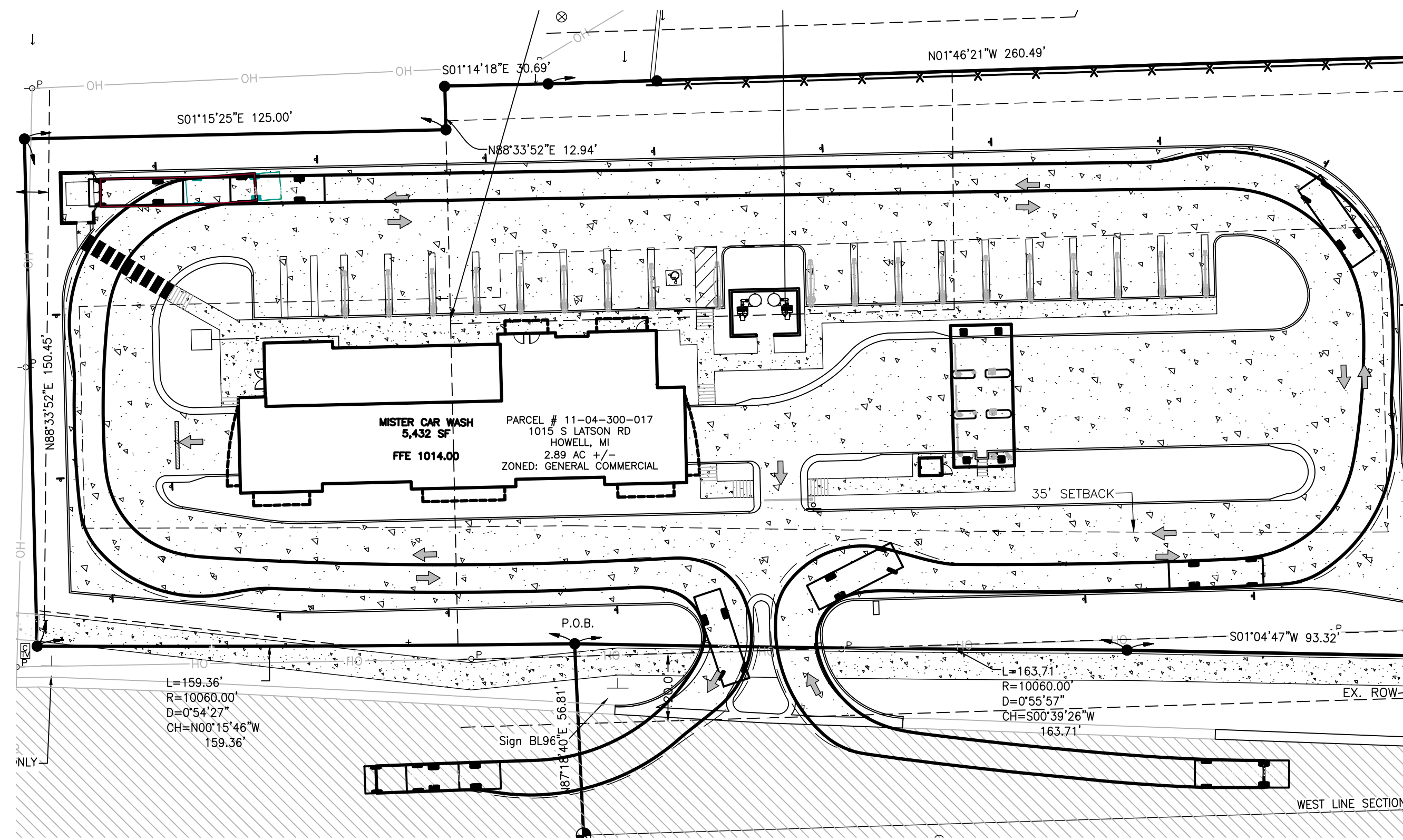
SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



Hino 338 M + Wayne Royal GT14 Refuse Truck  
 Overall Length 27.883ft  
 Overall Width 8.042ft  
 Overall Body Height 10.488ft  
 Min Body Ground Clearance 1.318ft  
 Track Width 8.042ft  
 Lock-to-lock time 6.00s  
 Curb to Curb Turning Radius 27.400ft



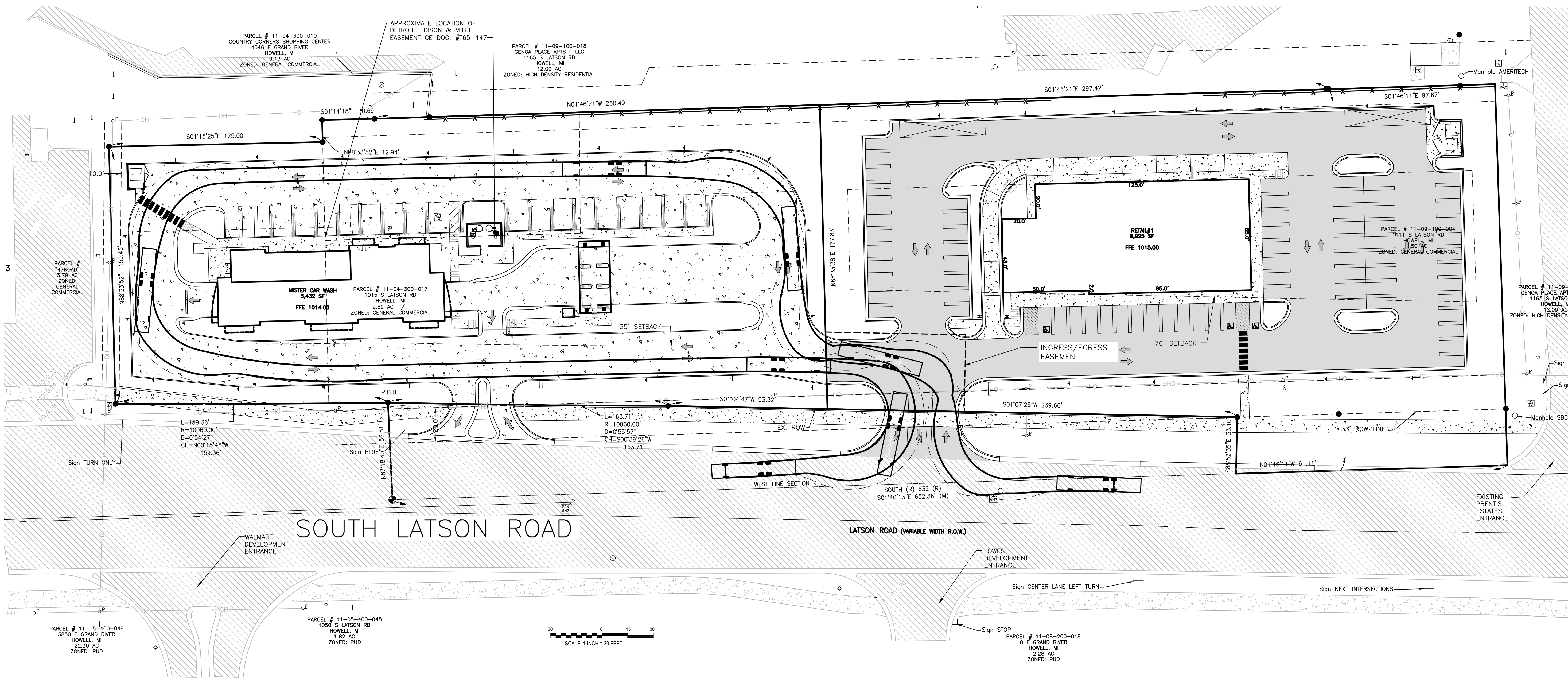
Brighton Area Fire Authority  
 Overall Length 49.083ft  
 Overall Width 8.167ft  
 Overall Body Height 7.500ft  
 Min Body Ground Clearance 0.750ft  
 Track Width 8.167ft  
 Lock-to-lock time 5.00s  
 Max Steering Angle (Virtual) 45.00°



CLOSEST POINT TO RESIDENTIAL BUILDING  
 175' TO PROPERTY LINE  
 321' TO PROPOSED BUILDING

SCALE: 1 INCH = 30 FEET

SCALE: 1 INCH = 50 FEET



SCALE: 1 INCH = 30 FEET

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 BE Engineering  
 CALL M.S.S. DIG  
 1-800-482-7171  
 www.beengineering.com

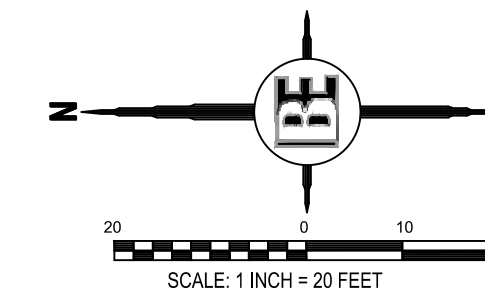
**BEBOSS**  
 BE Engineering  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

PROJECT		MISTER CAR WASH	
PREPARED FOR		CWP WEST LLC 232 E 7TH AVE TULSA, AZ 85705 206.664.1303	
TITLE		OVERALL SITE PLAN	
DESIGNED BY:	ST	LAYOUT MODIFICATIONS	1-16-24
DRAWN BY:	ST	PER P.C. MEETING	12-11-23
CHECKED BY:		PER TOWNSHIP COMMENTS	10-25-23
SCALE:	VARIES	REVISION PER	NO BY
JOB NO:	21-519		
DATE:	10/04/2023		
SHEET NO.	4		





SCREEN FENCE SAMPLE IMAGE  
MANUFACTURER: FENCETRAK  
PRODUCT: SANDSTONE VINYL



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

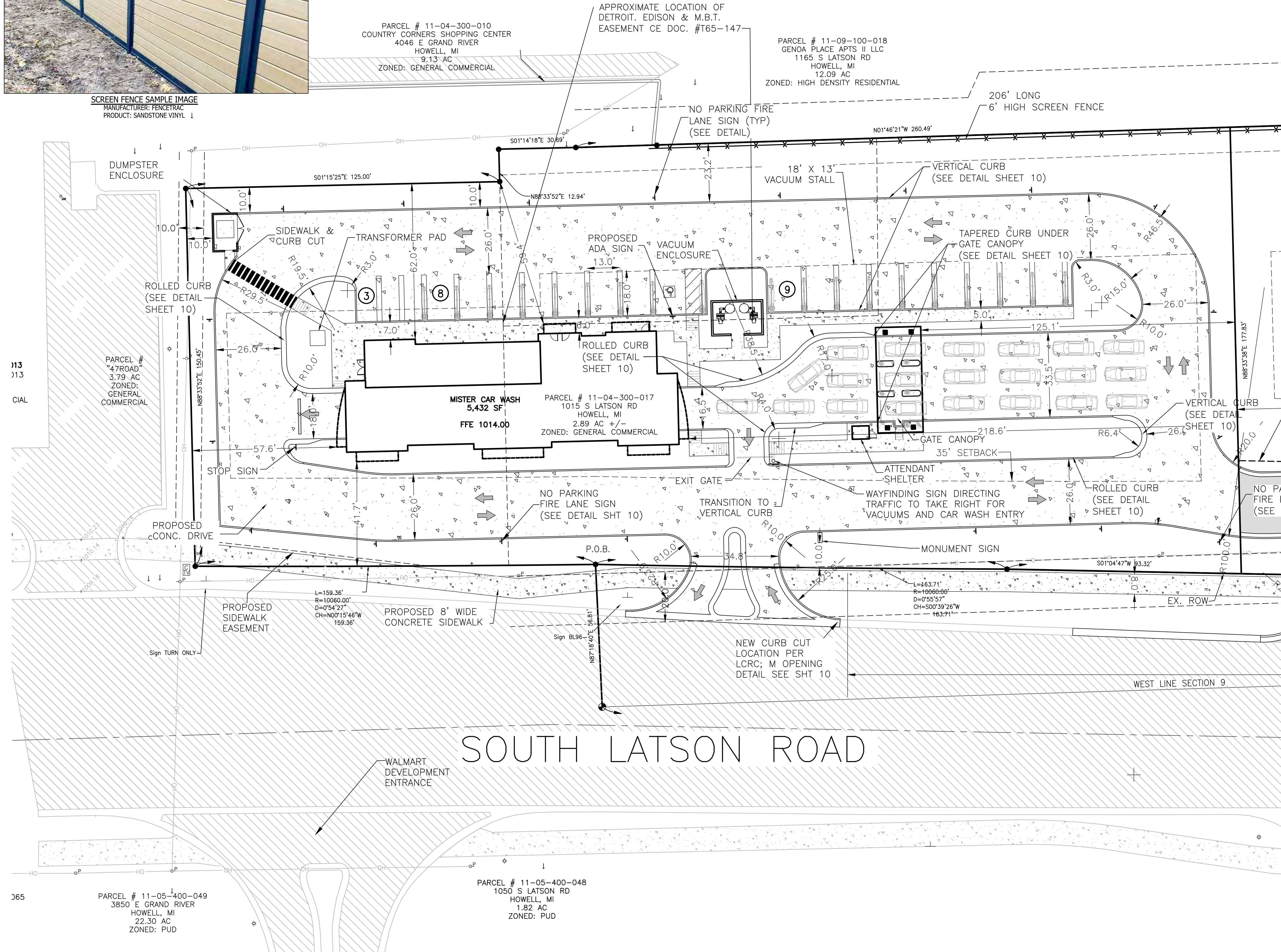
**SITE DATA**  
 PARCEL # 4711-04-300-017  
 1015 S. LATSON RD  
 HOWELL, MI  
 GENOA TOWNSHIP  
 3.40 AC  
 ZONING: GENERAL COMMERCIAL DISTRICT (GCD)  
 CURRENT USE: VACANT

**GENERAL COMMERCIAL DISTRICT**  
 - MIN. LOT AREA: 1 ACRE  
 - MIN. LOT WIDTH: 150 FT  
 - BUILDING SETBACK:  
 FRONT: 35 FT (IF NO PARKING IN FRONT YARD) 41.7 FT  
 SIDE: 15 FT 57.6 FT  
 REAR: 50 FT 59.4 FT  
 - PARKING SETBACK:  
 FRONT: 20 FT 96.5 FT  
 SIDE: 10 FT 10.0 FT  
 REAR: 10 FT 10.0 FT  
 - MAX LOT COVERAGE:  
 PARCEL AREA: 68,794 SFT (1.58 AC) PROVIDED  
 BUILDING: 5,432 SFT (7.9%)  
 IMPERVIOUS: 75% 46,524 SFT (67.6%)  
 - MAX BUILDING HEIGHT: 35 FT (2 STORIES) 35.0 FT

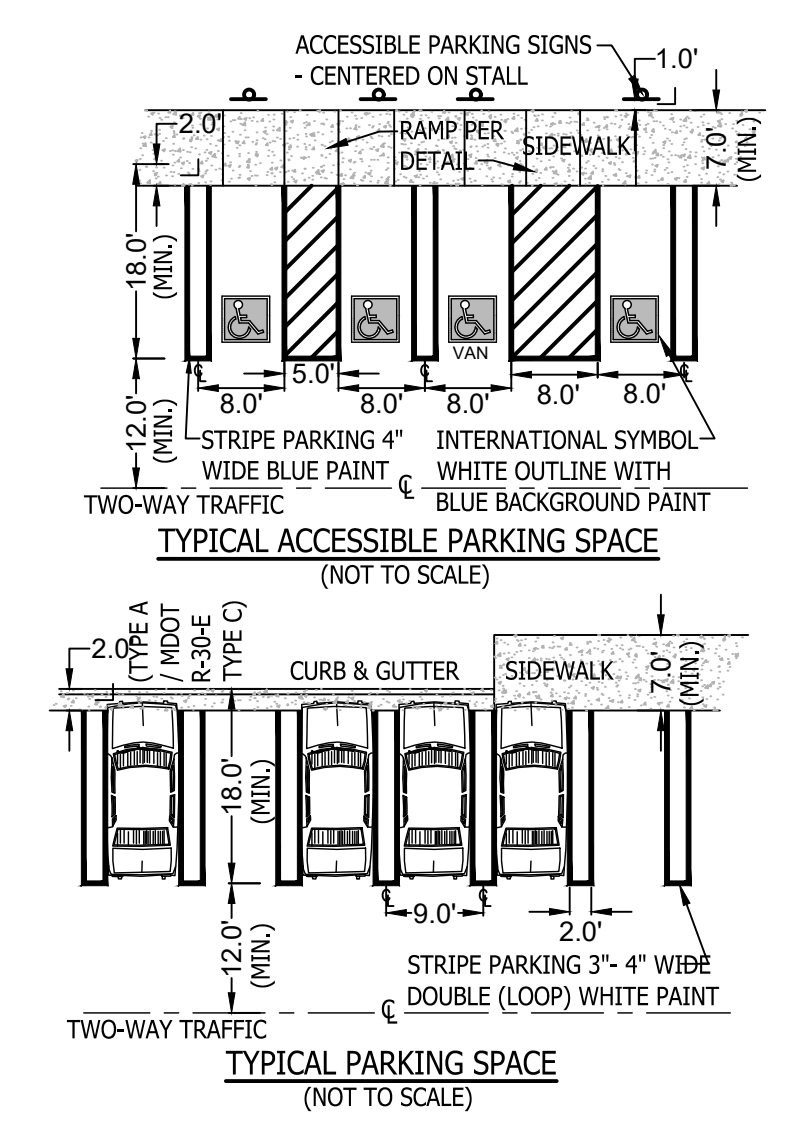
**PARKING CALCULATIONS:**  
 - AUTOMOBILE WASH: 2 SPACES PLUS 1 PER EMPLOYEE PER PEAK SHIFT  
 2 + 3 EMPLOYEES (PEAK SHIFT)  
 REQUIRED: 5 SPACES  
 PROVIDED: 20 SPACES (INCLUDES VACUUM SPACES WHICH ARE UTILIZED AS ADDITIONAL PARKING SPACES DURING TIMES OF EMPLOYEE SHIFT CHANGES)  
 LOADING/UNLOADING SPACES: 10' x 50'  
 WAIVER REQUESTED: LOADING ZONE N/A FOR PROPOSED USE

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**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670



- GENERAL NOTES**
- ALL OUTDOOR LIGHTS SHALL BE SHIELDED TO REDUCE GLARE AND SHALL BE ARRANGED TO NOT INTERFERE WITH THE VISION OF PERSONS ON ADJACENT ROADWAYS OR ADJACENT PROPERTY.
  - ALL SIGNS SHALL MEET LOCAL MUNICIPALITY ORDINANCE REQUIREMENTS.
  - THE BUILDING ADDRESS SHALL BE A MINIMUM 6" HIGH LETTERS OF CONTRASTING COLORS AND BE CLEARLY VISIBLE FROM THE STREET. THE LOCATION AND SIZE SHALL BE VERIFIED PRIOR TO INSTALLATION.
  - A KEY BOX/NOX BOX SHALL BE LOCATED NEAR THE FRONT ENTRY (FINAL LOCATION TO BE DETERMINED BETWEEN THE OWNER & FIRE MARSHALL).
  - ONE SIDE OF THE STREET SHALL BE MARKED AS A FIRE LANE AND SHALL HAVE APPROPRIATE SIGNAGE AT 50' INTERVALS.
  - ACCESS ROADS TO THE SITE SHALL BE PROVIDED AND MAINTAINED DURING CONSTRUCTION.
  - ACCESS ROADS SHALL BE CONSTRUCTED TO BE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING AT LEAST 84,000 LBS.
  - A MINIMUM VERTICAL CLEARANCE OF 13.5 FEET SHALL BE MAINTAINED THROUGHOUT THE SITE. THIS INCLUDES ENCROACHMENTS FROM LARGE TREE CANOPIES, LIGHTING, ETC.
  - DURING THE CONSTRUCTION PROCESS, THE BUILDING WILL BE EVALUATED FOR EMERGENCY RESPONDER RADIO SIGNAL STRENGTH. IF COVERAGE IS FOUND TO BE QUESTIONABLE OR INADEQUATE, AN APPROVED CONTRACTOR SHALL BE HIRED TO PERFORM A GRID TEST OF THE FACILITY. IF THE SIGNAL STRENGTH COVERAGE IS FOUND TO BE NON-COMPLIANT, AN APPROVED EMERGENCY RESPONDER RADIO COVERAGE SYSTEM SHALL BE PROVIDED IN THE BUILDING.
  - SITE LIGHTING SHALL BE PLACED ON TIMERS TO BE OFF DURING NON-USE HOURS TO THE EXTENT POSSIBLE WHILE MAINTAINING SITE SAFETY. SITE LIGHTING SHALL BE PROGRAMMED TO TURN OFF AT NIGHT WHEN ACTIVITIES ARE NO LONGER OCCURRING ON THE PROPERTY.
  - VACUUMS ARE TURNED OFF AT NIGHT.



**MISTER CAR WASH**

PROJECT: MISTER CAR WASH  
 PREPARED FOR: CWP WEST LLC  
 232 E 7TH AVE  
 TUCSON, AZ 85705  
 206.664.1303

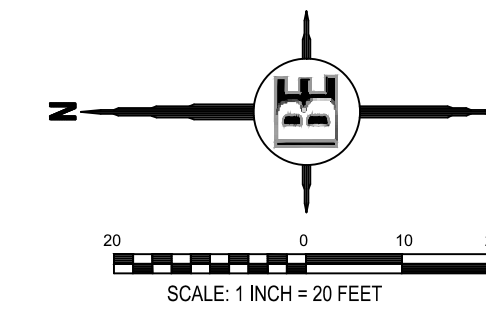
TITLE: SITE PLAN

NO	BY	DATE	REVISION PER	COMMENTS
1	ST	10-25-23		PER TOWNSHIP COMMENTS
2	ST	12-11-23		PER P.C. MEETING
3	ST	1-16-24		LAYOUT MODIFICATIONS

DESIGNED BY: ST  
 DRAWN BY: ST  
 CHECKED BY:  
 SCALE: 1" = 20'  
 JOB NO: 21-519  
 DATE: 10/04/2023  
 SHEET NO. 5

FOR SITE PLAN APPROVAL ONLY!  
 NOT FOR CONSTRUCTION



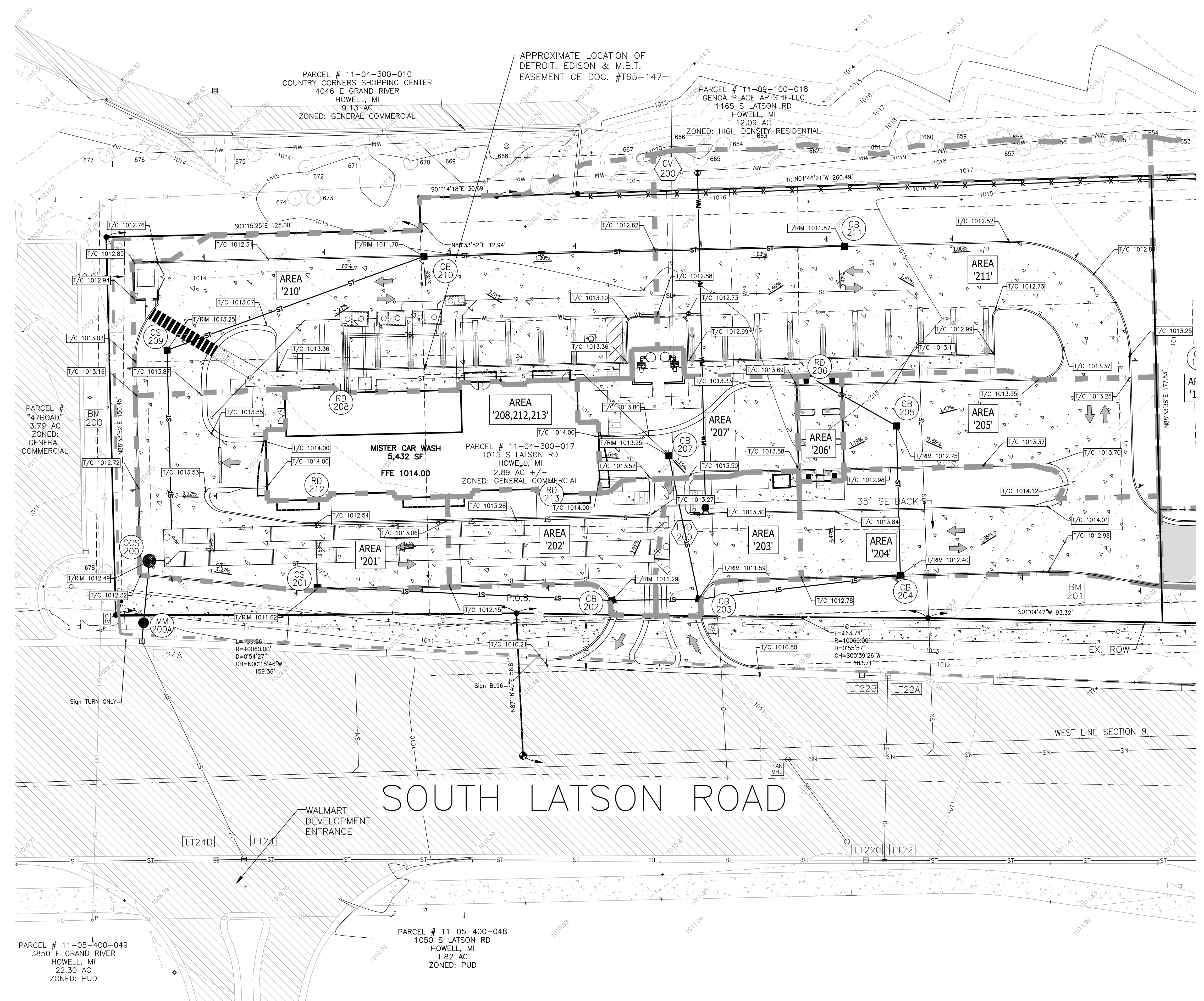


SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

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BEBOSS ENGINEERING  
CALL M55 DIG  
1-800-467-7171  
www.beboss-engineering.com

DRAINAGE AREA TABLE				
DRAINAGE AREA	TOTAL AREA (AC)	IMP. AREA (AC)	C VALUE	A°C
200	-	-	-	-
201	0.15	0.12	0.77	0.12
202	0.08	0.06	0.74	0.06
203	0.06	0.05	0.80	0.05
204	0.13	0.10	0.72	0.09
205	0.12	0.10	0.80	0.09
206	0.02	0.02	0.90	0.02
207	0.08	0.06	0.75	0.06
208	0.05	0.05	0.90	0.05
210	0.33	0.23	0.69	0.23
211	0.41	0.19	0.52	0.22
212	0.04	0.04	0.90	0.04
213	0.04	0.04	0.90	0.04
TOTALS	1.51	1.07	0.69	1.05



**BEBOSS**  
Engineering  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

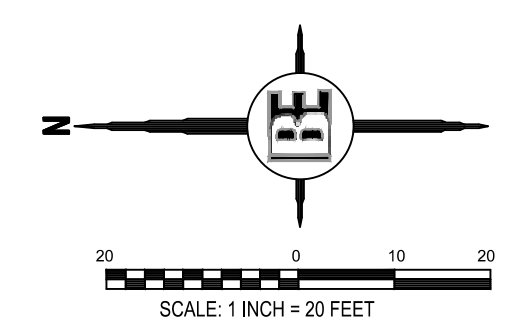
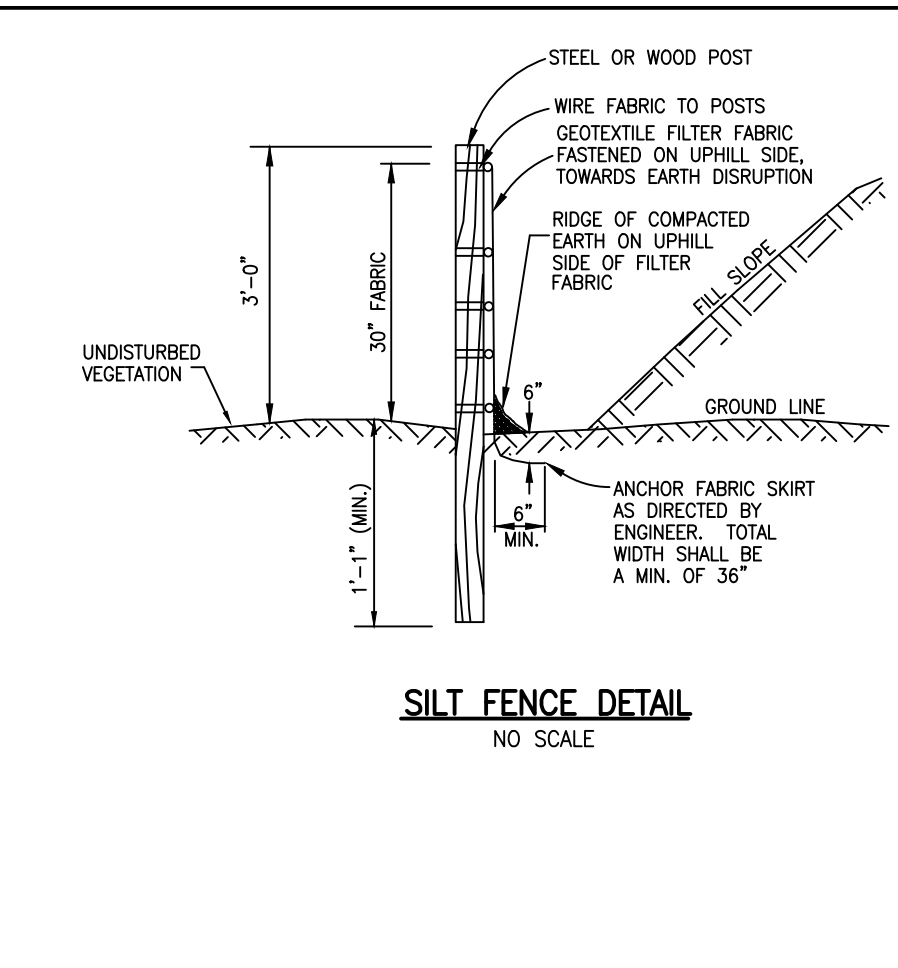
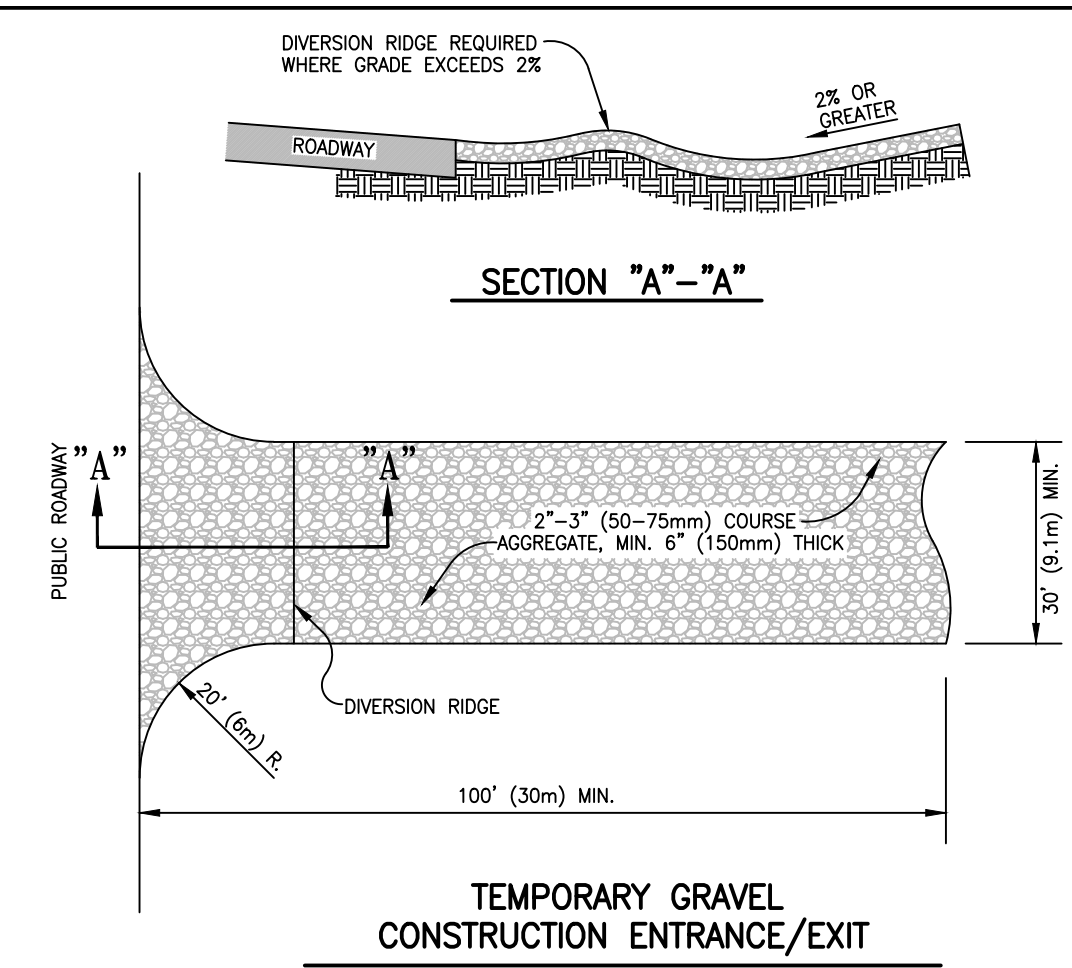
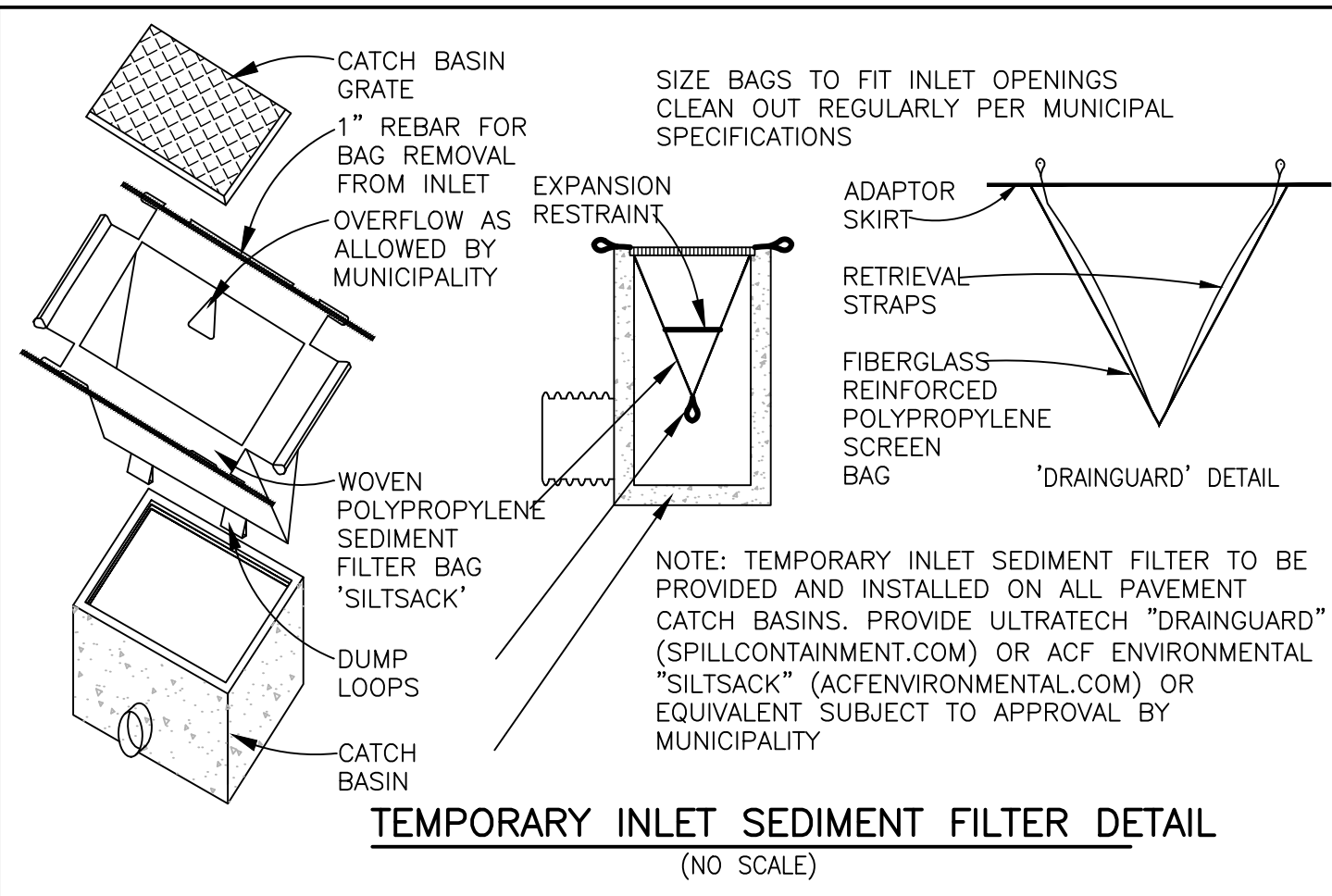
PROJECT: MISTER CAR WASH  
PREPARED FOR: CWP WEST LLC  
232 E 5TH AVE  
TULSA, AZ 85705  
206.664.1303

TITLE: GRADING & DRAINAGE PLAN

NO	BY	DATE	REVISION
1	ST	1-16-24	LAYOUT MODIFICATIONS
2	ST	12-11-23	PER P.C. MEETING
3	ST	10-25-23	PER TOWNSHIP COMMENTS
NO	BY	DATE	REVISION

DESIGNED BY: ST  
DRAWN BY: DH  
CHECKED BY:  
SCALE: 1" = 20'  
JOB NO: 21-519  
DATE: 10/04/2023  
SHEET NO. 6





SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

**SOIL EROSION CONTROL MEASURES**

1	STRIPPING & STOCKPILING TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BARRIERS TO ACT AS A DIVERSION STOCKPILE SHOULD BE TEMPORARILY SEED
6	SEEDING WITH MULCH AND/OR MATTING	ESTABLISHES VEGETATION COVER (SEE NOTE FOR DRAINWAYS WITH LOW VELOCITY) EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL, ERO.
14	AGGREGATE COVER	STABILIZES SOIL SURFACE, THIS MINIMIZES EROSION FORMS CONSTRUCTION TRAFFIC IN BARRIER MEMBER MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS
15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES SURFACE VELOCITY
16	CURB & GUTTER	KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE COLLECTS AND CONVEYS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY
35	STORM SEWER	SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF CONVEYS RUNOFF TO MUNICIPAL SEWER SYSTEM OR STABILIZED OUTFALL LOCATION USE CATCH BASINS TO COLLECT SEDIMENT
36	CATCH BASIN, DRAIN INLET	COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER OVER INLET
40	INLET SEDIMENT FILTER	EASY TO SHAPE COLLECTS SEDIMENT MAY BE CLEANED AND EXPANDED AS NEEDED
51	RETAINING WALL	REDUCES GRADIENT WHERE SLOPES ARE EXTREMELY STEEP PERMITS REVISION OF EXISTING VEGETATION, KEEPING SOIL STABLE IN CRITICAL AREAS MINIMIZES MAINTENANCE
54	SILT FENCE	USES GEOTEXTILE FABRIC AND POSTS OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY. (SEE RETAIL SHEET)

T= TEMPORARY, P= PERMANENT  
TOTAL DISTURBED AREA= 1.58 AC.

**SURFACE WATER & COUNTY DRAINS**  
**WETLAND** - APPROXIMATELY 200 FT SOUTHEAST BEHIND PLATINUM CONTRACTING  
**LAKE** - APPROXIMATELY 4000 FT NORTHWEST TO LAKE CHEMUNG  
**STREAMS** - APPROXIMATELY 1000 FT NORTHWEST TO LIVINGSTON COMMONS SHOPPING CENTER  
**BASINS** - APPROXIMATELY 900 FT NORTHWEST TO SLEEPCHER MATTRESS STORE  
**DRAINS** - APPROXIMATELY 650 FT NORTHWEST TO LATSON ROAD DRAIN  
**PONDS** - APPROXIMATELY 200 FT EAST BEHIND PLATINUM CONTRACTING

**CONSTRUCTION SEQUENCE**

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT EROSION IS MINIMIZED AND THAT COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES IS MAINTAINED THROUGHOUT EXECUTION OF THIS PROJECT.

1 DAY	1. INSTALL SILT FENCE AS SHOWN ON PLANS.
30 DAYS	2. ROUGH GRADE AND INSTALL STORM DRAINAGE.
1 DAY	3. INSTALL INLET PROTECTION STORM INLETS.
180 DAY	4. START BLDG. CONSTRUCTION
30 DAYS	5. INSTALL PAVEMENT
10 DAYS	6. FINE GRADE AROUND BUILDING, SPREAD TOPSOIL, SEED OR SOD AS APPLICABLE.
1 DAY	7. REMOVE ALL EROSION CONTROL STRUCTURES.
1 DAY	8. REMOVE ACCUMULATED SILT FROM ALL EXISTING DRAINAGE.

**CONTROLS & MEASURES POST CONSTRUCTION SEQUENCE**

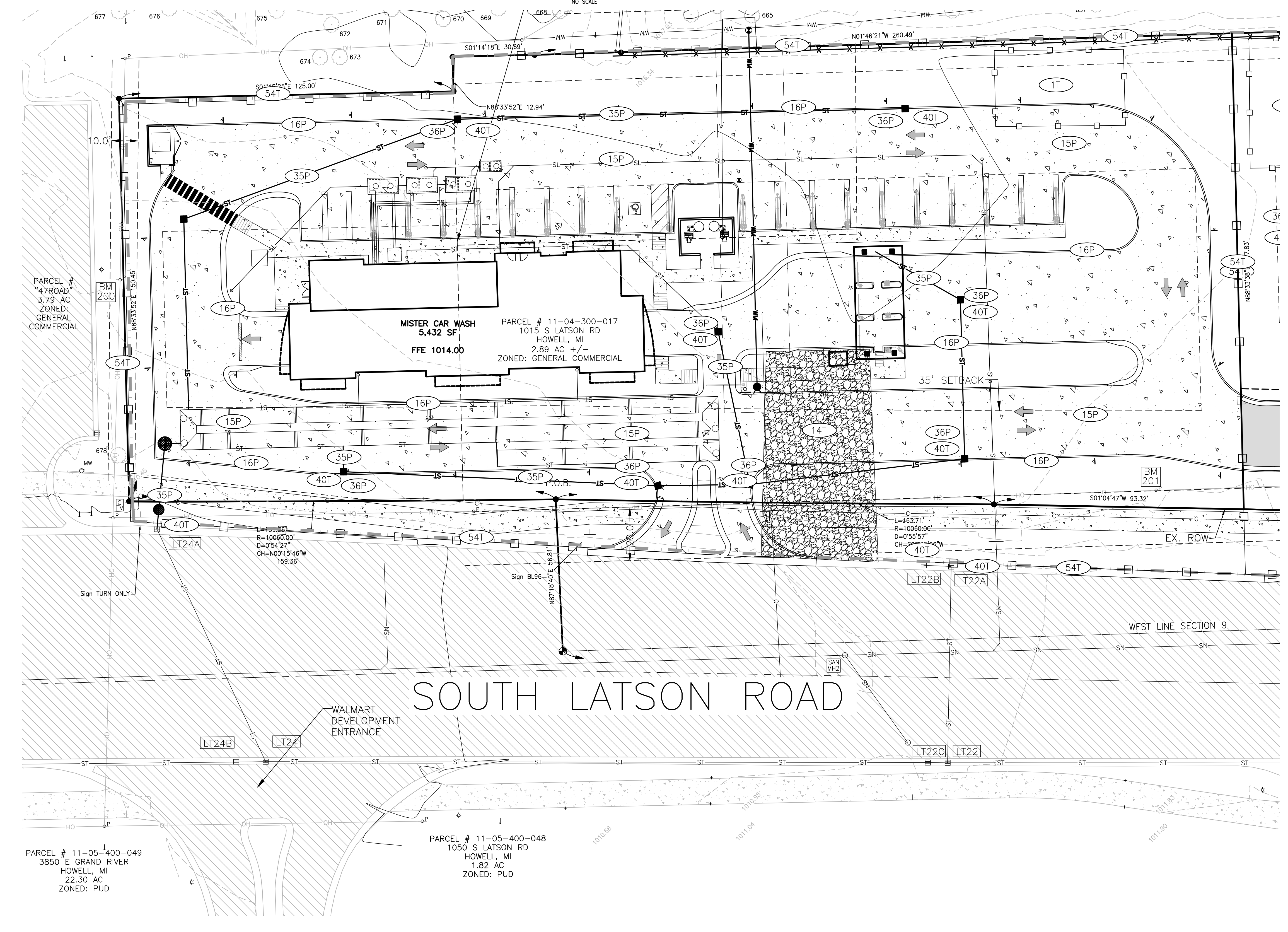
ACTIVITY	WEEKLY	MONTHLY	AS REQUIRED
MAINTAIN LANDSCAPING, REPLACE MULCH	X	X	X
CLEAN INLETS		X	X
COLLECT LITTER	X		X
SWEEP PARKING LOT		X	X

**CONTROLS & MEASURES NARRATIVE**

ACTIVITY	DESCRIPTION
MAINTAIN LANDSCAPING, REPLACE MULCH	COLLECT GRASS, TREE, AND SHRUB CLIPPINGS, DISPOSE IN APPROVED CONTAINER, REPLACE DEAD SOD, 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

**PROPOSED CONST. SCHEDULE FOR THE YEAR 2024**

ACTIVITY	MAY	JUNE	JULY	AUG	SEPT	OCT
DEMO & CLEAR						
MASS GRADING						
UNDERGROUND UTILITY						
FINAL GRADING						
SEED & MULCH						



**BEBOSS Engineering**  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

**MISTER CAR WASH**

PROJECT: CWP WEST LLC  
232 E 5TH AVE  
TULSA, OK 74103  
206.664.1303

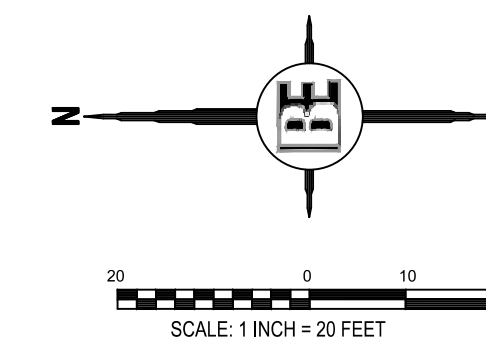
PREPARED FOR: CWP WEST LLC

TITLE: SOIL EROSION & SEDIMENTATION CONTROL PLAN

NO	DATE	REVISION PER
1	1-16-24	LAYOUT MODIFICATIONS
2	12-11-23	PER P.C. MEETING
3	10-25-23	PER TOWNSHIP COMMENTS
4	10-25-23	NO BY

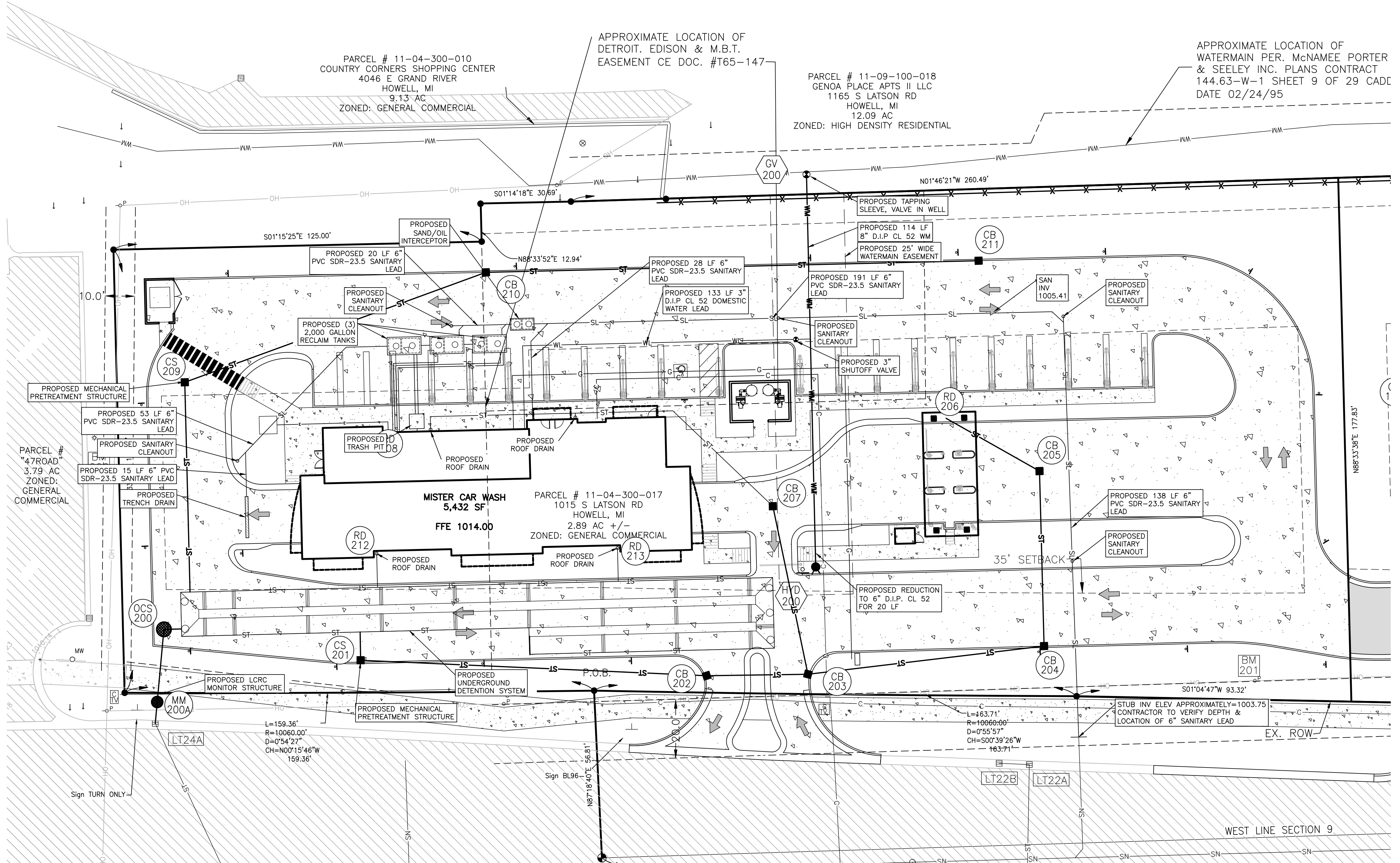
DESIGNED BY: ST  
DRAWN BY: JS  
CHECKED BY:  
SCALE: 1" = 20'  
JOB NO: 21-519  
DATE: 10/04/2023  
SHEET NO. 7





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, DEPTH, OR ELEVATION OF UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND EASEMENTS FROM THE PLANS. BE ENGINEERING, INC. CALL MSS DIG 1-800-487-7171



# SOUTH LATSON ROAD

FROM	TO	DRAIN AREA	ACRES	RUNOFF COEFF	EQUIV AREA A * C	INTEN-SITY I	TIME OF CONC Tc	ADDL RUNOFF Q	PIPE LENGTH (LF)	PIPE DIA (IN)	VELOCITY FLOWING FULL (FPS)	HYDRAULIC GRADIENT SLOPE %	ACTUAL SLOPE USED	MANNING COEFFICIENT	MANNING FLOW CAPACITY	MANNING'S VELOCITY (FT/SEC)	TIME (MIN)	HS ELEV UPPER END	HS ELEV LOWER END	RM ELEV UPPER END	RM ELEV LOWER END	INVERT UPPER END	INVERT LOWER END	DROP DISTANCE (FT)	
206	205	206	0.02	0.90	0.02	4.38	15.00		0.07	36	6	1.58	0.30%	1.00%	0.013	0.56	2.87	0.21	1009.29	1008.93	1013.60	1012.75	1008.89	1008.53	
205	204	205	0.12	0.80	0.09	4.35	15.21		0.48	59	12	2.15	0.22%	0.50%	0.013	2.53	3.22	0.31	1008.93	1008.64	1012.75	1012.40	1008.13	1007.84	
204	203	204	0.13	0.72	0.09	4.32	15.52		0.88	81	12	2.49	0.30%	0.50%	0.013	2.53	3.22	0.42	1008.64	1008.23	1012.40	1011.59	1007.84	1007.43	
203	202	203	0.06	0.80	0.05	4.28	15.93	0.46	1.54	34	12	2.93	0.41%	0.50%	0.013	2.53	3.22	0.18	1008.23	1008.06	1011.59	1011.29	1007.43	1007.26	
202	201	202	0.08	0.74	0.06	4.26	16.11		1.79	118	12	3.06	0.45%	0.50%	0.013	2.53	3.22	0.61	1008.06	1007.49	1011.29	1011.62	1007.26	1006.67	
201	DET	201	0.15	0.77	0.12	4.26	16.11		2.29	10	12	3.86	0.72%	0.50%	0.013	2.53	3.22	0.05	1007.49	1007.42	1011.62	-	1006.67	1006.62	
208	207	208	0.05	0.90	0.05	4.38	15.00		0.20	129	6	2.22	0.60%	1.00%	0.013	0.56	2.87	0.75	1009.81	1008.52	1014.00	1013.25	1009.41	1008.12	
207	203	207	0.08	0.75	0.06	4.29	15.75		0.46	58	12	2.15	0.22%	0.50%	0.013	2.53	3.22	0.30	1008.52	1008.23	1013.25	1011.59	1007.72	1007.43	
211	210	211	0.41	0.52	0.22	4.38	15.00		0.94	167	12	2.49	0.30%	0.50%	0.013	2.53	3.22	0.87	1009.16	1008.32	1011.87	1011.70	1008.36	1007.52	
210	209	210	0.33	0.69	0.23	4.28	15.87		1.92	109	12	3.14	0.48%	0.50%	0.013	2.53	3.22	0.56	1008.32	1007.78	1011.70	1013.25	1007.52	1006.98	
209	DET	209	-	-	-	16.43	16.43		1.92	71	12	3.14	0.48%	0.50%	0.013	2.53	3.22	0.37	1007.78	1007.42	1013.25	1011.30	1006.98	1006.62	
212	DET	212	0.04	0.90	0.04	4.38	15.00		0.16	11	6	2.70	0.89%	2.00%	0.013	0.80	4.05	0.05	1010.65	1010.42	1014.00	-	1010.25	1010.02	3.00
213	DET	213	0.04	0.90	0.04	4.38	15.00		0.16	11	6	2.70	0.89%	2.00%	0.013	0.80	4.05	0.05	1010.65	1010.42	1014.00	-	1010.25	1010.02	3.00
DET	200	ALL	1.51	0.69	1.05	6.03	16.43		0.23	6	12	1.42	0.10%	0.32%	0.013	2.02	2.57	0.04	1007.42	1007.40	1011.30	1012.49	1006.62	1006.60	
200	200A	200	-	-	-	16.43	16.43		0.23	25	12	1.42	0.10%	0.32%	0.013	2.02	2.57	0.16	1007.40	1007.32	1012.49	1010.00	1006.60	1006.52	
200A	EX	200A	-	-	-	16.59	16.59		0.23	7	12	1.42	0.10%	0.32%	0.013	2.02	2.57	0.05	1007.32	1007.30	1010.00	-	1006.52	1006.50	

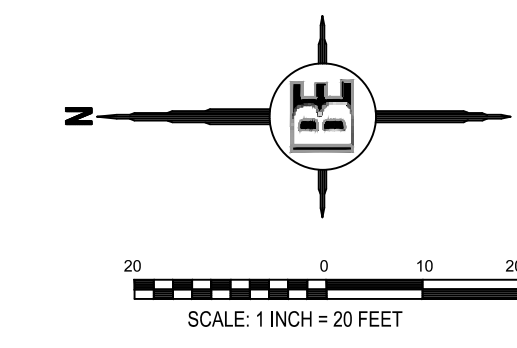
**BEBOSS**  
Engineering  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

PROJECT: MISTER CAR WASH  
PREPARED FOR: CWP WEST LLC  
232 E 5TH AVE  
TULSA, AZ 85705  
206.664.1393

NO	BY	DATE	REVISION
1	ST	10-25-23	PER TOWNSHIP COMMENTS
2	ST	12-11-23	PER P.C. MEETING
3	ST	1-16-24	LAYOUT MODIFICATIONS

DESIGNED BY: ST  
DRAWN BY: DH  
CHECKED BY:  
SCALE: 1" = 20'  
JOB NO: 21-519  
DATE: 10/04/2023  
SHEET NO. 8





SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

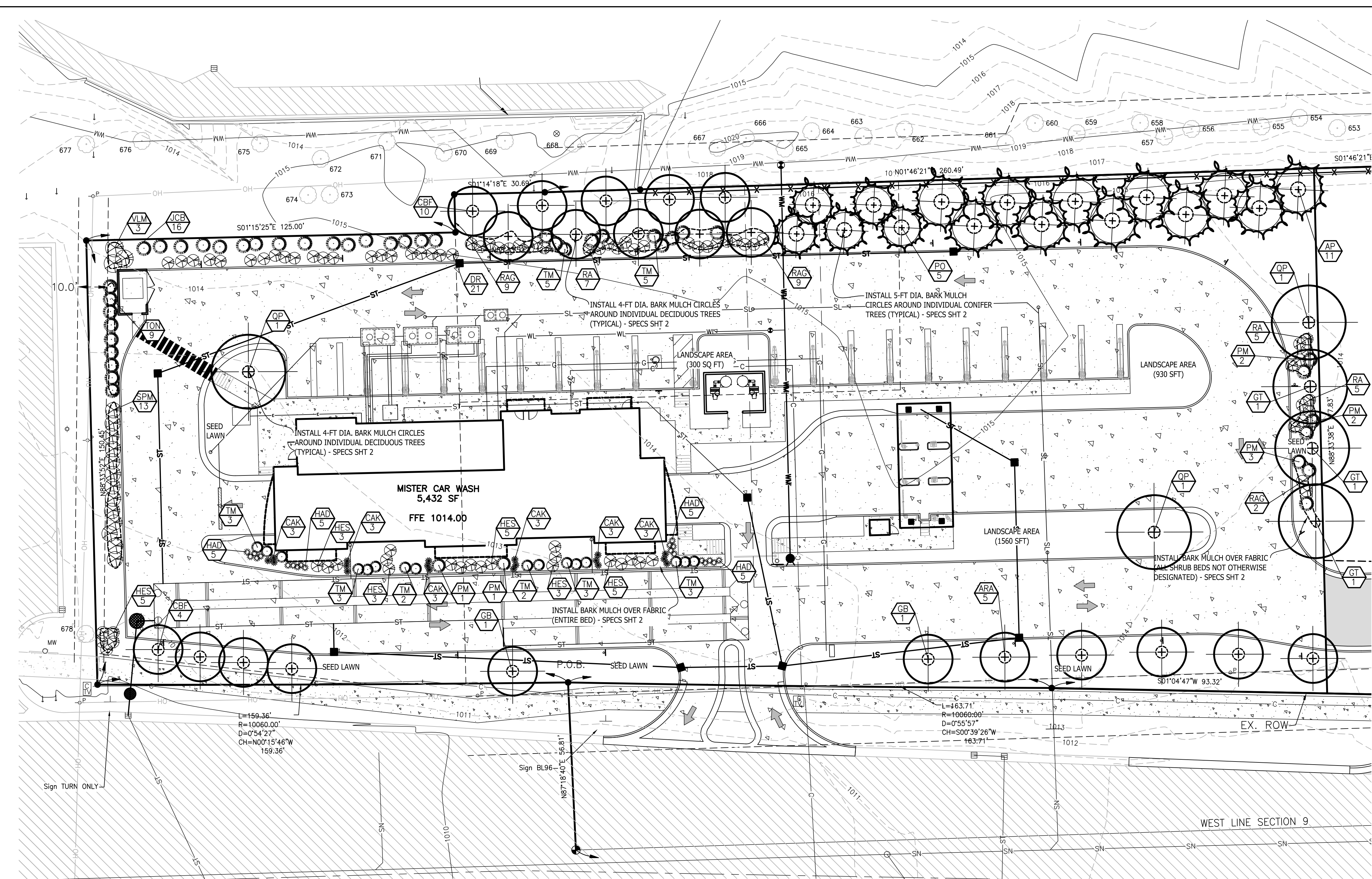
**LANDSCAPE CALCULATIONS GCD ZONING:**

**REQUIRED:**  
GREENBELT - PUBLIC R.O.W. : 1 CANOPY TREE / 40 LFT FRONTAGE, MIN 20 FT WIDTH  
BUFFER - NORTH ADJ. TO COMMERCIAL - TYPE C: 1 CANOPY OR CONIFER TREE OR 4 SHRUBS / 20 LFT MIN. 10 FT WIDTH  
BUFFER - SOUTH ADJ. TO COMMERCIAL - TYPE C: 1 CANOPY OR CONIFER TREE OR 4 SHRUBS / 20 LFT MIN. 10 FT WIDTH  
BUFFER - EAST PARTIAL (108.04 LFT) ADJ. TO COMMERCIAL - TYPE C: 1 CANOPY OR CONIFER TREE OR 4 SHRUBS / 20 LFT MIN. 10 FT WIDTH  
PARTIAL (283.36 LFT) ADJ. TO MULTI-FAMILY - TYPE B: 6-FT HGT CONTINUOUS WALL/FENCE + 1 CANOPY TREE + 1 CONIFER TREE + 4 SHRUBS / 30 LFT  
PARKING AREA (>10 SPACES): 1 CANOPY TREE & 100 SF OF LANDSCAPE AREA / 10 SPACES. 1/3 OF TREES MUST BE ON THE INTERIOR OF THE PARKING N/A - UNDERGROUND SYSTEM  
DETENTION / RETENTION BASIN: N/A - UNDERGROUND SYSTEM

**PROVIDED:**  
GREENBELT - PUBLIC R.O.W. : 416.40 LFT FRONTAGE / 40 = 11 CANOPY TREES PROVIDED  
BUFFER - NORTH PROP. LINE: (150.45 + 12.94) = 163.39 LFT NET = 163.39 / 20 = 8 TREES OR 30 SHRUBS OR COMBINATION 30 CONIFER & DECIDUOUS SHRUBS PROVIDED  
BUFFER - SOUTH PROP. LINE: 177.83 / 20 = 8 TREES OR 35 SHRUBS OR COMBINATION 4 TREES + 19 SHRUBS PROVIDED  
BUFFER - EAST ADJ. TO COMMERCIAL - TYPE C: 187.90 / 20 = 9 TREES OR 40 SHRUBS  
ADJ. TO MULTI-FAMILY - TYPE B: 228.27 / 30 = 8 CANOPY + 8 CONIFER TREES + 32 SHRUBS EX. BERM & MATURE CONIFER TREE SCREEN EXISTING ON ADJ. SITE & FURTHER SCREENS EX. WETLAND AREA WITH NO DEVELOPMENT (& UNLIKELY TO CHANGE) PROPOSE 16 CONIFER TREES + 10 CANOPY TREES + 77 CONIFER & DECIDUOUS SHRUBS & 6' HIGH SCREEN FENCE  
PARKING AREA (>10 SPACES): = 20 (SPACES PROVIDED) / 10 = 2 TREES + 200 SQFT OF LANDSCAPE AREA 2 TREES & 2400+ SQFT OF LANDSCAPE AREA PROVIDED

KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SIZE	REMARK
<b>DECIDUOUS TREES</b>					
ARA	5	Acer rubrum 'ifs KW 78'	Armstrong Gold Red Maple	2-1/2" cal.	B-B
CBF	14	Carpinus betulus 'Frans Fontaine'	Frans Fontaine European Hornbeam	2-1/2" cal.	B-B
GB	2	Ginkgo biloba 'Princeton Sentry'	Princeton Sentry Columnar Ginkgo	2-1/2" cal.	B-B
GT	3	Gleditsia triacanthos var inermis 'Skycole'	Skyline Honeylocust	2-1/2" cal.	B-B
QP	3	Quercus palustris	Northern Pin Oak	2-1/2" cal.	B-B
<b>CONIFER TREES</b>					
AP	11	Abies phanerolepis	Canaan Fir	6-ft hgt.	B-B
PO	5	Picea omorika	Serbian Spruce	6-ft hgt.	B-B
<b>CONIFER SHRUBS</b>					
JCB	16	Juniperus chinensis 'Blue Point'	Blue Point Juniper	48" ht./#5	Cont.
PM	9	Pinus mugo var Pumilo	Dwarf Mugo Pine	36" ht./#5	Cont.
TON	9	Thuja occidentalis nigra	Dark Green Arborvitae	48" ht./#5	Cont.
TM	26	Taxus x media 'densiformis'	Densiformis Yew	36" ht./#5	Cont.
<b>DECIDUOUS SHRUBS</b>					
DR	21	Diervilla rivularis 'diwibru01'	Honeybee Diervilla	24" ht./#3	Cont.
HES	24	Hydrangea macrophylla 'Bailmer'	Endless Summer Hydrangea	36" ht./#5	Cont.
RA	17	Ribes Alpinum 'Greenmound'	Greenmound Currant	18" ht./#3	Cont.
RAG	20	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac	24" ht./#3	Cont.
SPM	13	Syringa patula 'Miss Kim'	Miss Kim Lilac	24" ht./#3	Cont.
VLM	3	Viburnum lantana Mohican	Mohican Wayfaring Tree Viburnum	36" ht./#5	Cont.
<b>PERENNIALS</b>					
CAK	18	Calamagrostis acutiflora 'Karl Foerster'	Karl Foerster Feather Reed Grass	1 gal./#1	Cont.
HAD	20	Hemerocallis 'Apache War Dance'	Apache War Dance Daylily	2 gal./#2	Cont.

**SUPPLEMENTAL LANDSCAPE NOTES**  
1. ANY SUBSTITUTIONS OF PLANT MATERIAL FROM THE APPROVED SITE PLAN WILL BE APPROVED BY THE TOWNSHIP PRIOR TO INSTALLATION.

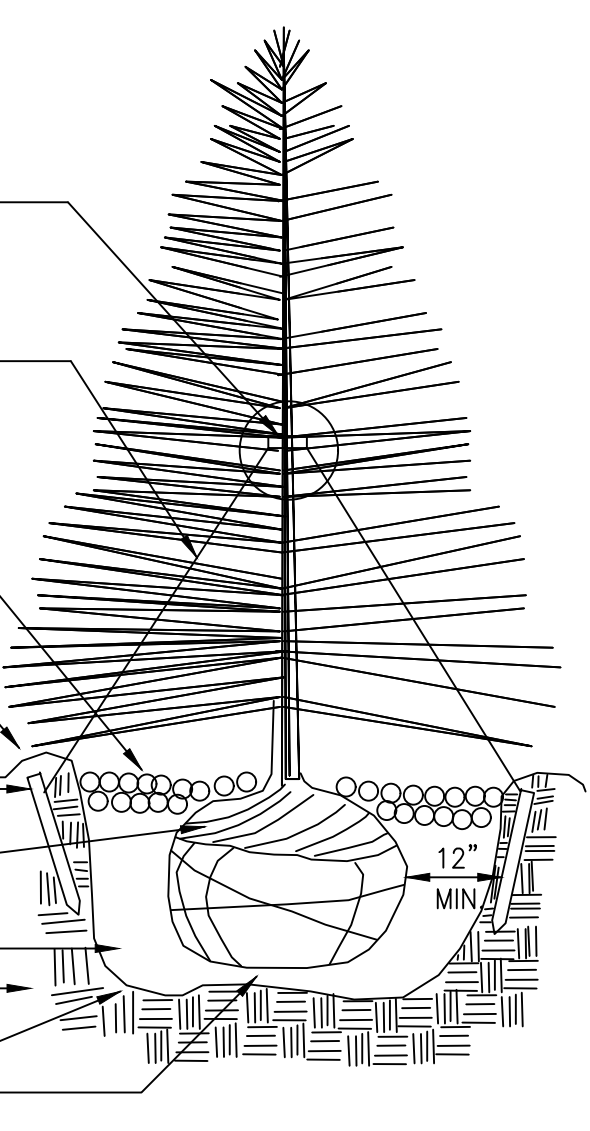


# SOUTH LATSON ROAD

BEFORE BACK FILLING AROUND PLANT, REMOVE ALL PLASTIC BALLING MATERIAL & METAL CONTAINERS. PUNCH HOLES IN FIBER POTS TO PROVIDE DRAINAGE.

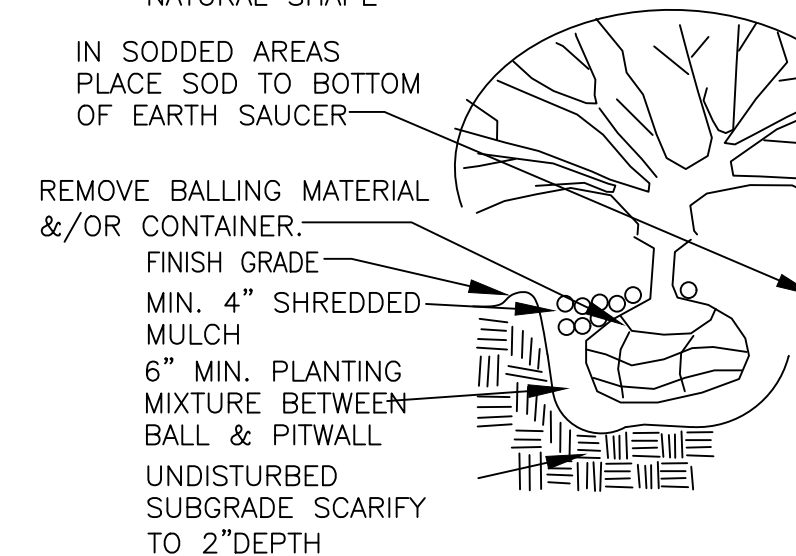
NEVER PRUNE EVERGREENS  
TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE TO PREVIOUS EXISTING GRADE  
RUBBER HOSE 1/2" UP TREE POSITIONED DIRECTLY ABOVE TREE BRANCH

GUYING CABLE @ 3 GUYS PER TREE (120" APART)  
DOUBLE STRAND = 12 GAUGE TWISTED WIRE  
4" MULCH INSIDE SAUCER  
EARTH SAUCER 5" DEEP  
IN SODDED AREAS PLACE SOD TO BOTTOM OF EARTH SAUCER  
2"x4"x30" STAKE SET BELOW FIN. GRADE  
REMOVE TOP 1/3 OF BURLAP, ROPES & WIRE  
PLANTING MIX SUBGRADE SCARIFY TO 4" DEPTH  
6" COMPACTED PLANTING MIX UNDER BALL



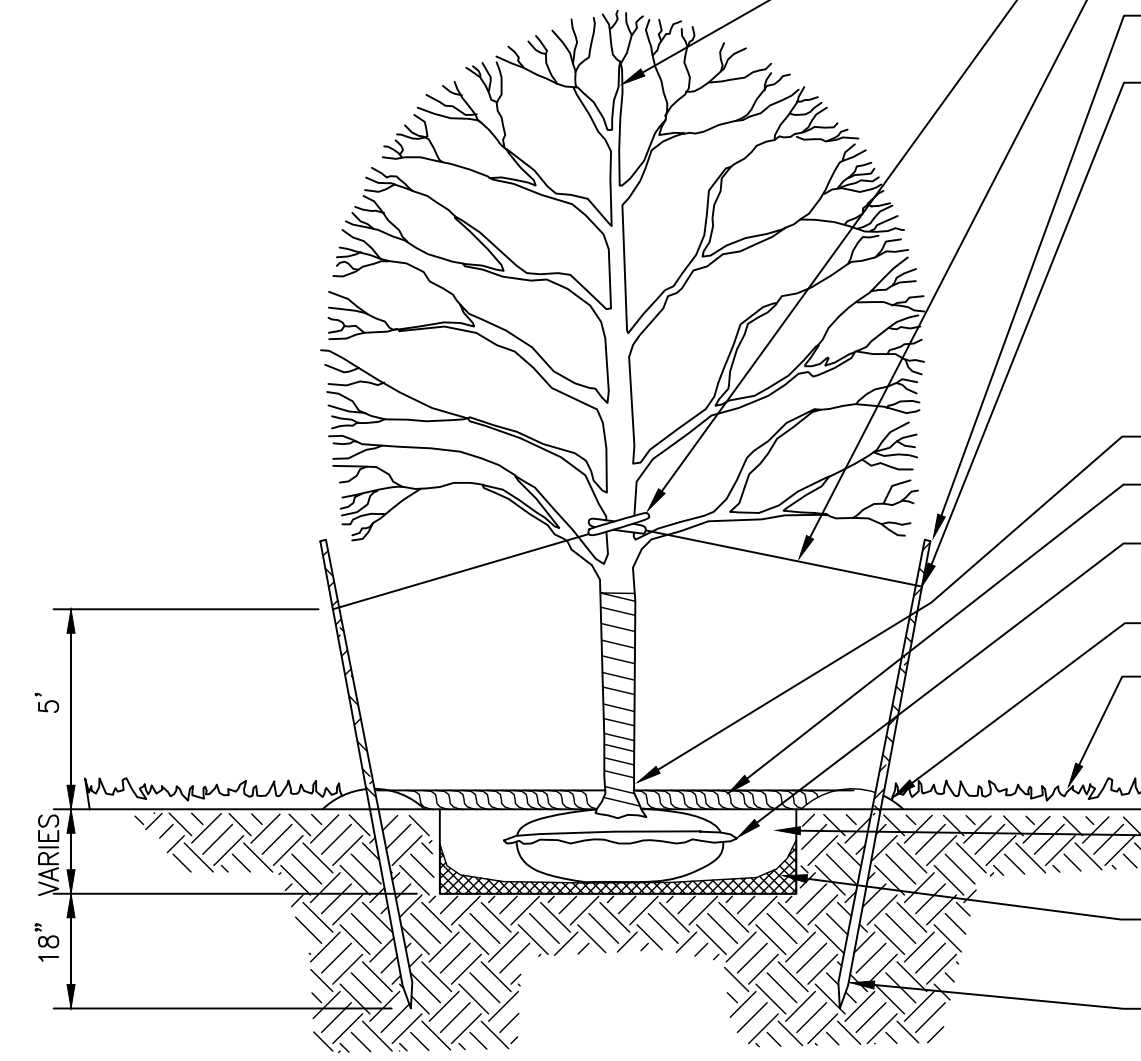
EVERGREEN TREE PLANTING DETAIL (NO SCALE)

PRUNE BROKEN OR MISSHAPEN - RETAIN NATURAL SHAPE  
IN SODDED AREAS PLACE SOD TO BOTTOM OF EARTH SAUCER  
REMOVE BALLING MATERIAL &/OR CONTAINER.  
FINISH GRADE MIN. 4" SHREDDED MULCH  
6" MIN. PLANTING MIXTURE BETWEEN BALL & PITWALL  
UNDISTURBED SUBGRADE SCARIFY TO 2" DEPTH



SHRUB PLANTING DETAIL (NO SCALE)

NEVER CUT THE LEADER  
RUBBER HOSE POSITIONED DIRECTLY ABOVE THE TREE BRANCH  
DOUBLE STRAND = 12 GAUGE TWISTED WIRE  
TREE STAKES, THREE 120" APART  
PULL WIRE THROUGH HOLE AND AROUND STAKE BEFORE TYING  
BEFORE BACK FILLING AROUND PLANT, REMOVE ALL PLASTIC BALLING MATERIAL & METAL CONTAINERS. PUNCH HOLES IN FIBER POTS TO PROVIDE DRAINAGE.



DECIDUOUS TREE PLANTING DETAIL (NO SCALE)

**BEBOSS Engineering**  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

**MISTER CAR WASH**  
CWP WEST LLC  
222 E. 5TH AVE.  
TUCSON, AZ 85705  
206.664.1303

**LANDSCAPE PLAN**

PROJECT	PREPARED FOR	DATE
LAYOUT MODIFICATIONS	PER P.C. MEETING	PER TOWNSHIP COMMENTS
1-16-24	12-11-23	10-25-23
3 ST	1 ST	NO BY
2 ST	1 ST	
1 ST		

DESIGNED BY: PC  
DRAWN BY: PC  
CHECKED BY:  
SCALE: 1" = 20'  
JOB NO: 21-519  
DATE: 10/03/2023  
SHEET NO. 9

**FOR SITE PLAN APPROVAL ONLY!  
NOT FOR CONSTRUCTION**

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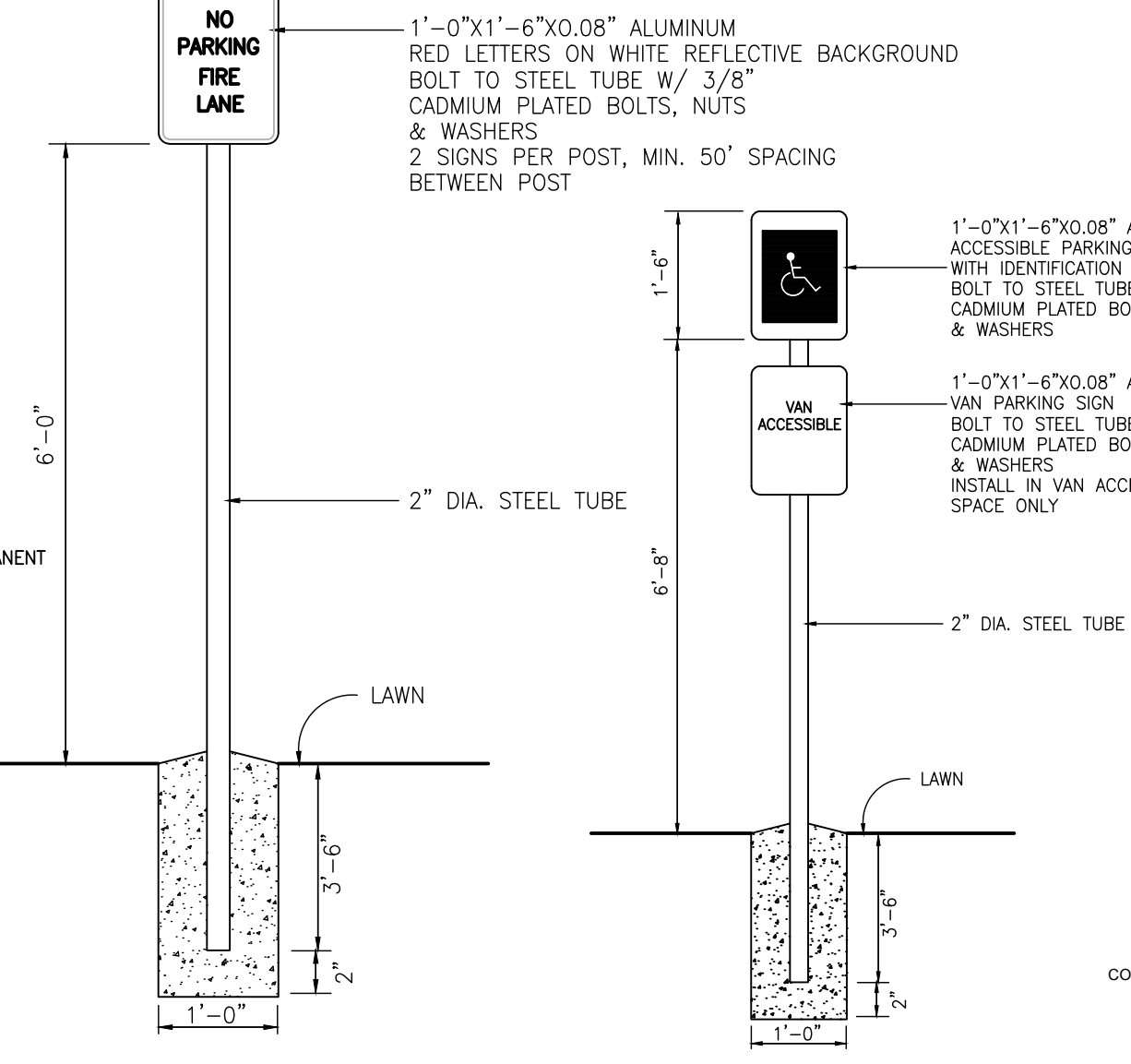
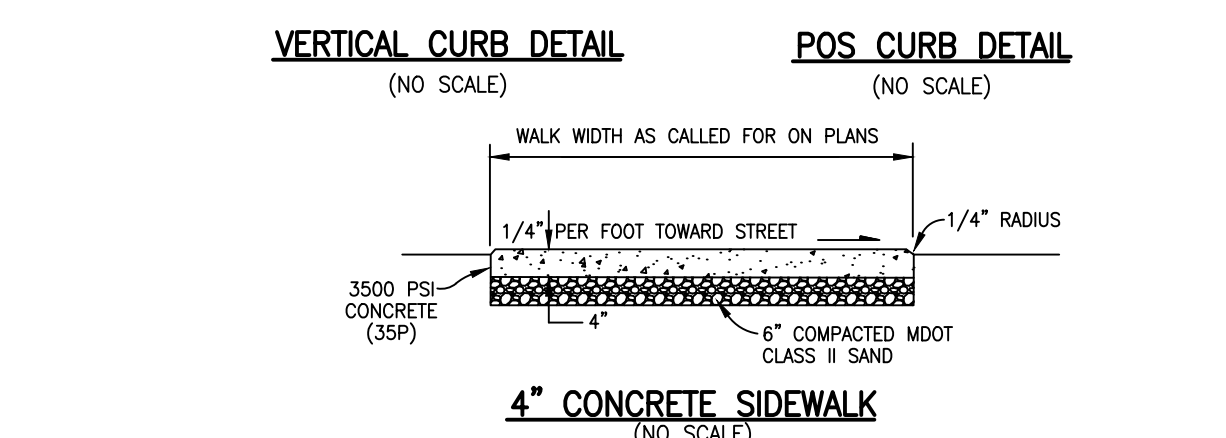
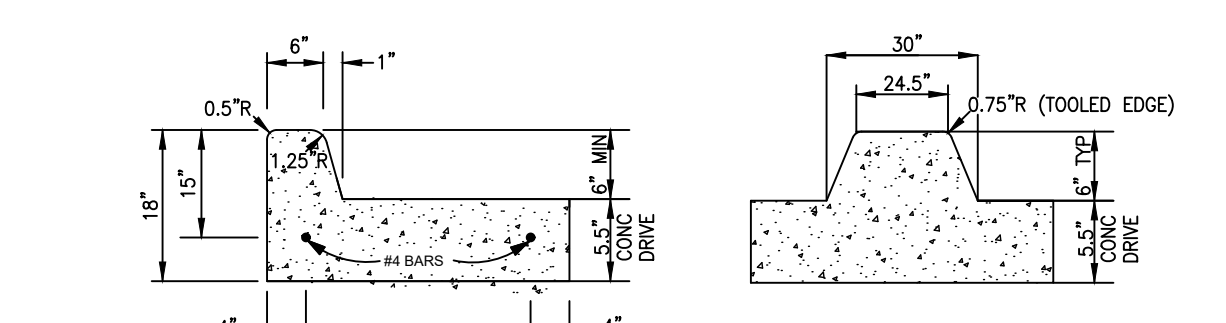
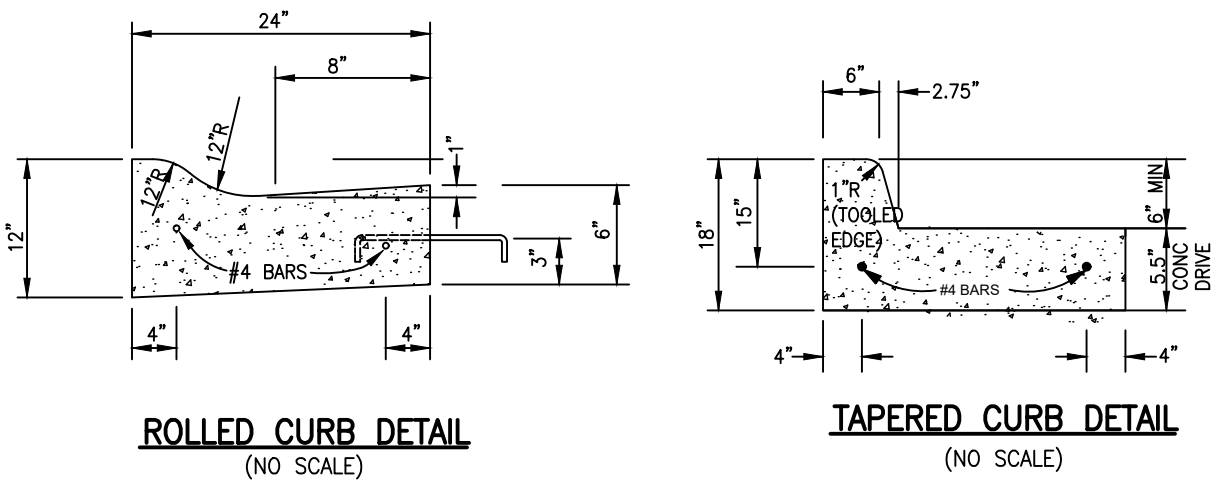


**LIVINGSTON COUNTY SOIL EROSION PERMIT TEMPLATE**  
TEMPORARY CONTROLS AND SEQUENCE

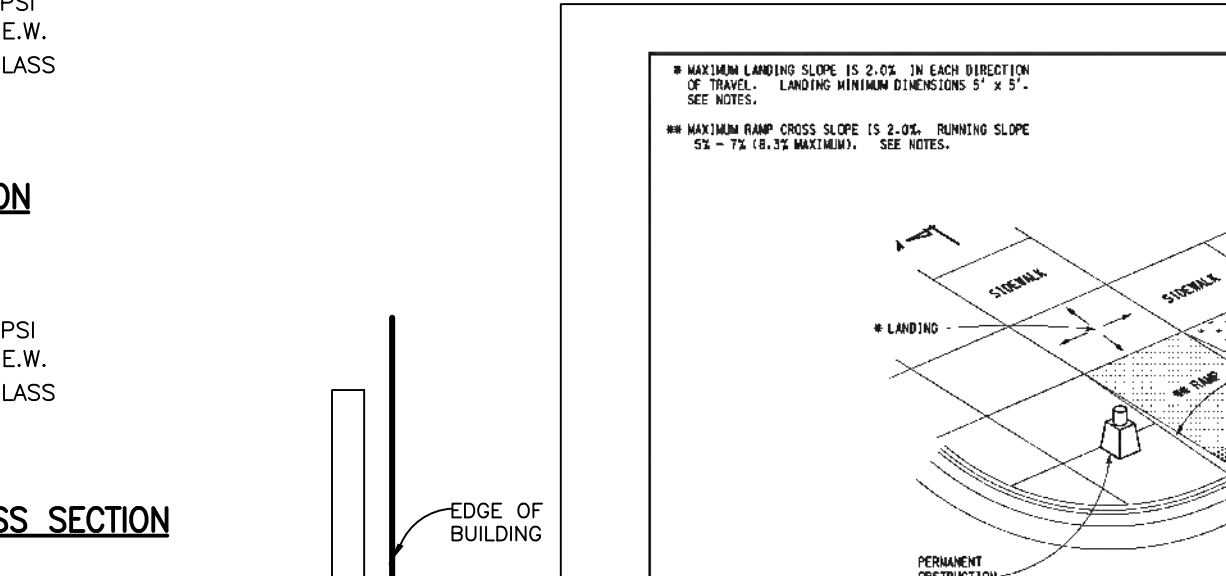
- NOTIFY LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE 24 HOURS PRIOR TO START OF GRADE WORK.
  - IN ACCORDANCE WITH PUBLIC ACT NO. 53, OF 1974 THE PERMIT HOLDER SHALL CALL MISS DIG FOR STAKING AND LOCATING OF UTILITIES, AT LEAST 72 HOURS IN ADVANCE OF THE START OF ANY WORK.
- PERMITTING STANDARDS
- (IMPORTANT NOTICE) RETENTION/DETENTION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION. INGRESS/EGRESS MUST HAVE LARGE CRUSHED ROCK TO REDUCE THE TRACKING OF SOIL ONTO THE PUBLIC TRAFFIC AREAS. SEE DETAIL ITEMS BELOW.
  - 36" M.D.T. SPECIFICATION TYPE SALT FABRIC FENCE AS SHOWN ON PLANS SHALL BE PLACED AND MAINTAINED ALONG PERMETER ON ALL LOW LYING AREAS OF THE CONSTRUCTION SITE TO FILTER RUNOFF BEFORE LEAVING PROPERTY.
  - ALL TEMPORARY EROSION CONTROL DEVICES AS NOTED ON PLANS SHALL BE INSTALLED PRIOR TO THE START OF MASSIVE EARTH DISTRIBUTION.
  - PLAN DOES DENOTE A DETAILED EROSION CONTROL DEVICE TO RESTRICT TRACKING OF MATERIAL ONTO THE HIGHWAY. STONE DIAPHRAGMS SHALL BE INSTALLED AT ALL INGRESS/EGRESS AREAS OF THE SITE PRIOR TO THE START OF MASSIVE EARTH DISRUPTION. DIAPHRAGMS SHALL BE OF CRUSHED STONE AND SHALL HAVE A MINIMUM LENGTH OF 100' LINEAL FEET.
  - RETENTION PONDS
    - RETENTION/DETENTION/SEDIMENTATION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION.
    - DETENTION POND OUTLETS SHALL BE OF THE STANDPIPE AND STONE FILTER SYSTEM WITH TRASH SCREEN. OUTLET FLOW SHALL NOT EXCEED 0.20 CUBIC FEET OF WATER PER SECOND PER ACRE. POND DIAPHRAGMS SHALL HAVE A MINIMUM OF ONE (1) FOOT OF FREEBOARD. AN EMERGENCY SPILLWAY SHALL BE CONSTRUCTED WITHIN THE FREEBOARD LEVEL.
    - THE EMERGENCY SPILLWAY FROM THE DETENTION POND SHALL BE SLOPED AND FENCED, OR RIP RAPPED, 15 FEET PAST THE TOE OF THE SLOPE OF THE BERM.
    - DIKES AND BERMS SHALL BE FREE OF ALL ORGANIC MATTER.
    - RETENTION/DETENTION PONDS SHALL BE FENCED WITH A 4' CHAIN LINK FENCE INCLUDING A 12' ACCESS GATE FOR MAINTENANCE UNLESS MINIMUM 5 FT. HORIZONTAL TO 1 FT. VERTICAL SIDE SLOPES ARE PROVIDED. THE FENCE SHALL BE INSTALLED AT THE OUTER PORTION OF THE BERM, TO ALLOW FOR MAINTENANCE WORK TO BE DONE INSIDE THE FENCE.
    - ALL UNIMPROVED DISTURBED AREAS SHALL BE STRIPPED OF TOPSOIL WHICH WILL BE STORED ONSITE DURING THE EXCAVATING STAGE. TOPSOIL PILES SHALL BE SEEDED AND MULCHED, OR MATTED WITH STRAW IN THE NON-GROWING SEASON, IMMEDIATELY AFTER THE STRIPPING PROCESS IS COMPLETED, TO PREVENT WIND AND WATER EROSION.
    - SOIL EROSION CONTROLS SHALL BE MONITORED DAILY BY THE ON-SITE ENGINEER, OR CONTRACTOR, WHICHEVER CASE APPLIES.

- ALL STORM DRAINAGE PIPE 30" IN DIAMETER OR LARGER SHALL BE FRONTED, AT THE JOINTS ON THE INSIDE WITH MORTAR, AFTER BACKFILLING.
- ALL STORM DRAIN OUTLETS THAT DO NOT EMPTY INTO THE RETENTION/DETENTION POND SHALL HAVE A TEMPORARY 5'X10'X3' SUMP INSTALLED AT THE TERMINATION OF THE STORM SEWER. UPON COMPLETION OF THE STABILIZATION WORK THE SUMP AREA SHALL BE FILLED AND RIP RAPPED WITH COBBLE STONE. SLIT TRAPS SHALL BE INSPECTED AFTER EACH STORM.
- STORM WATER OUTLETS DO NOT DENOTE RIP RAP. ALL OUTLETS SHALL BE RIP RAPPED OVER KEYED FILTER FABRIC WITH A MINIMUM OF 15 SQ. YARDS OF 6" OR LARGER COBBLE STONE.
- RIP RAP AS NOTED ON THE PLAN SHALL BE OF A FUNNEL SHAPE CONSTRUCTION. WIDTH SHALL INCREASE AS DISTANCE FROM THE OUTLET POINT INCREASES AT A 3:1 RATIO.
- RIP RAP SHALL BE OF COBBLE STONE, 6" IN DIAMETER OR LARGER. GROUNTING MAY BE NECESSARY, AND SHALL BE A MINIMUM OF 6" IN DEPTH WITH THE COBBLE SET IN THE CEMENT SLURRY.
- STORM WATER OUTLET IS IN NEED OF A SPLASH BLOCK WHICH IS NOT NOTED ON THE PLAN. INSTALL SPLASH BLOCK IF SLOPE OF THE PIPE IS 4% OR GREATER.
- IT WILL BE NECESSARY FOR THE DEVELOPER TO HAVE THE STORM DRAINAGE LINES CLEANED PRIOR TO FINAL INSPECTION BY THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE. IF REQUIRED, THIS WORK SHALL BE DONE BY A PROFESSIONAL SEWER CLEANING FIRM AND CERTIFIED IN WRITING BY THE PROJECT ENGINEER. ALL Sumps and TEMPORARY SLIT TRAPS SHALL ALSO BE CLEANED AT THIS TIME.
- STABILIZATION
  - ALL UNIMPROVED DISTURBED AREAS SHALL BE RE-TOP SOILED, WITH A MINIMUM OF 3" OF MATERIAL, SEEDED, MULCHED AND TACKED WITHIN 15 DAYS OF THE COMPLETION OF THE MASSIVE EARTH DISRUPTION. IN THE NON-GROWING SEASON STRAW MATTING WILL SUFFICE. HYDROSEEDING WILL BE AN ACCEPTABLE ALTERNATE FOR MULCHING. EXTREME CARE SHOULD BE EXERCISED IN SPRING AND FALL PERIODS AS A FROST WILL BREAK THE BIND OF THE HYDROSEEDING, WHICH WILL AFFECT THE EFFECTIVENESS OF THIS PROCEDURE.
  - IN THE NON-GROWING SEASON, TEMPORARY STABILIZATION OF MASSIVELY EXPOSED AREAS FOR WINTER STABILIZATION SHALL BE DONE WITH STRAW MATTING.
  - PERIODIC INSPECTIONS WILL BE MADE THROUGHOUT THE COURSE OF THE PROJECT. IT WILL BE THE RESPONSIBILITY OF THE MANAGERS OF THE PROJECT TO CONTACT THIS OFFICE FOR THE FINAL INSPECTION AT THE END OF THE PROJECT.
  - THIS COMMERCIAL PERMIT IS VALID FOR THE MASS EARTH MOVEMENT, THE INSTALLATION OF ROADS, DRAINS, AND UTILITIES AND IS NOT FOR ANY SINGLE FAMILY RESIDENCE. ALL RESIDENTIAL BUILDERS WILL NEED TO SECURE WAIVERS AND OR PERMITS AS NECESSARY FOR EACH LOT IN THIS DEVELOPMENT AT THE TIME APPLICATION FOR SINGLE FAMILY RESIDENCE IS MADE.
  - THE ISSUING BUILDING DEPARTMENT SHALL NOT ISSUE THE CERTIFICATE OF OCCUPANCY UNTIL THE FINAL INSPECTION LETTER FROM THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE HAS BEEN OBTAINED.
  - PER THE LIVINGSTON COUNTY DRAIN COMMISSIONER THE SEEDING, FERTILIZER AND MULCH MINIMUM QUANTITIES SHALL BE AS FOLLOWS:
 

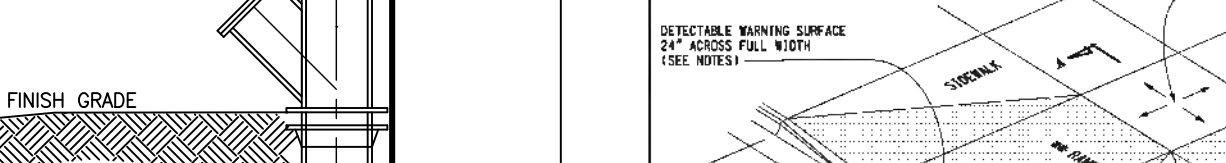
TOP-SOIL	3" IN DEPTH
GRASS SEED	218 LBS. PER ACRE
FERTILIZER	150 LBS. PER ACRE
STRAW MULCH	3" IN DEPTH 1.5 TO 2 TONS PER ACRE (ALL MULCHING MUST HAVE A TOWN, SUCH AS TACKIFIER, NET BINDING, ETC.)
  - HYDRO-SEEDING
    - HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1% IN SUCH CASES STABILIZATION SHALL BE DONE WITH SEED AND STRAW MULCH WITH A TACKIFIER.
- MAINTENANCE SCHEDULE FOR SOIL EROSION CONTROLS
  - SILT FENCE SHALL BE INSPECTED WEEKLY AND AFTER EACH MAJOR STORM EVENT. MAINTENANCE SHALL INCLUDE REMOVAL OF ACCUMULATED SILT AND REPLACEMENT OF TORN SECTIONS. SILT FENCE SHALL BE REMOVED WHEN ALL CONTRIBUTING AREAS HAVE BEEN STABILIZED.
  - TRACKING PAD SHALL BE INSPECTED MONTHLY FOR ACCUMULATED DIRT. TRACKING PAD SHALL BE REPLACED WHEN THE STONES ARE CHOKED WITH DIRT. TRACKING PAD SHALL BE REMOVED IMMEDIATELY PRIOR TO THE FIRST COURSE OF ASPHALT BEING LAID.
  - DETENTION/RETENTION POND SHALL BE INSPECTED QUARTERLY ON A PERMANENT BASIS. MAINTENANCE SHALL INCLUDE SEDIMENT REMOVAL, EMBANKMENT STABILIZATION AND MAINTAINING THE OUTLET STRUCTURE IN GOOD CONDITION. NO TREES SHALL BE ALLOWED TO GROW ON THE EMBANKMENT.
  - CATCH BASINS SHALL BE INSPECTED ANNUALLY FOR ACCUMULATION OF SEDIMENT. ALL SEDIMENT MUST BE REMOVED AND DISPOSED OF PROPERLY WHEN THE SUMP IS FULL.
  - COMMON AREAS SHALL BE STABILIZED NO LATER THAN 15 DAYS AFTER GRADE WORK, PURSUANT TO RULE 1709 (5).



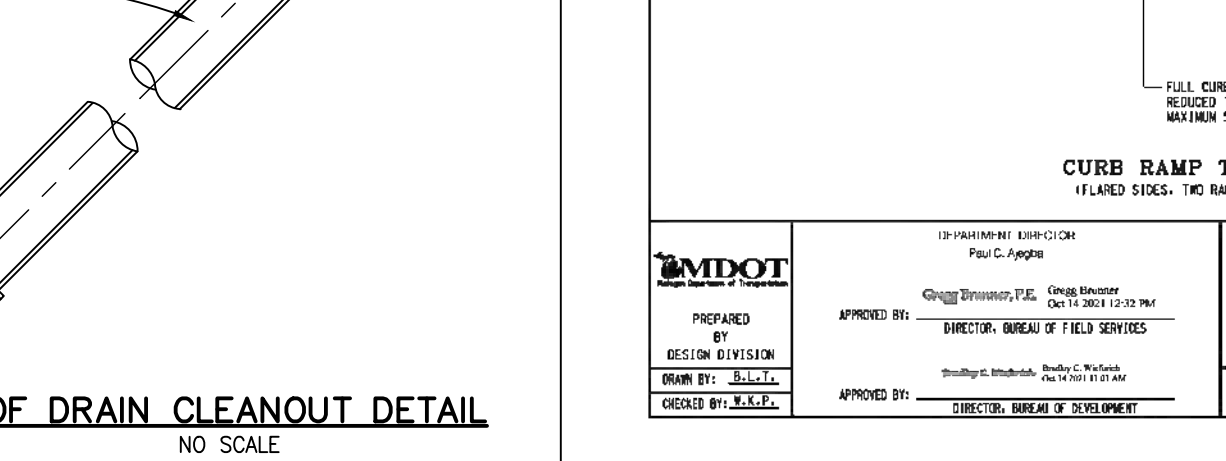
NO PARKING SIGN DETAIL (NO SCALE)  
HANDICAP PARKING SIGN DETAIL (NO SCALE)



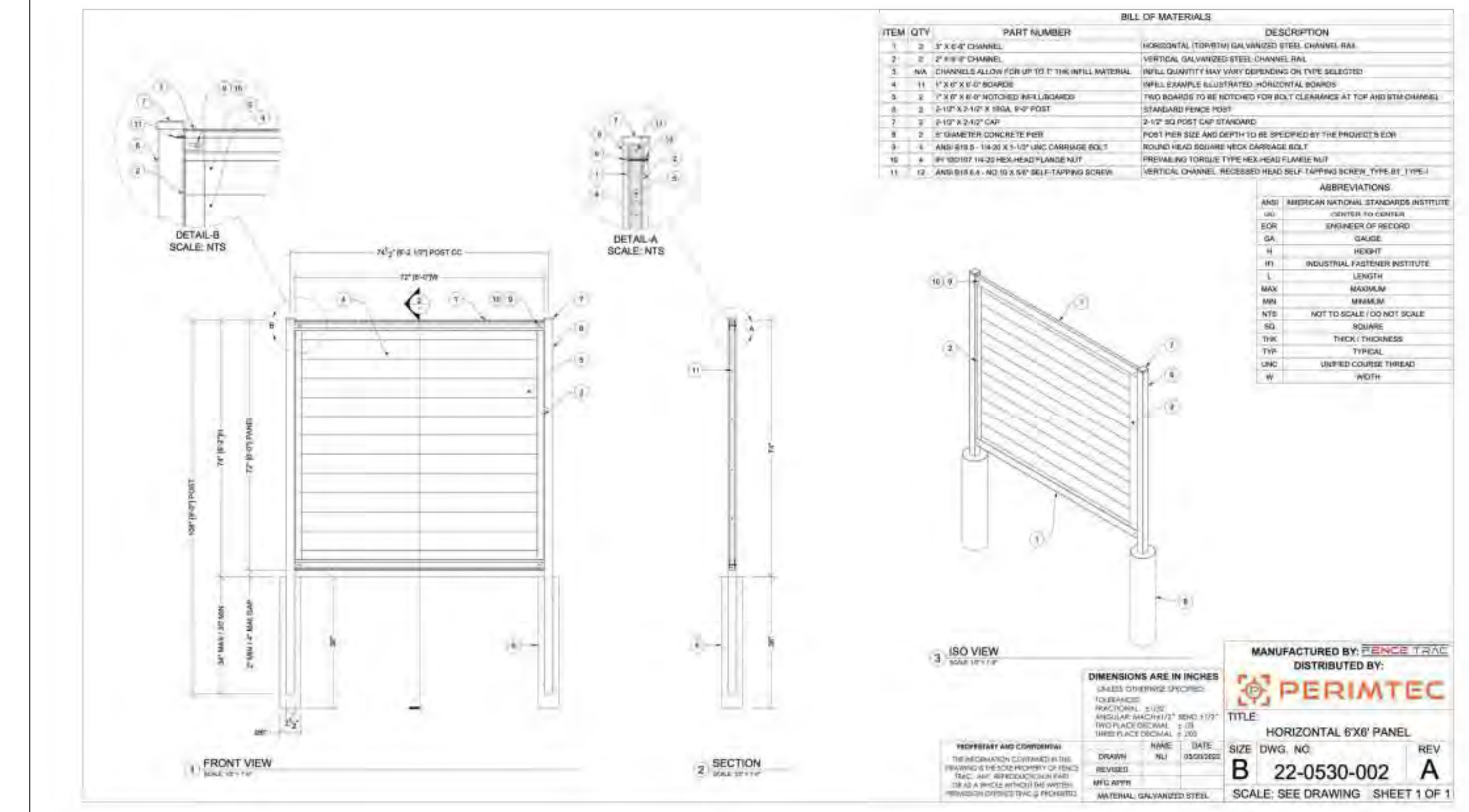
CONCRETE PAVEMENT CROSS SECTION (NO SCALE)



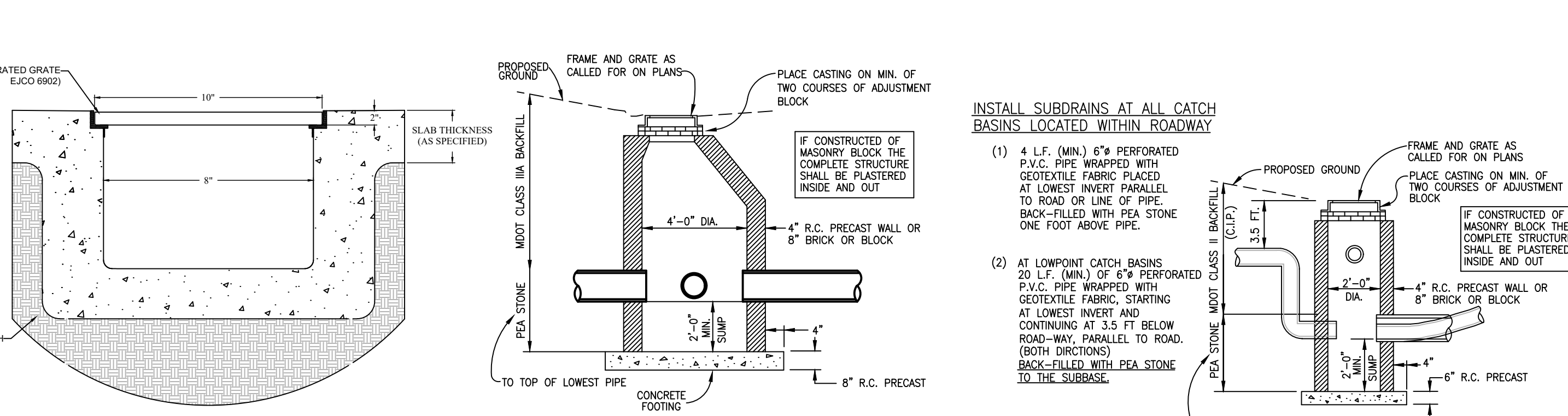
DUMPSTER PAD CONCRETE PAVEMENT CROSS SECTION (NO SCALE)



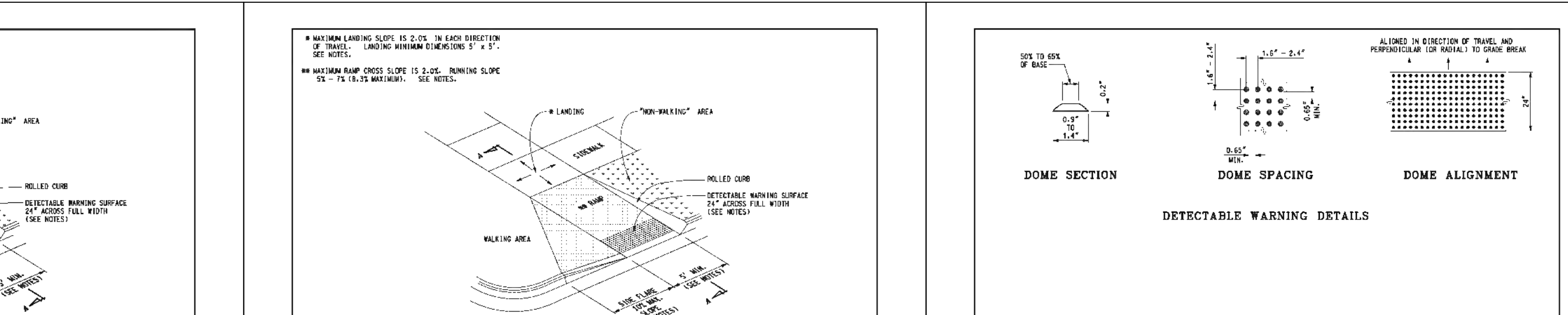
ROOF DRAIN CLEANOUT DETAIL (NO SCALE)



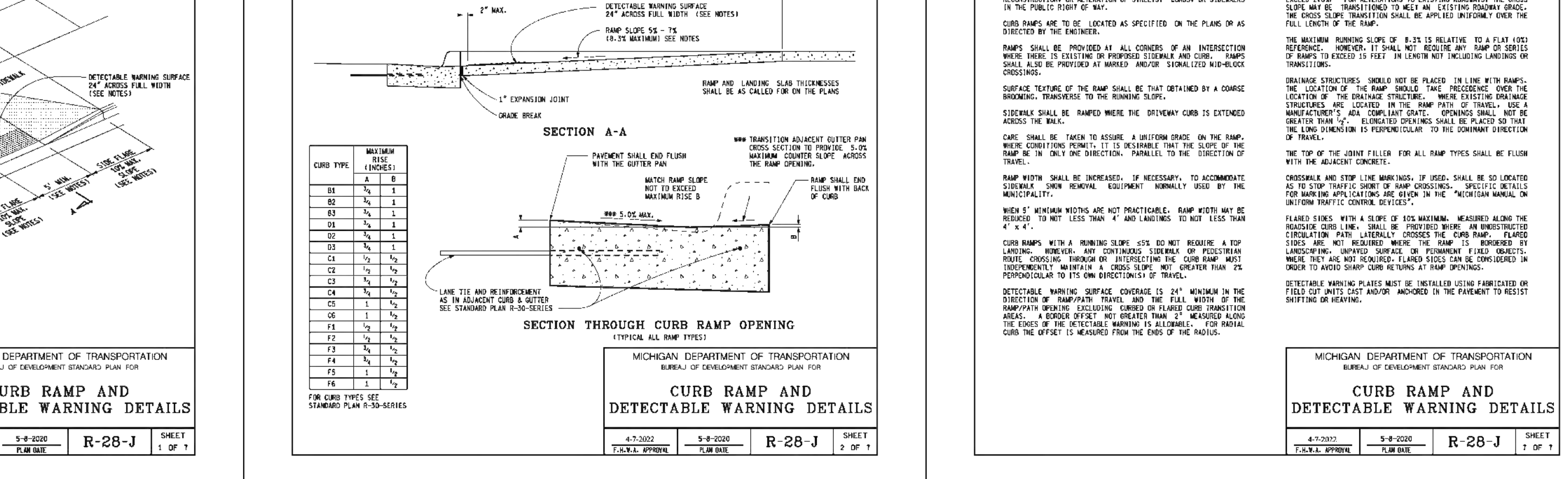
SCREEN FENCE DETAIL (NO SCALE)



4 FT. DIA. CATCH BASIN W/SUMP (NO SCALE)



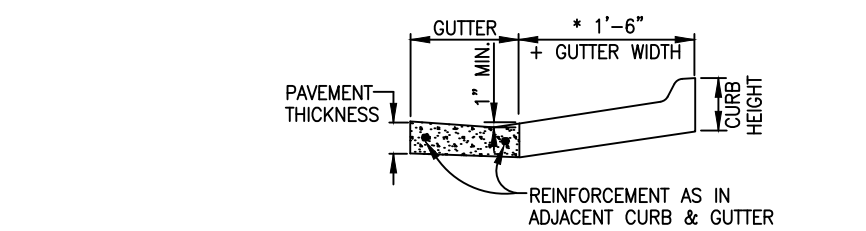
2 FT. DIA. CATCH BASIN W/SUMP (NO SCALE)



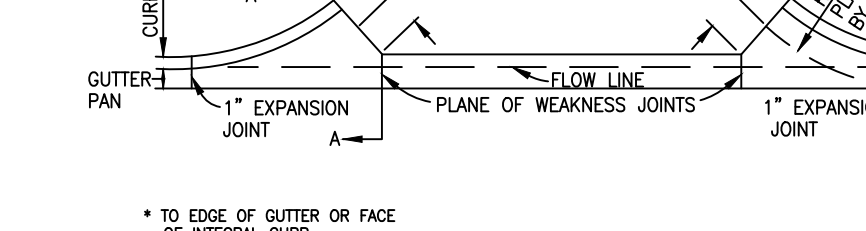
CURVED RAMP TYPE R AND CURVED RAMP TYPE RF (NO SCALE)

SLOPES AND DITCHES

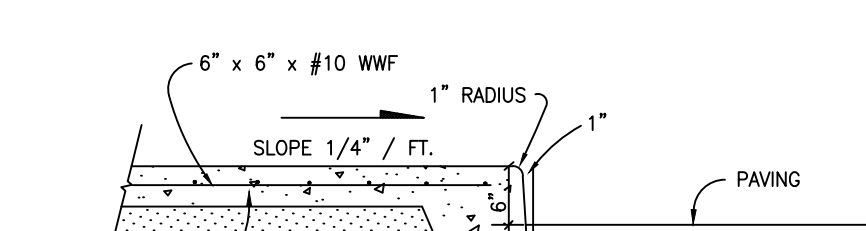
- ON SITE DITCHES SHALL BE OF THE FLAT BOTTOM TYPE MINIMUM WIDTH OF 2' WITH A MINIMUM OF 3' HORIZONTAL TO 1' VERTICAL SIDE SLOPES, 3:1.
- DITCHES WITH STEEP SLOPES WILL NEED FLOW CHECKS TO PREVENT SCOURING OF THE DITCH BOTTOM. DITCHES SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR INSPECTOR.
- SLOPES IN EXCESS OF 3' HORIZONTAL TO 1' VERTICAL SHALL NOT BE USED EXCEPT WITH A MECHANICAL DEVICE SUCH AS A RETAINING WALL, TERRACING, OR OTHER APPROVED DEVICE.
- STORM DRAINS
  - ALL STORM WATER STRUCTURES, CATCH BASINS AND/OR MANHOLES, IF BLOCK, SHALL BE PLASTERED ON BOTH THE INSIDE AND OUTSIDE OF THE STRUCTURES. GROUING AND POINTING WILL BE NECESSARY AT THE CASTING AND STRUCTURE JOINT TO PREVENT LEAKAGE AND THE RESULTING SOIL MOVEMENT, AROUND THE STRUCTURE.
  - STORM WATER INLETS SHALL HAVE AS A TEMPORARY CONTROL A STRAW BALE BARRIER AND STONE FILTER INSTALLED AROUND THE INLET DURING CONSTRUCTION. AS AN ALTERNATIVE TO THE STRAW BALE BARRIER, A BURLAP AND PEA STONE FILTER MAY BE USED. THREE LAYERS OF BURLAP FIBER AND A FILTER OF PEA STONE MINIMUM 1 FT. IN DEPTH CAN BE USED. DUE TO THE POROSITY OF THE BURLAP FILTER THE MINIMUM OF 1 FT. OF STONE IS VERY IMPORTANT. THE CONTROL SHALL BE INSTALLED AS SOON AS THE STRUCTURE IS BUILT AND INSPECTED DAILY.
  - BURLAP AND PEA STONE FILTERS WILL NEED TO BE CHANGED AFTER EACH RAINFALL.
  - COUNTY CODE REQUIRES A MINIMUM PIPE SIZE OF 12" IN DIAMETER. IF SMALLER PIPE IS NEEDED FOR OUTLET PURPOSES THE 12" CAN BE BAFFLED TO THE CORRECT SIZE. ALL PIPE SHALL MEET THE 12" DIAMETER CODE SIZE.
  - ALL STORM DRAIN OUTLETS 15" IN DIAMETER OR LARGER SHALL HAVE ANIMAL GUARDS INSTALLED TO PREVENT ENTRANCE TO THE SYSTEM.



SECTION A-A (NO SCALE)



CONCRETE DRIVEWAY OPENING - MDOT STANDARD II-42, DETAIL I.M. (NO SCALE)



INTEGRAL CONCRETE WALK / CURB DETAIL (NO SCALE)

MANHOLE FRAME & COVER & CATCH BASIN INLETS					
TYPE	LOCATION	MANUFACTURER OR EQUAL	TYPE OF COVER OR INLET	TYPE OF COVER OR INLET	MAXIMUM DRAINAGE AREA (ACRES)
MH	ALL	1040	R-1916 F1	SANITARY-SOLID SELF-SEALING STORM-VENTED	N/A
CB	TYPE A CURB	7000-T1-M1	R-3070	FLAT GRATE WITH VERT. OPEN BACK	0.71
CB	TYPE B CURB	7085-T1-M1	R-3034-B	FLAT GRATE WITH ROLL BACK	0.87
CB	PAVEMENT/SHOULDER	1020-M1	R-2080-D	FLAT GRATE	0.68
CB	OPEN AREA	1020-01	R-2580-D	BEEHIVE GRATE 4" HIGH	0.63
CB	GUTTER	5100	R-3238	CONCAVE INLET	0.96

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

**BEBOSS Engineering**  
Engineers Planners Landscape Architects

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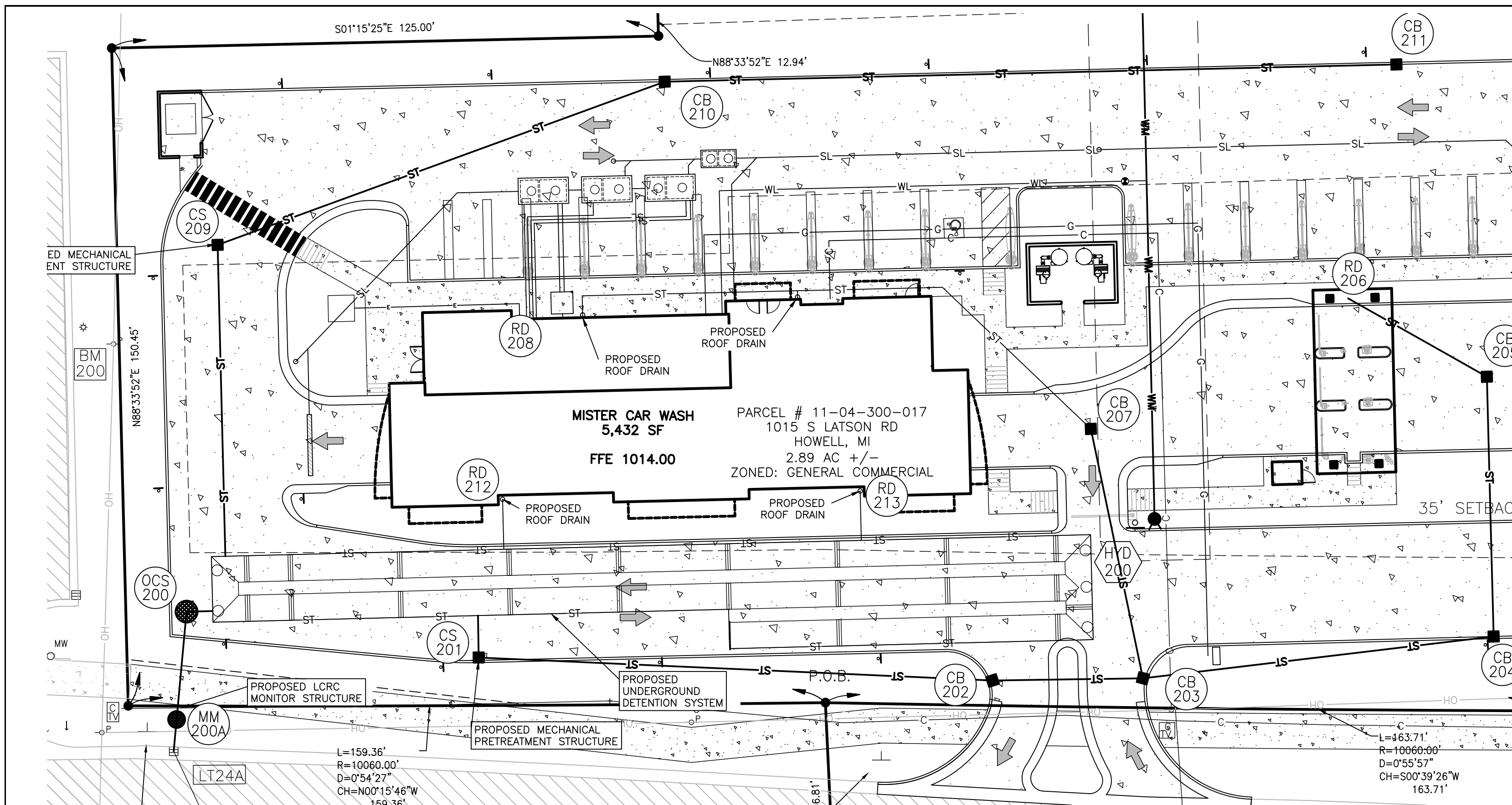
**MISTER CAR WASH**

CWP WEST LLC  
232 E 5TH AVE  
TUSCON, AZ 85705  
2065641303

CONSTRUCTION DETAILS

DESIGNED BY: ST  
DRAWN BY: DH/JS  
CHECKED BY:  
SCALE: NO SCALE  
JOB NO: 21-519  
DATE: 10/04/2023  
SHEET NO. 10





### STORM WATER MANAGEMENT NARRATIVE

**PRE-DEVELOPMENT:**  
THE SITE CURRENTLY SITS VACANT AND SHEET FLOWS FROM EAST TO WEST TO THE LATSON ROAD STORM SEWER SYSTEM.

**POST DEVELOPMENT:**  
THE SITE WILL BE DEVELOPED AND PAVED FOR USE AS A CAR WASH. THE SITE WILL CONTAIN A STORM SEWER COLLECTION SYSTEM WHICH WILL COLLECT ALL ON-SITE (AND SOME TRIBUTARY OFF-SITE) STORM WATER AND ROUTE IT TO A MECHANICAL PRETREATMENT UNIT. THE MECHANICAL PRETREATMENT UNIT IS PROPOSED AND DESIGNED TO MEET THE REQUIRED WATER QUALITY STANDARDS PRIOR TO DISCHARGE INTO THE PROPOSED ON-SITE UNDERGROUND DETENTION SYSTEM. INFILTRATION TESTING HAS BEEN COMPLETED THAT INDICATE THAT ON-SITE SOILS IN THE AREA OF THE PROPOSED BASIN ARE APPROXIMATELY 1.5 IN/HR. APPLYING A FACTOR OF SAFETY OF 2, THE SITE IS UTILIZING A SOILS INFILTRATIVE CAPACITY OF 0.75 IN/HR.

ONE OF THE MAIN GOALS OF THE CURRENT LIVINGSTON COUNTY DRAIN COMMISSIONER STORM WATER STANDARDS IS TO PROMOTE ON-SITE INFILTRATION IF SUITABLE SOILS EXIST. IF SITE SOILS EXCEED 0.25 IN/HR, INFILTRATION IS EXPECTED TO BE IMPLEMENTED, AND WITH ON-SITE SOILS WITH INFILTRATIVE RATES GREATER THAN 0.50 IN/HR, THE SOILS DO NOT NEED ANY AMENDMENT TO FURTHER PROMOTE INFILTRATION. DUE TO THE GEOMETRICS OF THE SUBJECT SITE (BEING SHALLOW AND A SMALLER COMMERCIAL PARCEL), THERE ARE MINIMAL OPPORTUNITIES TO PROMOTE INFILTRATION OTHER THAN AT THE LOCATION OF THE UNDERGROUND DETENTION SYSTEM. IN ORDER TO PROMOTE INFILTRATION AT THE BASIN FOOTPRINT PRIOR TO STORM WATER DISCHARGE TO THE LATSON ROAD STORM SEWER SYSTEM OCCURRING, THE UNDERGROUND DETENTION SYSTEM PIPE INVERT IS SET BELOW THE OUTLET CONTROL ORIFICE ELEVATION BY 2.5'. SO 2.5' OF THE 6" DIAMETER UNDERGROUND SYSTEM PIPE WILL BE BELOW THE OUTLET ELEVATION. A PERFORATED PIPE AND THE SURROUNDING STRUCTURAL BACKFILL AROUND THE UNDERGROUND DETENTION SYSTEM WILL AID IN PROMOTION OF THE INFILTRATION OF STORM WATER IN THE ON-SITE 0.75 IN/HR SOILS. THE VOLUME WITHIN THE UNDERGROUND SYSTEM THAT IS BELOW THE OUTLET ELEVATION IS 5,062 CFT:

494 LFT PIPE X 11.1511 CFT/LFT OF PIPE (BOTTOM 2.5' OF 6" DIA PIPE) = 5,509 CFT  
THE 5,509 CFT PROVIDED BELOW THE INVERT IS INTENDED TO MEET OR EXCEED THE REQUIRED CHANNEL PROTECTION VOLUME 4,917 CFT. THIS DESIGN MEETS THAT VOLUME REQUIREMENT.

PER THE LDCO STANDARDS, VOLUME PROVIDED FOR THE CHANNEL PROTECTION VOLUME CAN BE CREDITED TOWARDS THE REQUIRED 100-YR DETENTION VOLUME, SO LONG AS THE REMAINING DETENTION VOLUME REQUIRED IS NOT LESS THAN THE EXTENDED DETENTION VOLUME. WITH THIS, A REMAINING 8,288 CFT OF VOLUME IS NEEDED:

13,797 CFT - 5,509 CFT = 8,288 CFT (REMAINING VOLUME NEEDED ABOVE OUTLET)  
8,288 CFT > 7,186 CFT (EXTENDED DETENTION VOLUME)

A VOLUME OF 8,459 CFT IS PROVIDED ABOVE THE OUTLET CONTROL ELEVATION.

494 LFT PIPE X 17.1232 CFT/LFT OF PIPE (TOP 3.5' OF 6" DIA PIPE) = 8,459 CFT  
THE TOTAL STORAGE VOLUME PROVIDED IN THE SYSTEM IS 13,968 CFT (5,509 CFT BELOW OUTLET FOR CPVC INFILTRATION VOLUME + 8,459 CFT ABOVE OUTLET)

IN ORDER FOR INFILTRATION TO OCCUR IN THE BASIN FOOTPRINT, AN Adequate FOOTPRINT FOR INFILTRATION MUST BE PROVIDED. PER THE LDCO STANDARDS AND WITH AN INFILTRATION RATE OF 0.75 IN/HR, A MINIMUM BASIN FOOTPRINT OF 2,810 SFT IS REQUIRED. A BASIN FOOTPRINT OF THE PROPOSED SYSTEM IS 3,462 SFT. WITH THIS FOOTPRINT AREA AND ON-SITE INFILTRATION RATE, THE PROVIDED RATE OF INFILTRATION IS 216.4 CFT/HR WHICH RESULTS IN FULL INFILTRATION WITHIN 23.4 HOURS.

3,762 SFT X (0.75 IN/HR X 1FT/12IN) = 235.1 CFT/HR  
5,509 CFT / 235.1 CFT/HR = 23.4 HRS TO INFILTRATE THE PROVIDED CPVC STORAGE VOLUME BELOW THE OUTLET INVERT.

### LIVINGSTON COUNTY DETENTION BASIN CALCULATIONS

AREA (ACRES)	IMPERVIOUS FACTOR	IMPERVIOUS
1.07	0.9	0.96
0.00	0.7	0.00
0.44	0.2	0.09

COMPOUND C: 0.69  
TOTAL DRAINAGE AREA: 1.51 ACRES

**WATER QUALITY VOLUME V<sub>WQ</sub>**  
V<sub>WQ</sub> = 3,630(C/A) = 3782 FT<sup>3</sup>  
Are upstream infiltration BMP's provided? NO (Infiltration promoted at Basin)  
V<sub>u</sub> = 0.15(V<sub>WQ</sub>) = 567 FT<sup>3</sup>

**WATER QUALITY RATE FOR MECHANICAL STRUCTURE**  
T<sub>c</sub> = MAX TIME OF CONCENTRATION = 17.91 MIN  
Q<sub>WQ</sub> = (C/A)(30.2(T<sub>c</sub>+9.17))<sup>0.81</sup> = 2.17 CFS

**CHANNEL PROTECTION VOLUME CONTROL - REQUIRED**  
V<sub>CP-R</sub> = 4,719(C/A) = 4917 FT<sup>3</sup>

**CHANNEL PROTECTION VOLUME CONTROL - PROVIDED**  
In-Situ Infiltration rate = 0.75 IN/HR (INCLUDES FACTOR OF SAFETY OF 2)  
Are upstream infiltration BMP's provided? NO INFILTRATION  
Basin Footprint Infiltration Area Required = 2610 FT<sup>2</sup>  
V<sub>CP-P</sub> = 5509 FT<sup>3</sup>

**CHANNEL PROTECTION RATE CONTROL (EXTENDED DETENTION VOLUME)**  
V<sub>ED</sub> = 6,897(C/A) = 7186 FT<sup>3</sup>

**EXTENDED DETENTION OUTLET RATE**  
Q<sub>ED</sub> = V<sub>ED</sub>(48hr) = 0.042 CFS  
H<sub>ED</sub> = V<sub>ED</sub>(4,800 (H<sup>1/2</sup>)) = 1.0 1" HOLES  
ELEV<sub>ED</sub> = 2.63 FT  
1009.25 FT

**100-YEAR ALLOWABLE OUTLET RATE**  
Q<sub>DRAIN</sub> = Restricted Drain Rate = 0.15 CFS/ACRE  
Q<sub>VRR</sub> = 1.1055 - 0.206LN(A) = 1.000 CFS/ACRE  
Q<sub>LOOP</sub> = (LESSER OF Q<sub>DRAIN</sub> & Q<sub>VRR</sub>) \* A = 0.227 CFS

**100-YEAR DETENTION VOLUME**  
V<sub>100R</sub> = 18985 (C/A) = 19780 FT<sup>3</sup>  
Q<sub>100R</sub> = (C/A)(63.3(T<sub>c</sub>+9.17))<sup>0.81</sup> = 6.00 CFS  
R = 0.206 - 15ln(Q<sub>100R</sub>/Q<sub>100R</sub>) = 0.8975  
V<sub>100D</sub> = V<sub>100R</sub> TR V<sub>CP-R</sub> = 8288 FT<sup>3</sup>  
Is V<sub>100D</sub> ≥ V<sub>ED</sub>? YES  
V<sub>100D</sub> = 8288 FT<sup>3</sup>

**BASIN STORAGE PROVIDED**  
Lineal Footage of Pipe in system: 494 ft

ELEVATION	INCREMENTAL VOLUME / LFT (FT <sup>3</sup> )	TOTAL VOLUME (FT <sup>3</sup> )
1010.12	1,254	555.9
1009.62	1,972	974.2
1009.12	2,432	1,200.5
1008.62	2,725	1,344.9
1008.12	2,909	1,433.0
1007.62	2,986	1,475.1
1007.12	2,986	1,475.1
1006.62	0.0	0.0
1006.12	2,909	1,433.0
1006.12	2,725	1,344.9
1005.62	2,432	1,200.5
1005.12	1,972	974.2
1004.62	1,254	555.9
1004.12	0	0

PROVIDED FOOTPRINT OF BASIN BOTTOM AREA: 3,762 FT<sup>2</sup>

**OUTLET CONTROL STRUCTURE**  
Q<sub>ED</sub> ACTUAL  
H<sub>ED</sub> = 1 (1" HOLES)  
A<sub>ED</sub> = 0.0055 FT<sup>2</sup>  
Q<sub>ED</sub> ACTUAL = (A<sub>ED</sub>) \* (0.62 \* (2 \* 32.2 \* h)<sup>0.5</sup>) = 0.044 CFS

**OVERFLOW SPILLWAY DESIGN**  
Design Flow Rate: Q<sub>100R</sub> = 6.00 CFS  
Depth of Spillway: D<sub>SPILL</sub> = 6 INCHES  
Width of Spillway: W<sub>SPILL</sub> = Q<sub>100R</sub> / (3.33 D<sub>SPILL</sub><sup>1.49</sup>) = 5.1 FT

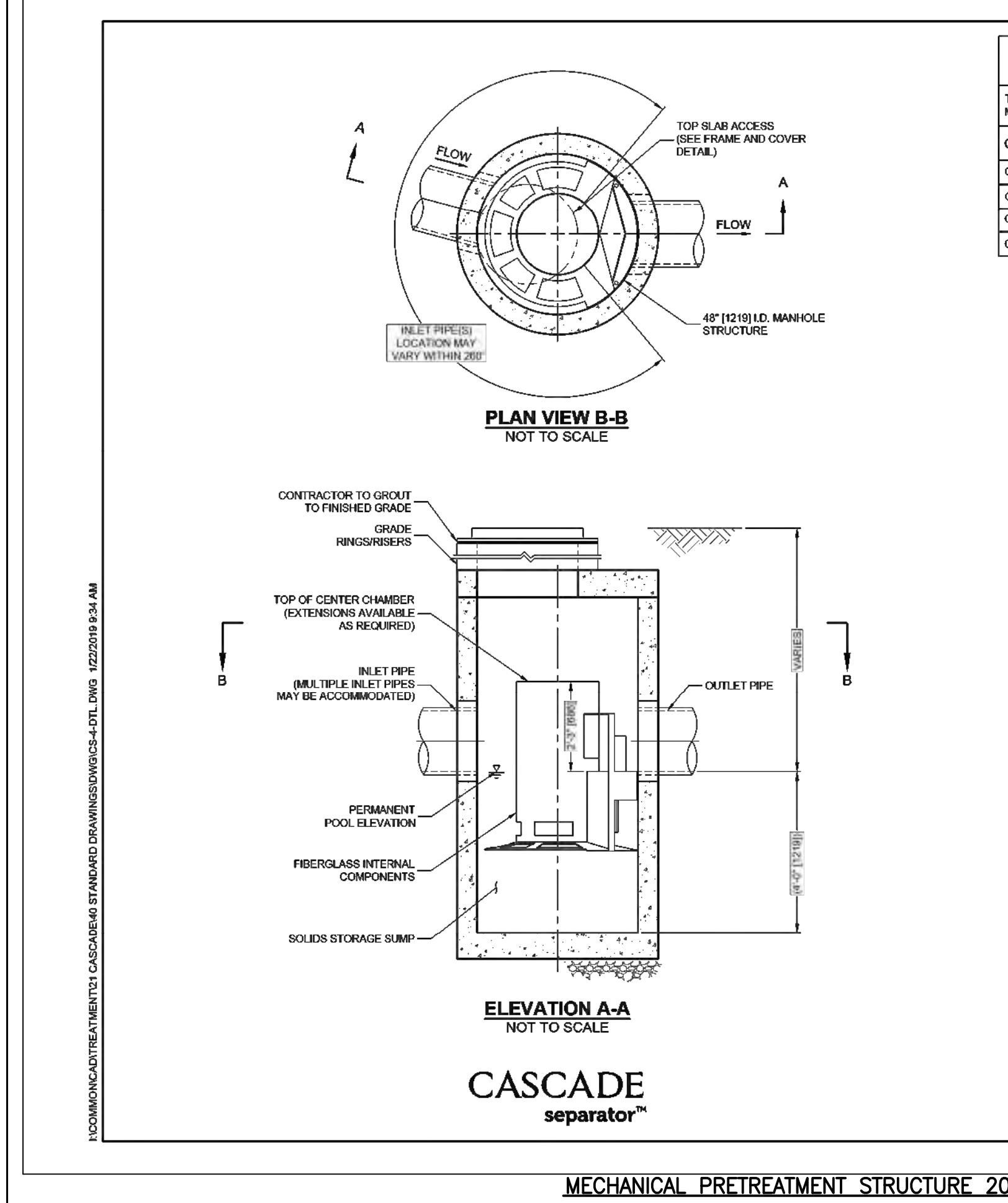
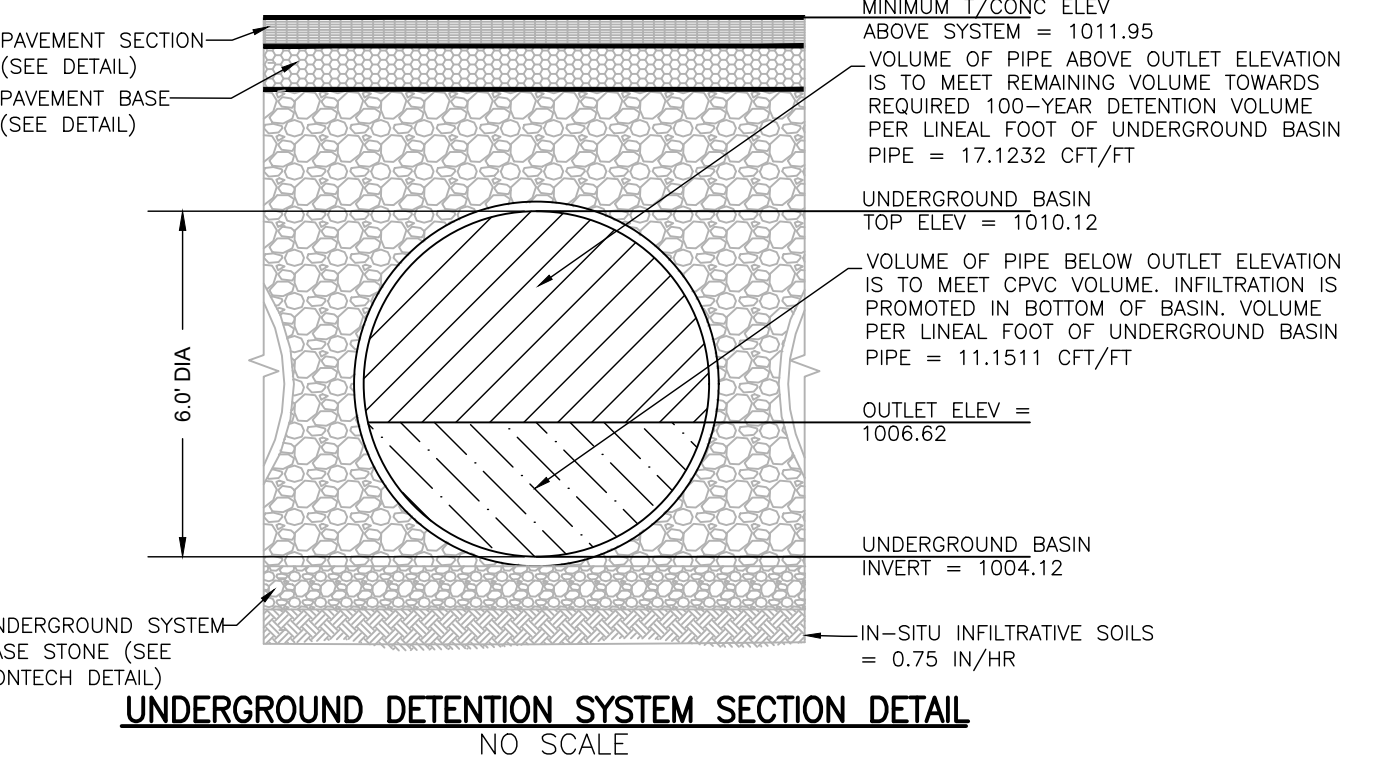
**BASIN DESIGN SUMMARY**  
BASIN SIZE REQUIRED = 8288 FT<sup>3</sup>  
BASIN SIZE PROVIDED = 8,459 FT<sup>3</sup>

ELEVATION	# OF HOLES	DIAMETER OF HOLES
1006.62	1.0	1-INCH
1009.25	1.0	2-INCH

**OVERFLOW SPILLWAY SUMMARY**  
WIDTH OF OVERFLOW SPILLWAY = 6 FT

Design Criteria			
Site Designation	CS 201	Sizing Method	Treatment Flow Rate
Screening Required?	No	Treatment Flow Rate	1.16
Groundwater Depth (ft)	5 - 10	Pipe Invert Depth (ft)	0 - 5
Multiple Inlets?	No	Grate Inlet Required?	Yes
Required Particle Size Distribution?	No	80' belowwater two inlets?	N/A
Treatment Selection			
Treatment Unit	CASCADE SEPARATOR	System Manual	CS-4
Trap Removal	80%	Particle Size Distribution (PSD)	250

Design Criteria			
Site Designation	CS 209	Sizing Method	Treatment Flow Rate
Screening Required?	No	Treatment Flow Rate	0.97
Groundwater Depth (ft)	5 - 10	Pipe Invert Depth (ft)	0 - 5
Multiple Inlets?	No	Grate Inlet Required?	No
Required Particle Size Distribution?	No	80' belowwater two inlets?	N/A
Treatment Selection			
Treatment Unit	CASCADE SEPARATOR	System Manual	CS-4
Trap Removal	80%	Particle Size Distribution (PSD)	250



**CASCADE SEPARATOR DESIGN NOTES**  
THE STANDARD CS-4 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

**CONFIGURATION DESCRIPTION**

GRADED INLET ONLY (NO INLET PIPES)
GRADED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPES)
CURB INLET WITH INLET PIPE OR PIPES

**SITE SPECIFIC DATA REQUIREMENTS**

STRUCTURE ID	WATER QUALITY FLOW RATE (cfs [L/s])	PEAK FLOW RATE (cfs [L/s])	RETURN PERIOD OF PEAK FLOW (yr)	RIM ELEVATION
PIPE DATA:	INVERT	MATERIAL	DIAMETER	
INLET PIPE 1				
OUTLET PIPE				

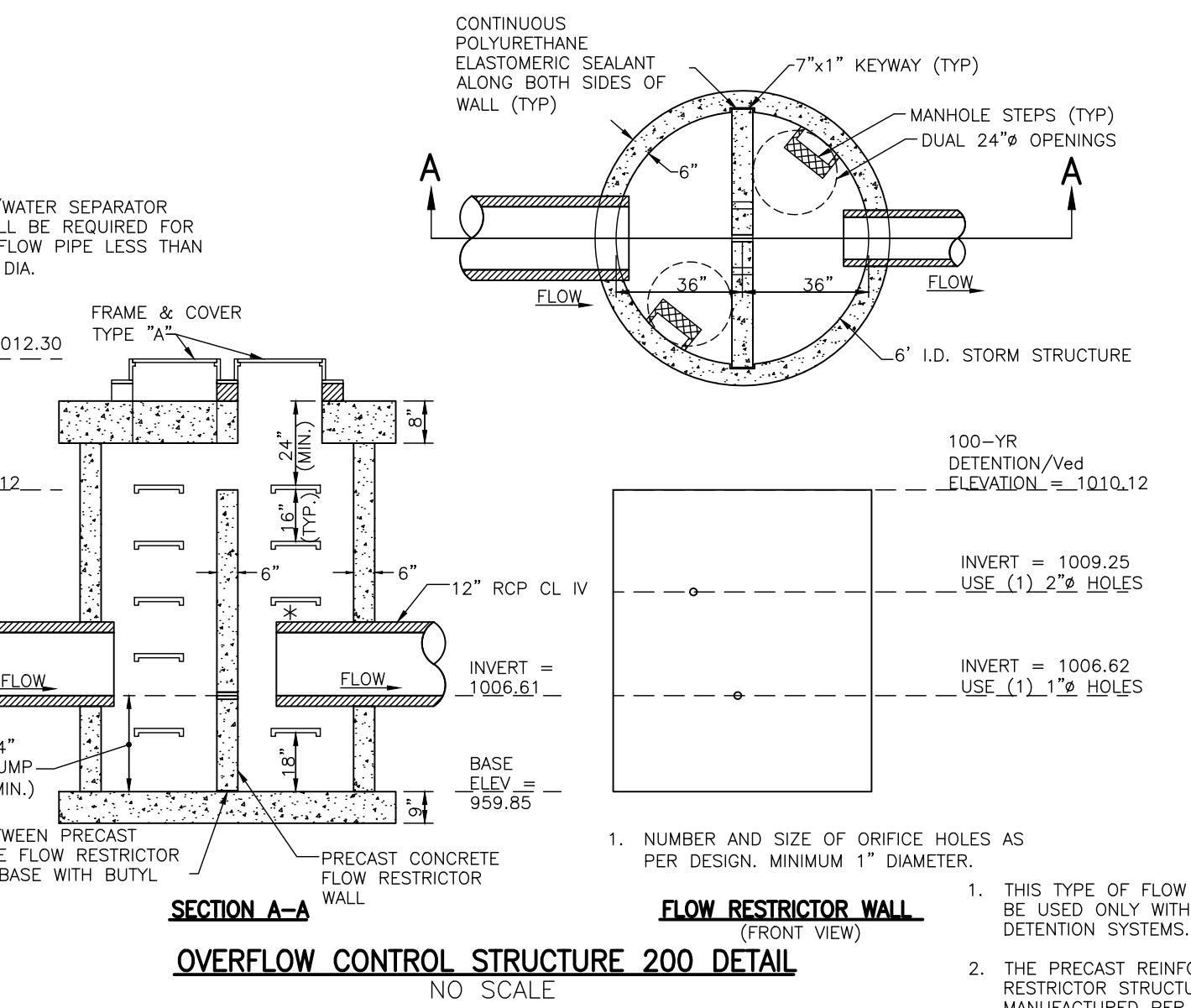
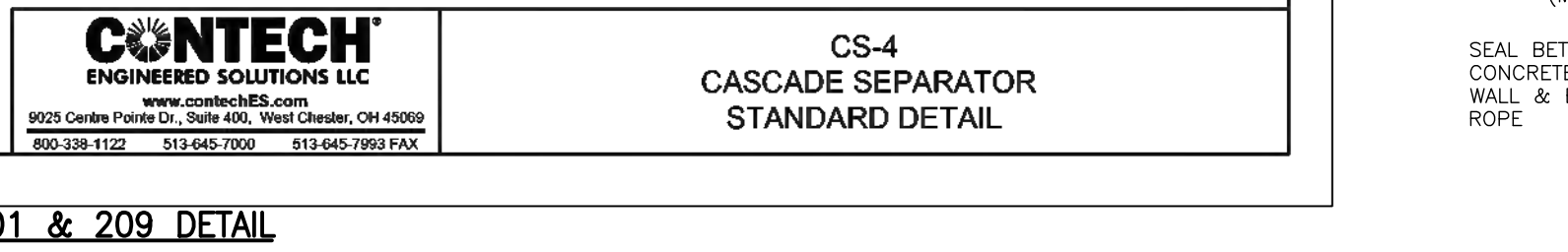
NOTES/SPECIAL REQUIREMENTS:

**GENERAL NOTES**

- CONTRACTOR TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE: www.contech.com
- CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- CASCADE SEPARATOR STRUCTURE SHALL MEET ASHITO HIGH LOAD RATINGS, ASSUMING EARTH COVER OF 0'-2' (610) AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET ASHITO MAKE AND BE CAST WITH THE CONTECH LOGO.
- CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND ASHITO LOAD FACTOR DESIGN METHOD.
- ALTERNATE UNITS ARE SHOWN IN MILLIMETERS (mm).

**INSTALLATION NOTES**

- ANY SUB-BASE, BACKFILL DEPTH AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE INLET AND GROUT INLET AND OUTLET PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



ELEVATION	# OF HOLES	DIAMETER OF HOLES
1006.62	1.0	1-INCH
1009.25	1.0	2-INCH

**BEBOSS Engineering**  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

**MISTER CAR WASH**

**BASIN DETAILS**

DESIGNED BY: ST  
DRAWN BY: DH  
CHECKED BY:  
SCALE: 1" = 20'  
JOB NO: 21-519  
DATE: 10/04/2023  
SHEET NO. 11



**PROJECT SUMMARY**

**CALCULATION DETAILS**

- LOADING = HSD20H25
- APPROX. LINEAR FOOTAGE = 494 LF

**STORAGE SUMMARY**

- STORAGE VOLUME REQUIRED = 12,432 CF
- PIPE STORAGE VOLUME = 13,948 CF
- BACKFILL STORAGE VOLUME = 0 CF
- TOTAL STORAGE PROVIDED = 14,028 CF

**PIPE DETAILS**

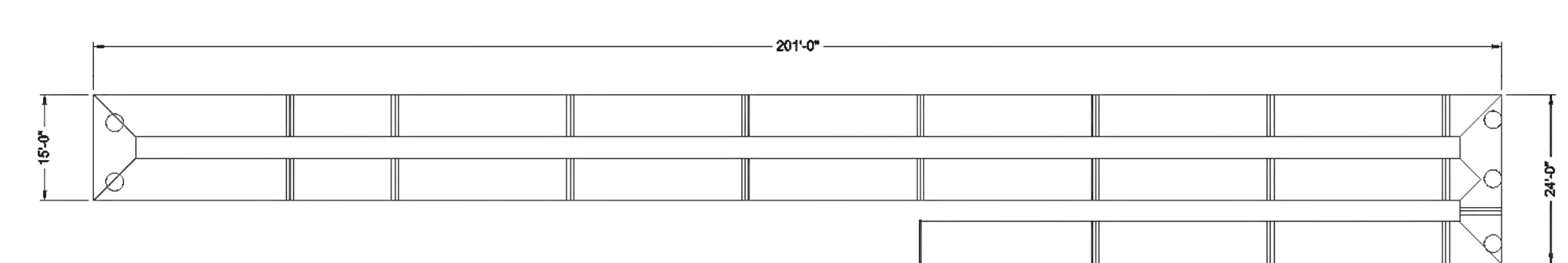
- DIAMETER = 72"
- CORRUPTION = 6x1
- GASKET = 10
- COATING = AL2
- WALL TYPE = PERFORATED
- BARREL SPACING = 36"

**BACKFILL DETAILS**

- WIDTH AT ENDS = 12"
- ABOVE PIPE = 10"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"

**NOTES**

- ALL RISER AND STUM DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A596.
- ALL RISERS AND STUMS ARE 2 1/2" x 1/2" CORRUGATION @ 16 GAUGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- IDENTITY OF PIPE UNKNOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAIL PROVIDED NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYOOS DESIGN. QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



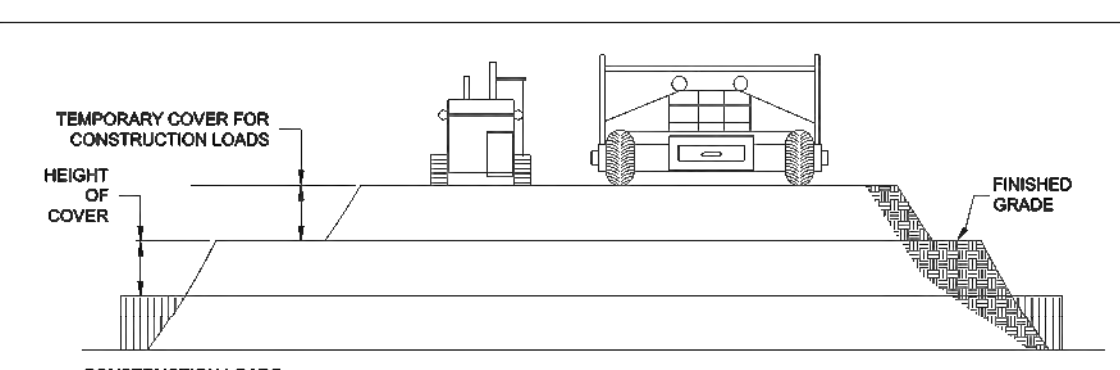
ASSEMBLY SCALE: 1" = 20'

**CONTECH**  
ENGINEERED SOLUTIONS LLC  
www.contechllc.com  
3025 Centre Pointe Dr., Suite 400, West Chester, OH 45389  
800-338-1122 513-845-7000 513-845-7993 FAX

**CONTECH**  
CMP DETENTION SYSTEMS  
CONTECH DYOOS DRAWING

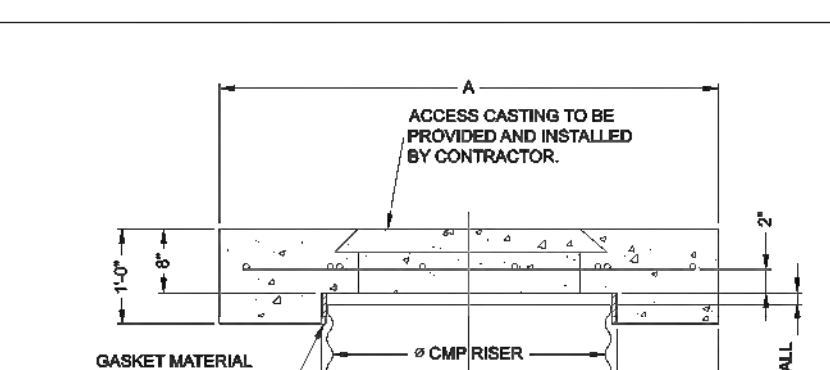
DYO38636 MCW - Latson  
North System  
Howell, MI  
DETENTION SYSTEM

PROJECT NO. 800-338-1122  
SHEET NO. 1  
DATE 11/16/24  
DESIGNED BY DYO  
CHECKED BY DYO  
APPROVED BY DYO  
DATE 11/16/24



CONSTRUCTION LOADING DIAGRAM SCALE: N.T.S.

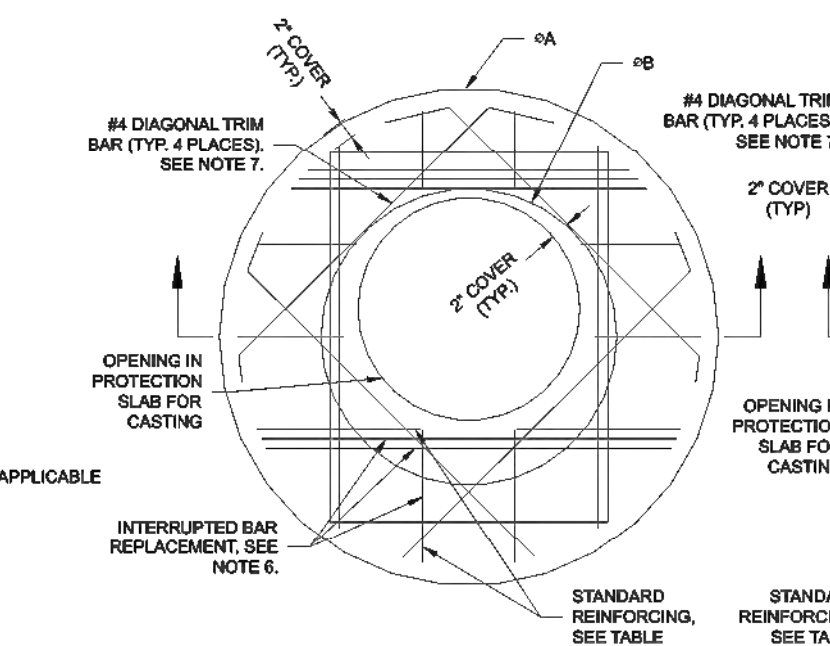
PIPE SPAN, INCHES	AXLE LOADS (kips)			
	15-50	50-75	75-110	110-150
12-42	3.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
125-144	3.5	4.0	4.5	4.5



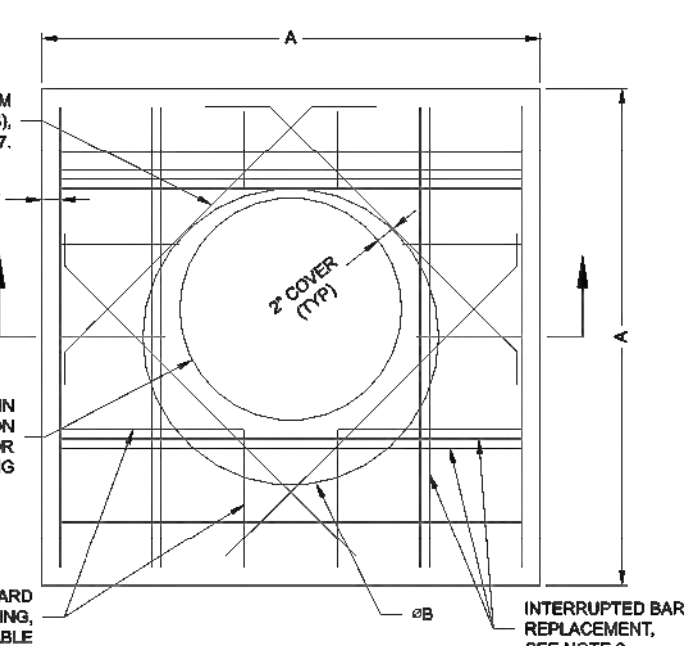
SECTION VIEW

REINFORCING TABLE				
Ø CMP RISER	A	B	REINFORCING	*BEARING PRESSURE (PSF)
24"	4"	20"	#5 @ 12" OC EW	2,410
	4"x4"		#5 @ 12" OC EW	1,780
30"	4"	32"	#5 @ 12" OC EW	2,150
	4"x4"		#5 @ 12" OC EW	1,520
36"	4"	38"	#5 @ 10" OC EW	1,890
	4"x4"		#5 @ 10" OC EW	1,350
42"	4"	44"	#5 @ 10" OC EW	1,720
	4"x4"		#5 @ 10" OC EW	1,210
48"	4"	50"	#5 @ 9" OC EW	1,620
	4"x4"		#5 @ 9" OC EW	1,100

\*\* ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

- NOTES:**
- DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
  - DESIGN LOAD H25.
  - EARTH COVER = 1' MAX.
  - CONCRETE STRENGTH = 3,500 psi
  - REINFORCING STEEL = ASTM A615, GRADE 60.
  - PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
  - TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING. BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
  - PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
  - DETAIL DESIGN BY DELTA ENGINEERING, BANGHAMTON, NY.

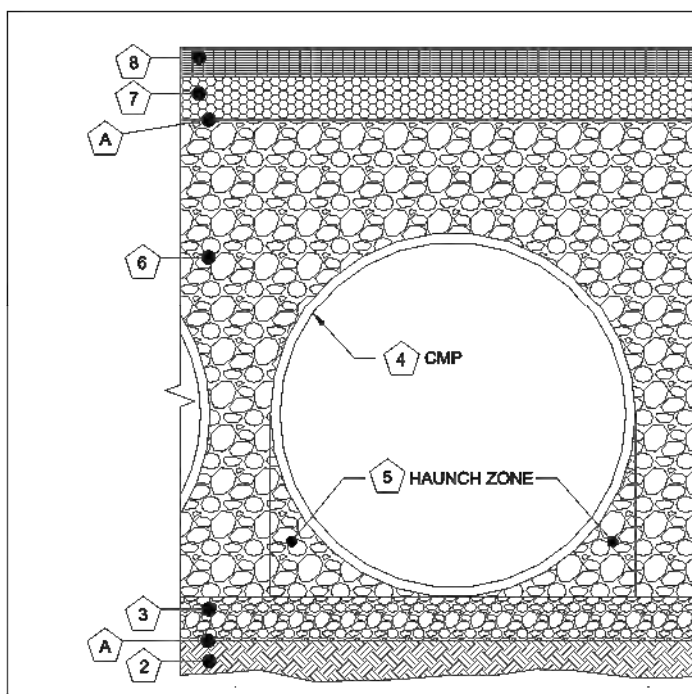
MANHOLE CAP DETAIL SCALE: N.T.S.

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3025 Centre Pointe Dr., Suite 400, West Chester, OH 45389  
800-338-1122 513-845-7000 513-845-7993 FAX

**CONTECH**  
CMP DETENTION SYSTEMS  
CONTECH DYOOS DRAWING

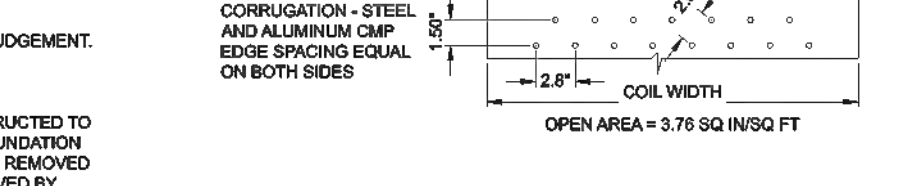
DYO38636 MCW - Latson  
North System  
Howell, MI  
DETENTION SYSTEM

PROJECT NO. 800-338-1122  
SHEET NO. 1  
DATE 11/16/24  
DESIGNED BY DYO  
CHECKED BY DYO  
APPROVED BY DYO  
DATE 11/16/24

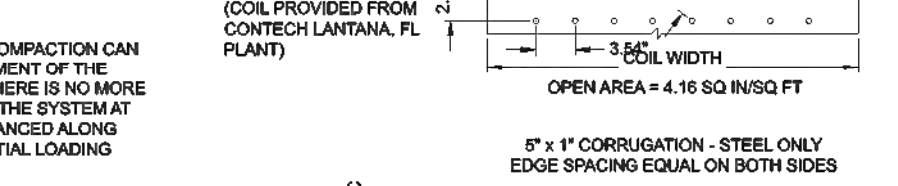


Material Location	Description	Material Designation	Designation
Top to Flexible Pavement (if applicable)			
Head Stone (if applicable)			
Geotextile Layer	Non-Woven Geotextile	CONTECH C40 1/2-6	Engineer Decision for consideration to prevent soil migration into wrapping soil layer. Wrap the trench only.
Backfill	Infiltration pipe systems have a pipe perforation level of 3/8" diameter. An open gravel, the bedding stone, with a particle size of 1/2" - 2 1/2" diameter is recommended.	AASHTO M 43 1/2-6 or AASHTO M 43-3, 4	Material shall be worked into the pipe haunches by means of vibratory rollers, rolling, air-cannon, vibratory rod, or other effective methods. Composition of all placed fill material is necessary and shall be considered adequate when no further settling of the material is observed under the compactor, or under foot, and the Project Engineer or his representative is satisfied with the level of compaction.
Bedding Stone	Well graded granular bedding material minimum particle size of 3"	AASHTO M 31 3-5, 5, 5L, 5T	For all aggregates larger than 3/8" a crushed bedding layer is not required for CMP. Pipe may be placed on the trench bottom comprised of native subsoil or crushed bedding material. For each pipe it is recommended to be placed on a relatively flat surface or prepared the foundation to a slight 'v' shape. Soil aggregates less than 3/8" and in-situ material should be pre-compact and replaced with 4" layer of well graded granular stone per the material designation.
Geotextile Layer	None	None	Contech does not recommend geotextiles be placed under the invert of infiltration systems due to the propensity for geotextiles to clog over time.

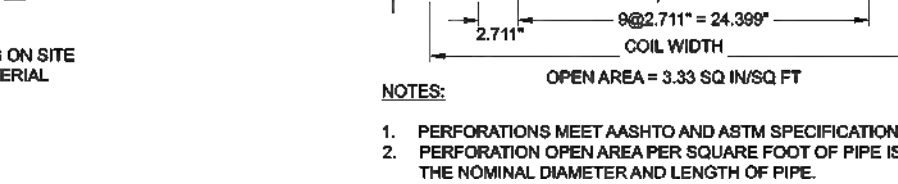
Note: The best AASHTO designations are for gradation only. The stone must also be angular and clean.



TYPICAL PERFORATION DETAIL SCALE: N.T.S.



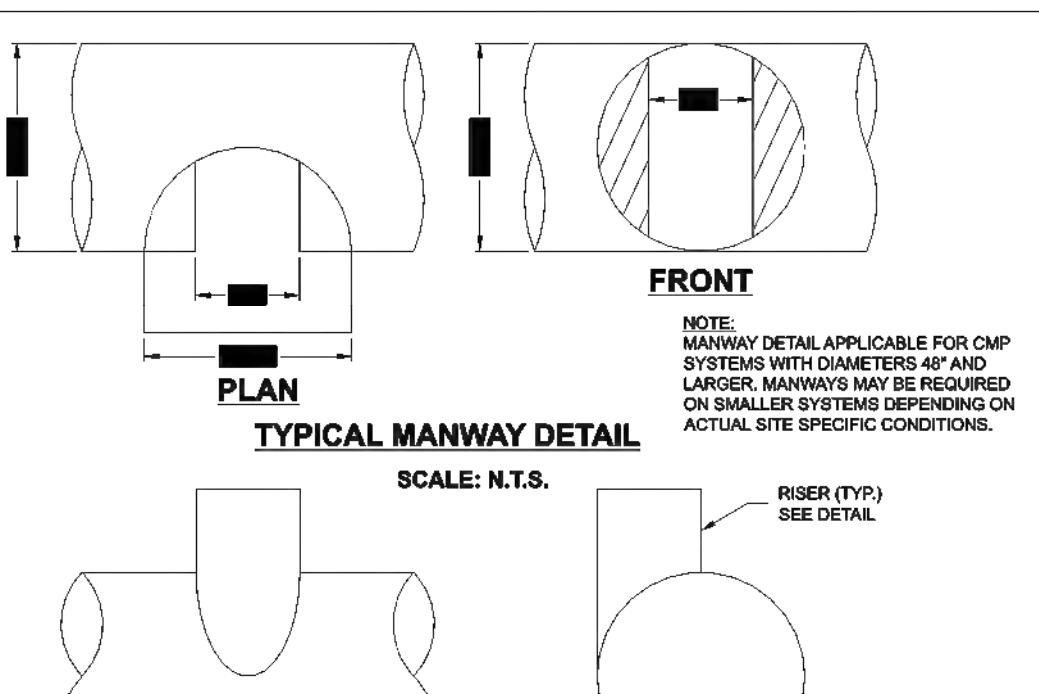
TYPICAL MANWAY DETAIL SCALE: N.T.S.



TYPICAL RISER DETAIL SCALE: N.T.S.



TYPICAL SECTION VIEW SCALE: N.T.S.



FRONT

PLAN

ELEVATION

TYPICAL RISER DETAIL

TYPICAL SECTION VIEW

LINER OVER ROWS

SCALE: N.T.S.

SCALE: N.T.S.

SCALE: N.T.S.

SCALE: N.T.S.

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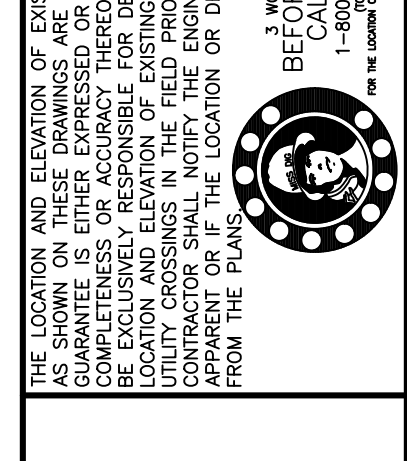
SCALE: N.T.S.

SCALE: N.T.S.

SCALE: N.T.S.

SCALE: N.T.S.

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO ONE SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION, DEPTH, OR CHARACTER OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION, DEPTH, OR CHARACTER OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE PLANS.



**BEBOSS**  
Engineering  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

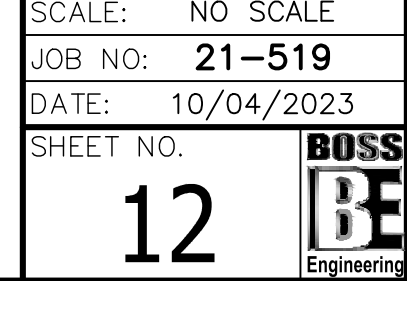
PROJECT: MISTER CAR WASH  
PREPARED FOR: CWP WEST LLC  
222 E 5TH AVE  
TULSA, OK 74106  
206-664-1303

PROJECT: UNDERGROUND DETENTION DETAILS

DESIGNED BY: ST  
DRAWN BY: DH/JS  
CHECKED BY:  
SCALE: NO SCALE  
JOB NO: 21-519  
DATE: 10/04/2023  
SHEET NO. 12

NO.	BY	REVISION	DATE
1	ST	PER P.C. MEETING	10-25-23
2	ST	LAYOUT MODIFICATIONS	11-16-24
3	ST	PER P.C. MEETING	12-11-24

DATE: 10/04/2023



12



### PIPE RESTRAINT SCHEDULE

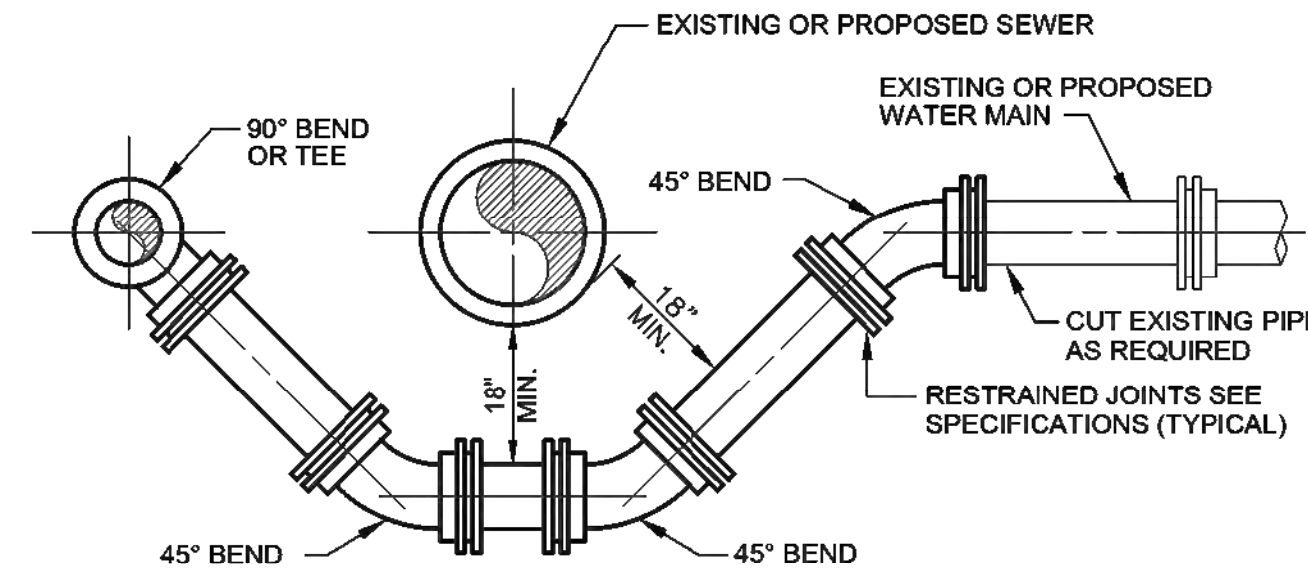
GROUND BURIED PRESSURE PIPE - POLYETHYLENE ENCASED DUCTILE IRON PIPE

PIPE DIAMETER	TEES, 90° BENDS	45° BENDS	22-1/2° BENDS	11-1/4° BENDS	DEAD ENDS	REDUCERS (ONE SIZE REDUCTION)*	REDUCERS (TWO SIZE REDUCTION)*
4	13	5	3	1	40	--	--
6	19	8	4	2	58	31	--
8	24	10	5	2	75	30	70
12	34	14	7	3	107	57	116
16	43	18	9	4	139	59	137
20	52	22	10	5	169	59	134
24	61	25	12	6	199	60	132
30	73	30	15	7	242	85	168
36	84	35	17	8	281	84	168

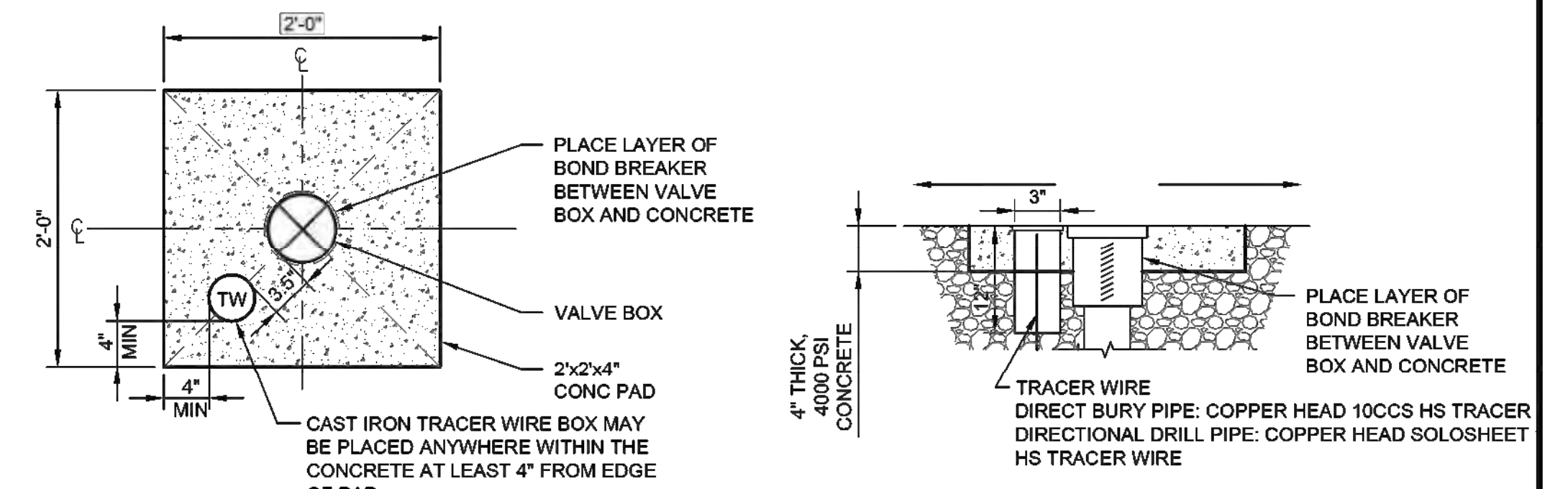
- LENGTHS OF PIPE RESTRAINT ARE GIVEN IN FEET.
  - IF REQUIRED PIPE DIAMETER IS NOT LISTED IN THIS TABLE, THE NEXT LARGEST PIPE DIAMETER SHALL BE USED.
  - THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE PLUS WATER HAMMER. FOR OTHER TEST PRESSURES, ALL VALUES TO BE INCREASED OR DECREASED PROPORTIONALLY.
  - THE VALUES PROVIDED OF RESTRAINT LENGTH ARE IN EACH DIRECTION FROM THE POINT OF DEFLECTION OR TERMINATION EXCEPT FOR TEES, AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE STEM.
  - IF TIE RODS ARE USED, USE FOUR RODS MINIMUM AND ADD 1/8-INCH TO BAR DIAMETER AS CORROSION ALLOWANCE.
- \* SIZE REDUCTION IS BASED UPON THE PIPE DIAMETER SHOWN IN THIS TABLE.

BASED UPON:

INTERNAL PRESSURE:	180
PIPE DEPTH:	5
BEDDING CLASS:	TYPE 4
SOIL TYPE:	GOOD SAND
SAFETY FACTOR:	2



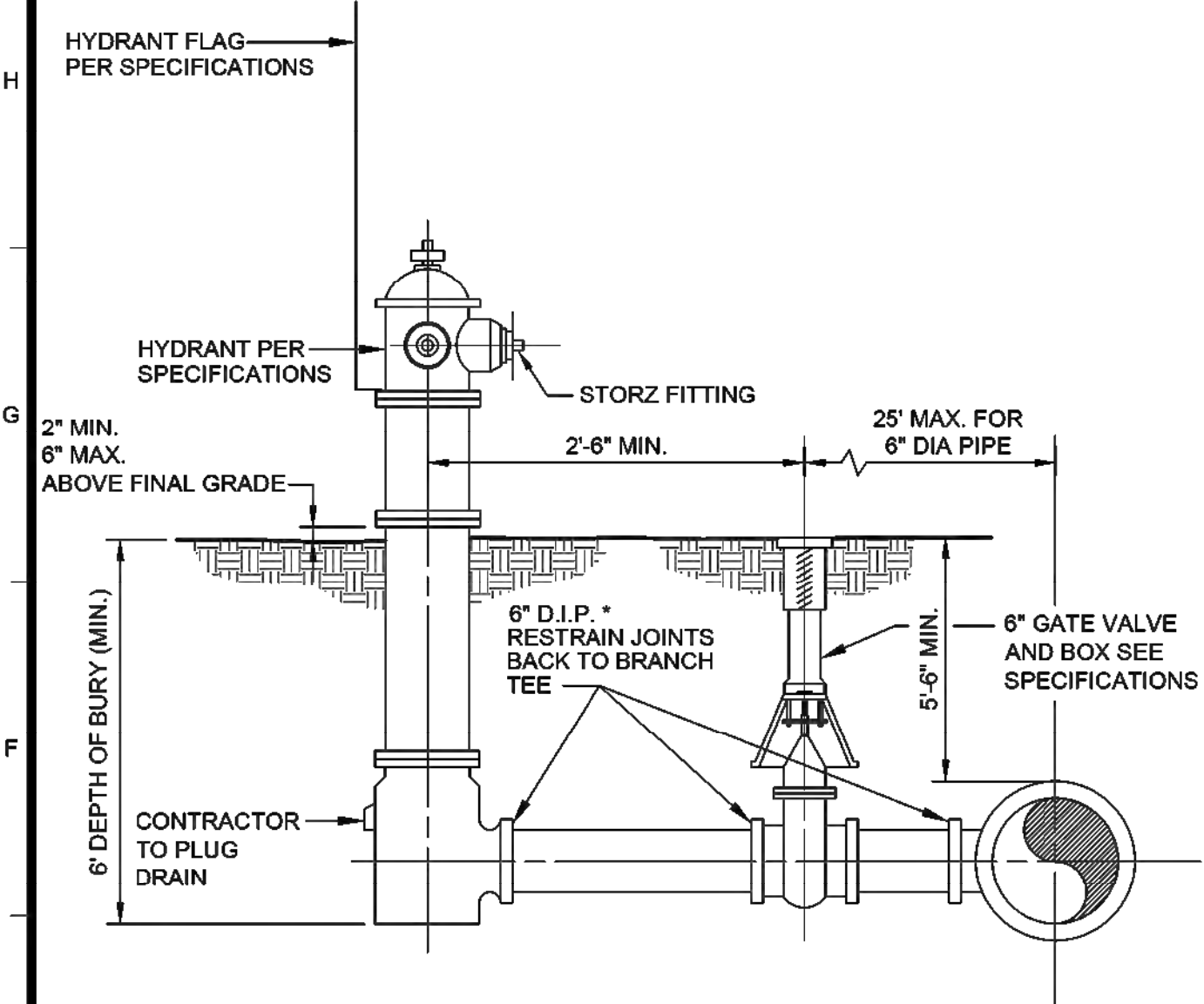
**WATER MAIN UTILITY OFFSET**



NOTE: ALL BOXES & ADJOINING TW BOXES SHALL BE ENCASED IN A CONC. PAD UNLESS OTHERWISE DETERMINED BY MHOG.

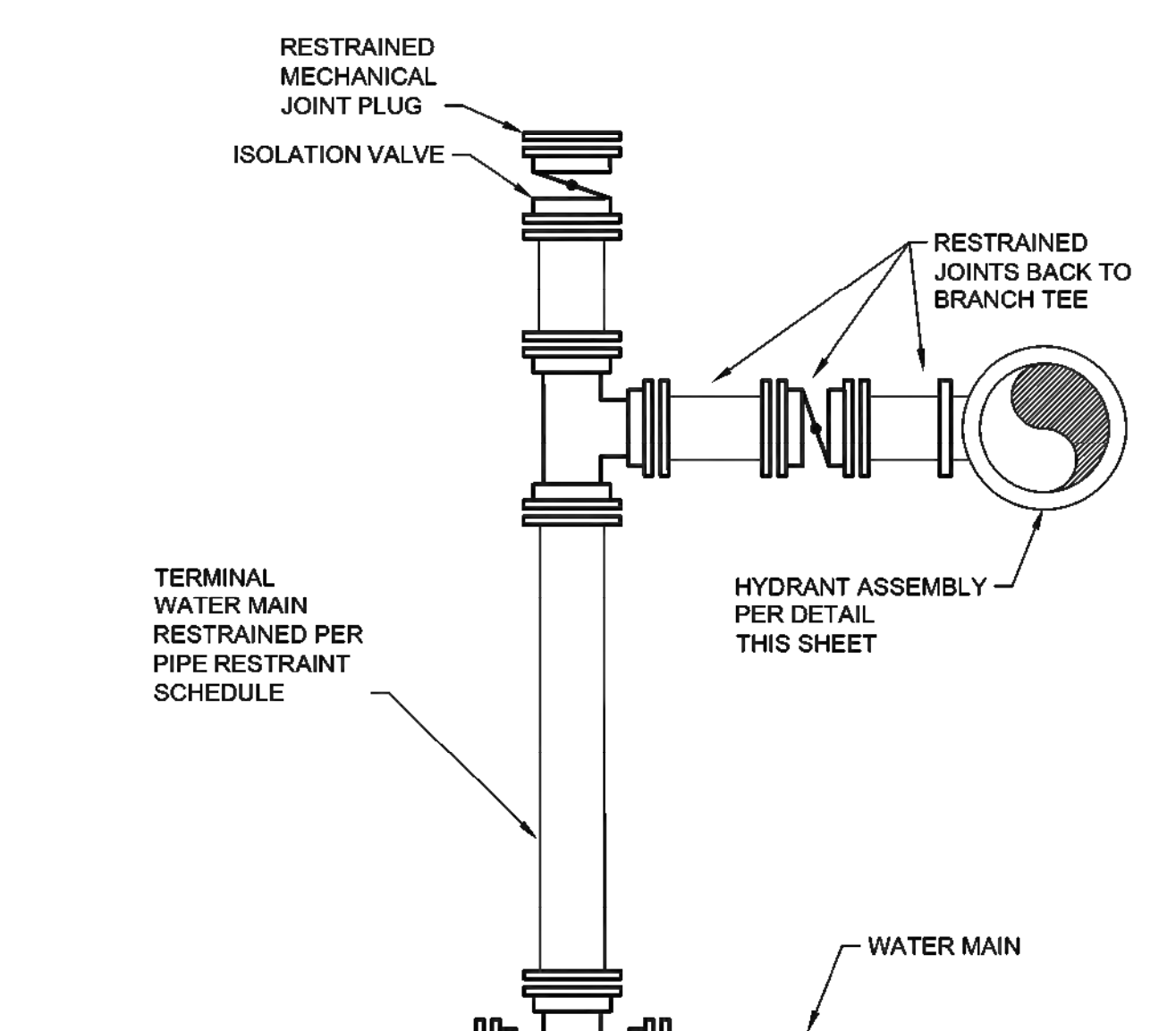
- NOTE:
- TRACER WIRE BOXES LOCATED WITHOUT A VALVE BOX ONLY REQUIRE AN 18" X 18" CONCRETE PAD.
  - TRACER WIRE BOX SHALL HAVE A LOCKING LID W/STANDARD AWWA PENTAGON KEY.
  - TRACER WIRE BOX SHALL BE COPPERHEAD RB14\*TP IN ASPHALT INSTALLATIONS AND CD14\*TP FOR ALL OTHER INSTALLATIONS.

**PLAN**  
**VALVE/TRACER WIRE BOX IN CONCRETE DETAIL**  
NO SCALE

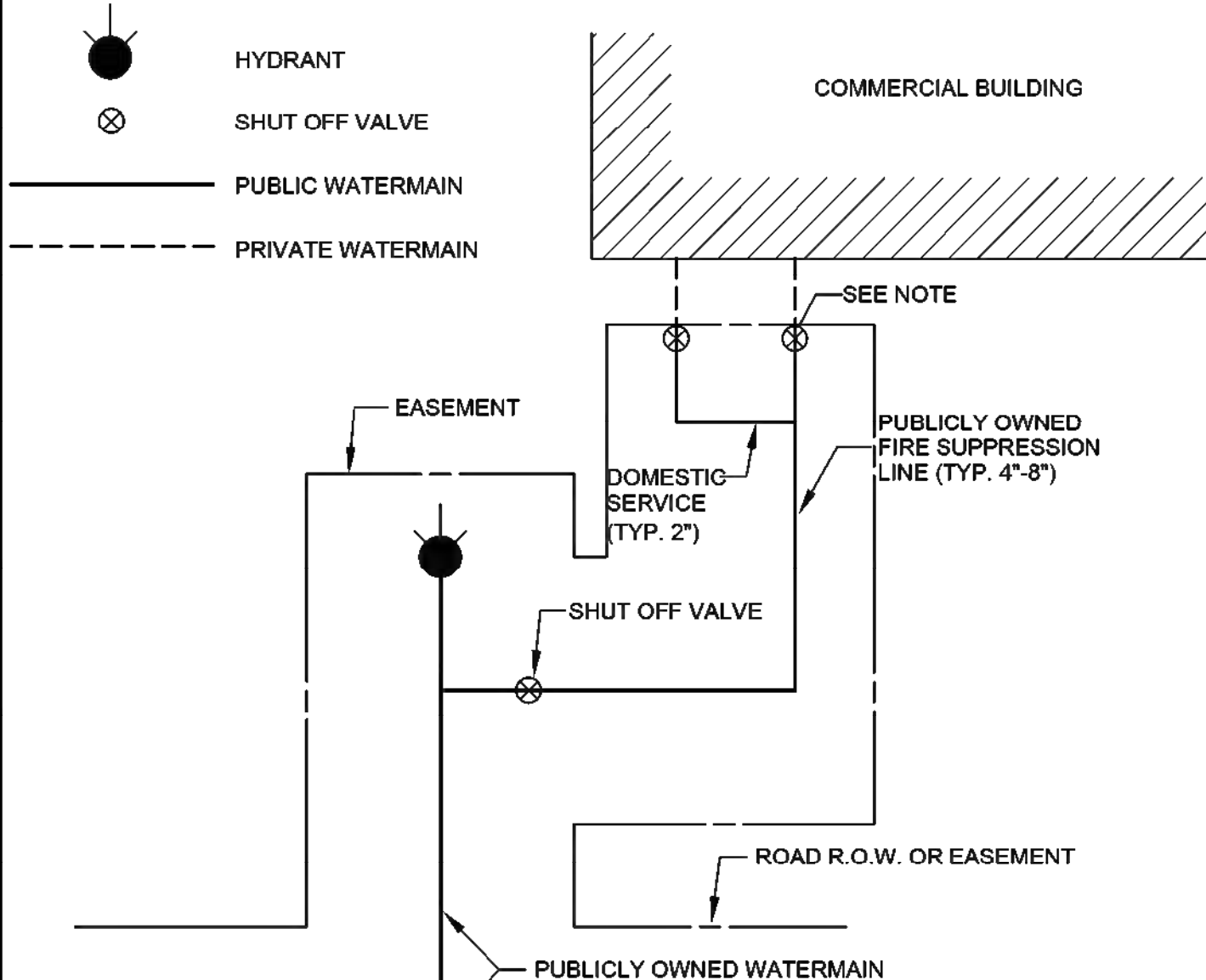


\* THE LENGTH OF 6" PIPE FROM THE MAIN TO THE HYDRANT ASSEMBLY CANNOT EXCEED 25'. ANY PIPE OVER 25 FEET SHALL BE 8" DIAMETER MINIMUM AND DESIGNED PER MHOG SPECIFICATIONS.

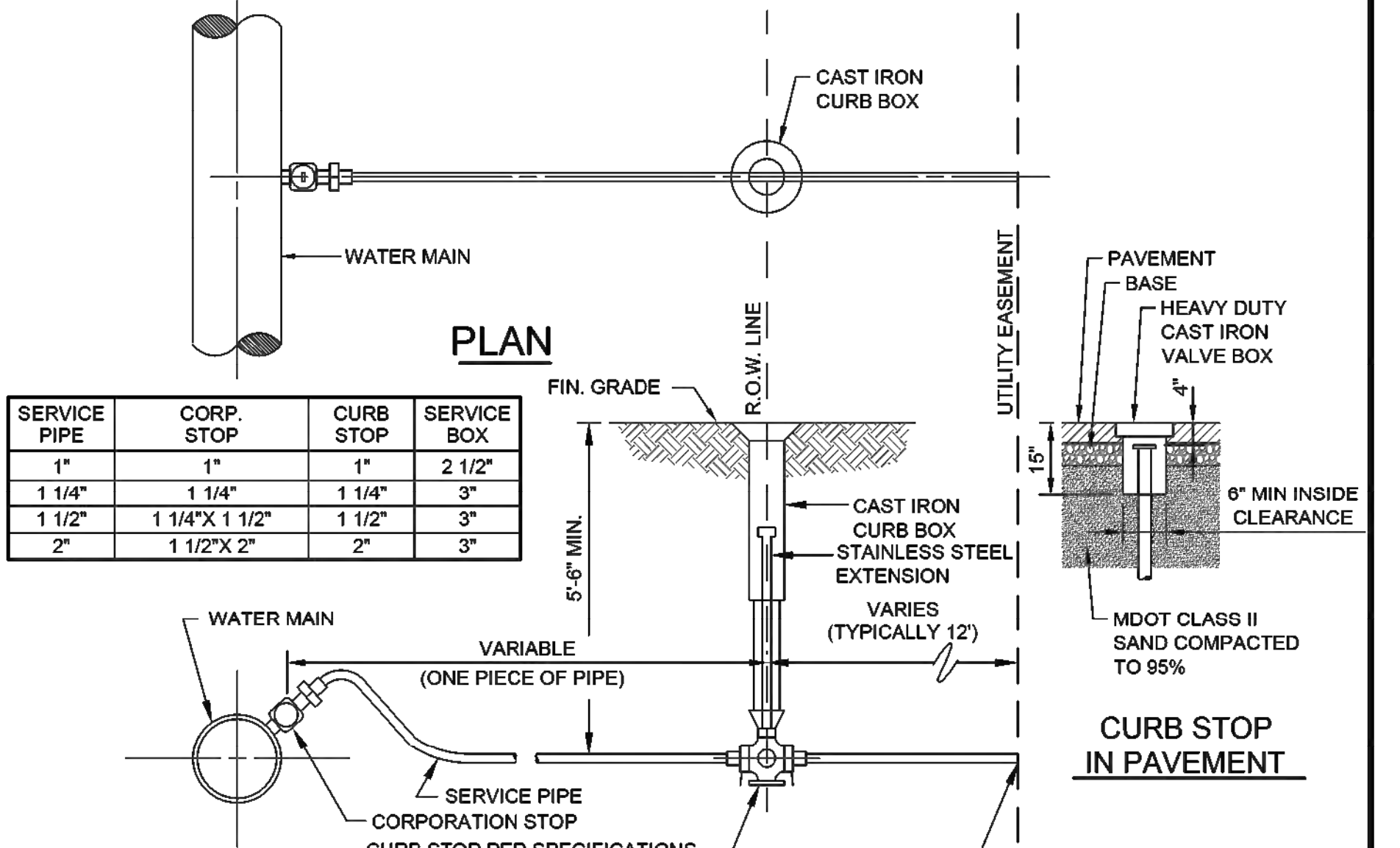
**FIRE HYDRANT ASSEMBLY**



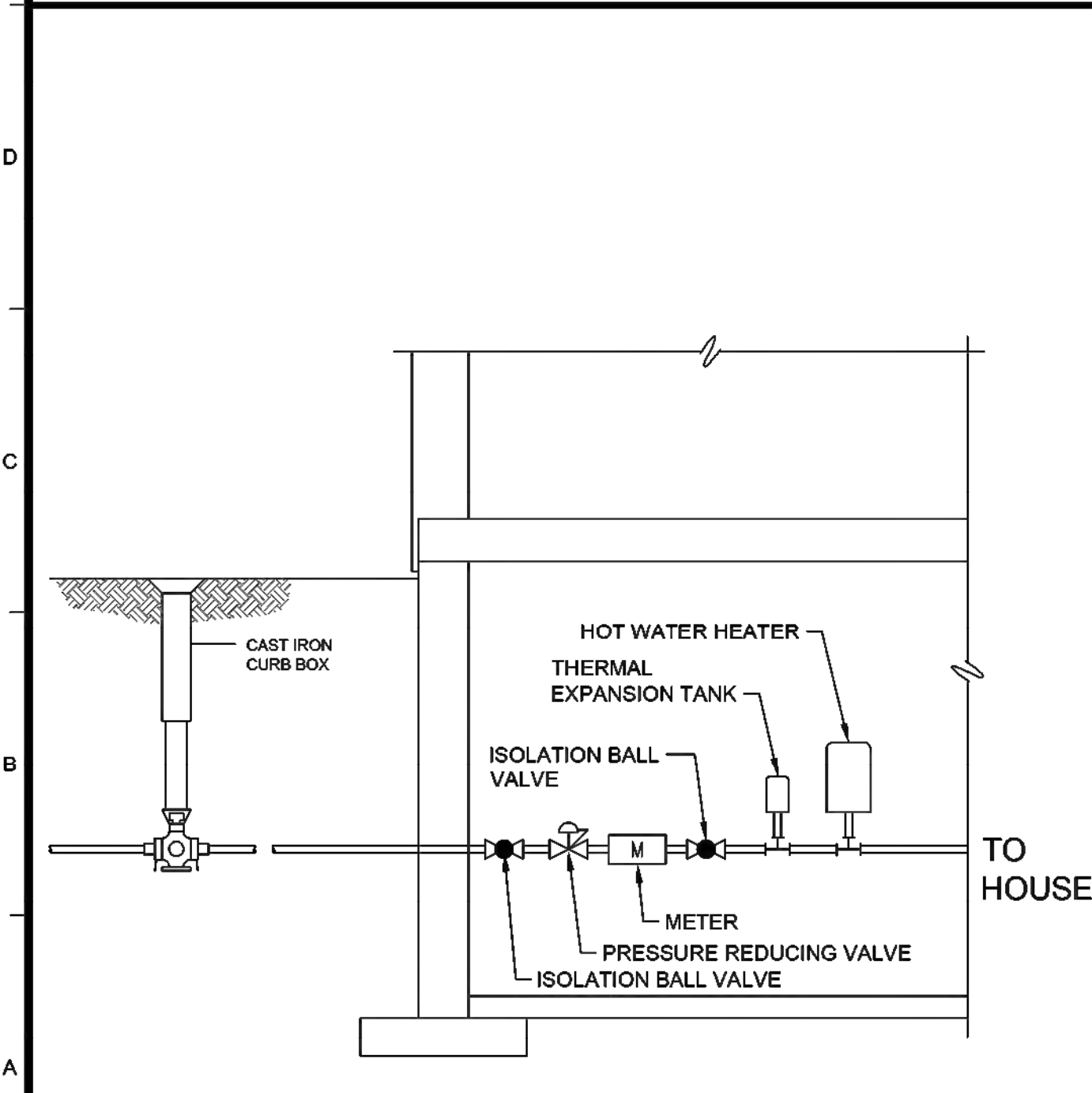
**TERMINAL HYDRANT DETAIL**



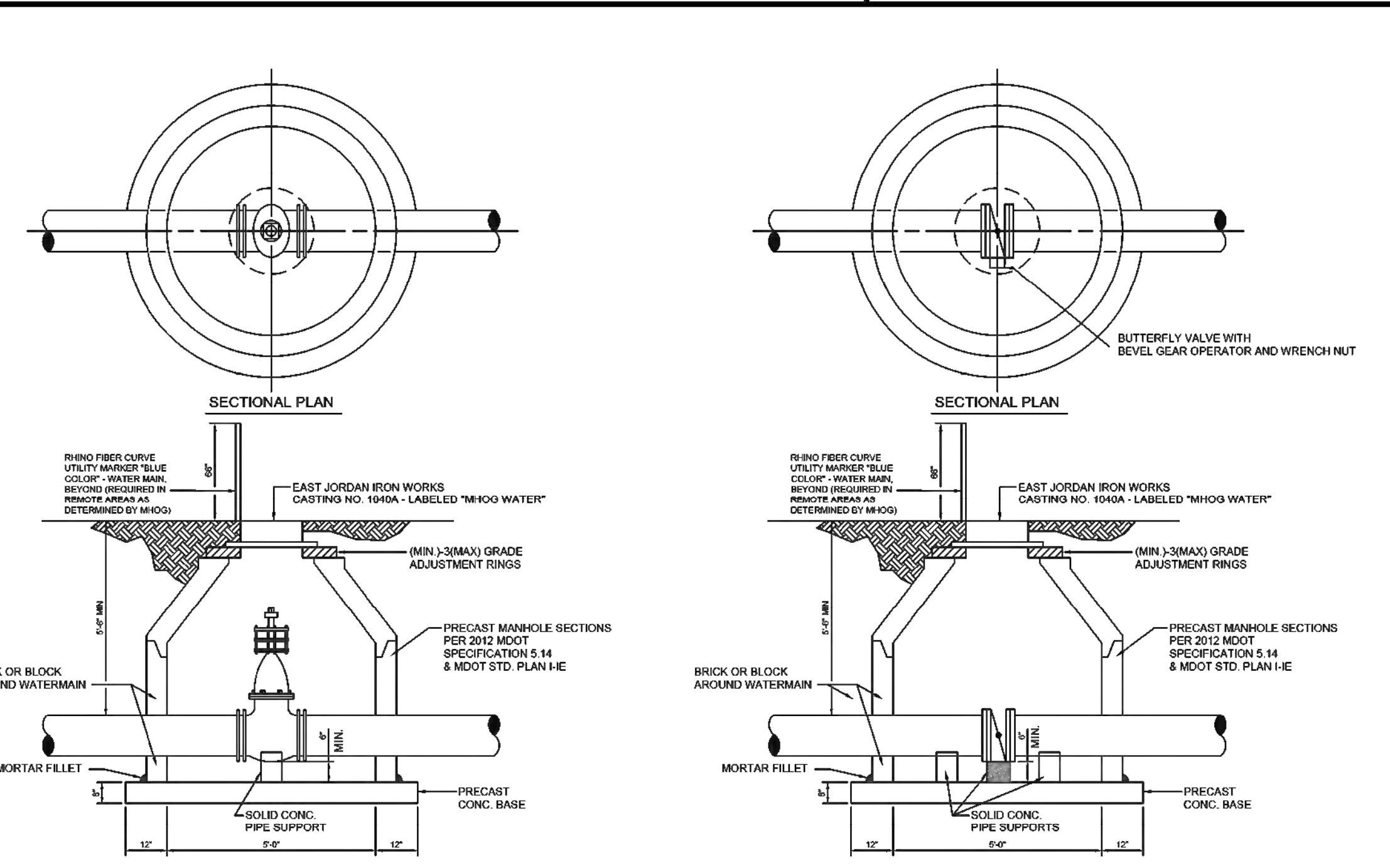
**COMMERCIAL BUILDING WATER SERVICE LAYOUT**



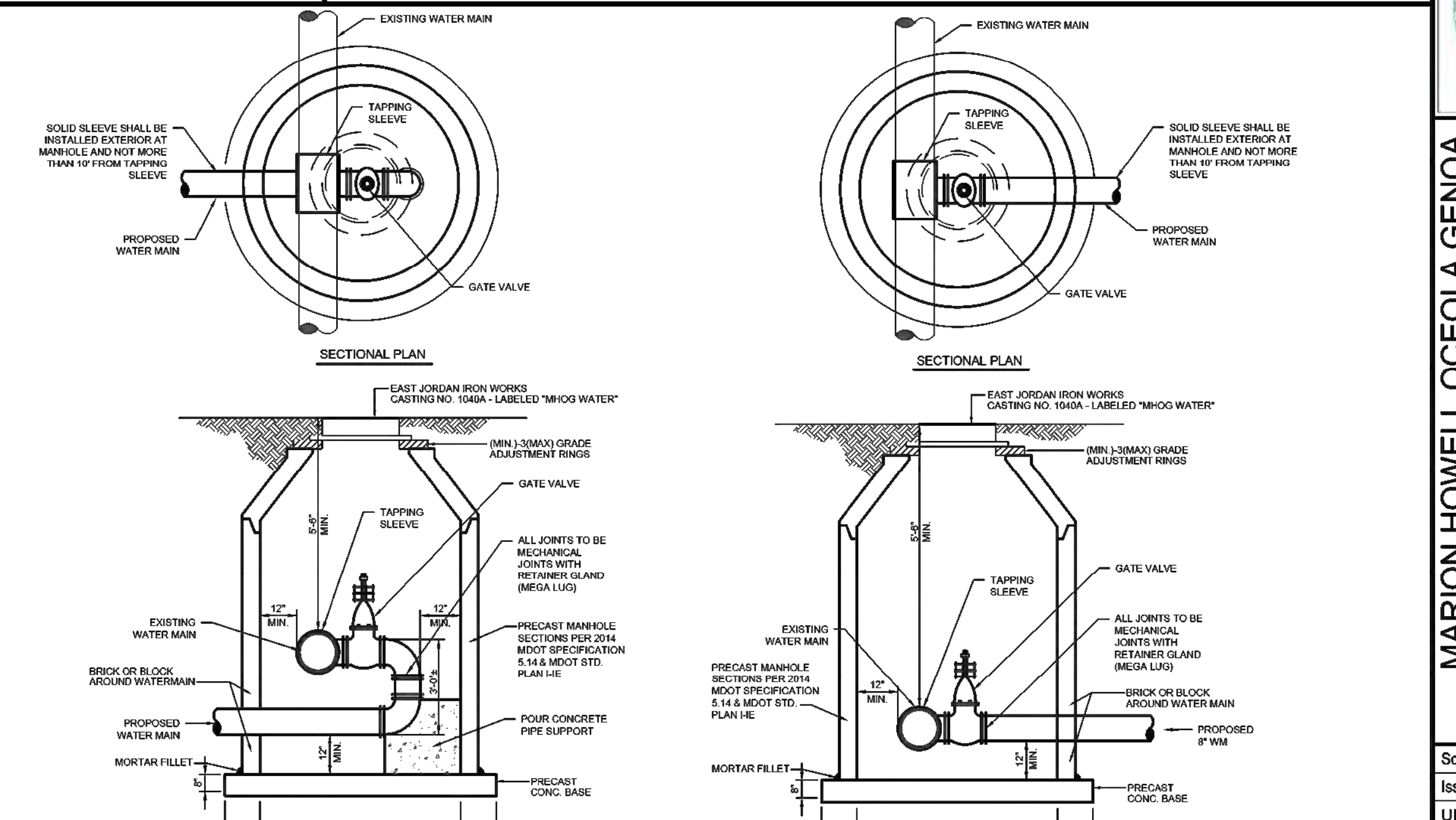
**SECTION**  
**WATER SERVICE LATERAL**



**PRIVATE RESIDENCE**  
**PRESSURE REDUCING VALVE (PRV)**



**VALVE AND GATE WELL**



**REVERSE TAP GATE WELL**

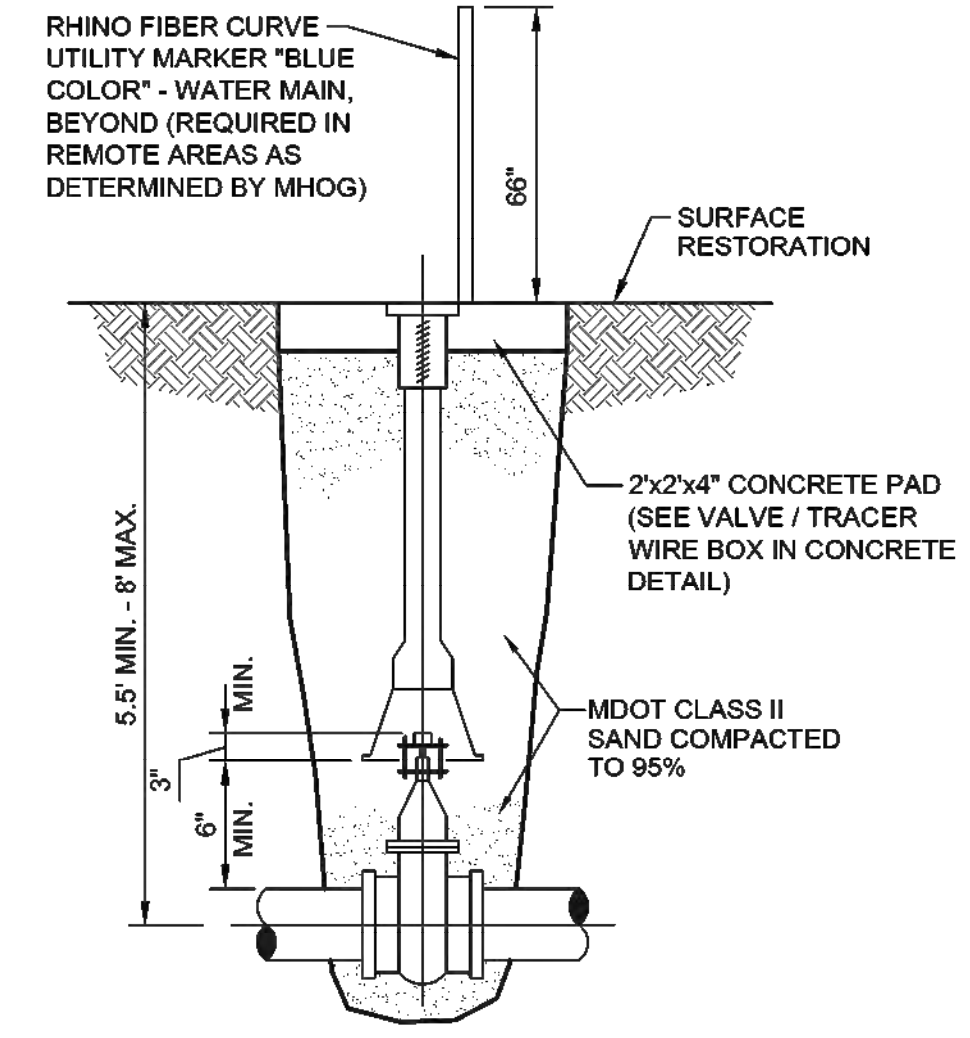


MARION HOWELL OCEOLA GENOA  
Sewer and Water Authority

Scale: NONE  
 Issued Date: JANUARY - 2014  
 UPDATED: MAY 2015  
 UPDATED: FEBRUARY 2016  
 UPDATED: APRIL 2016  
 UPDATED: OCTOBER 2017  
 UPDATED: FEBRUARY 2019  
 UPDATED: NOVEMBER 2022

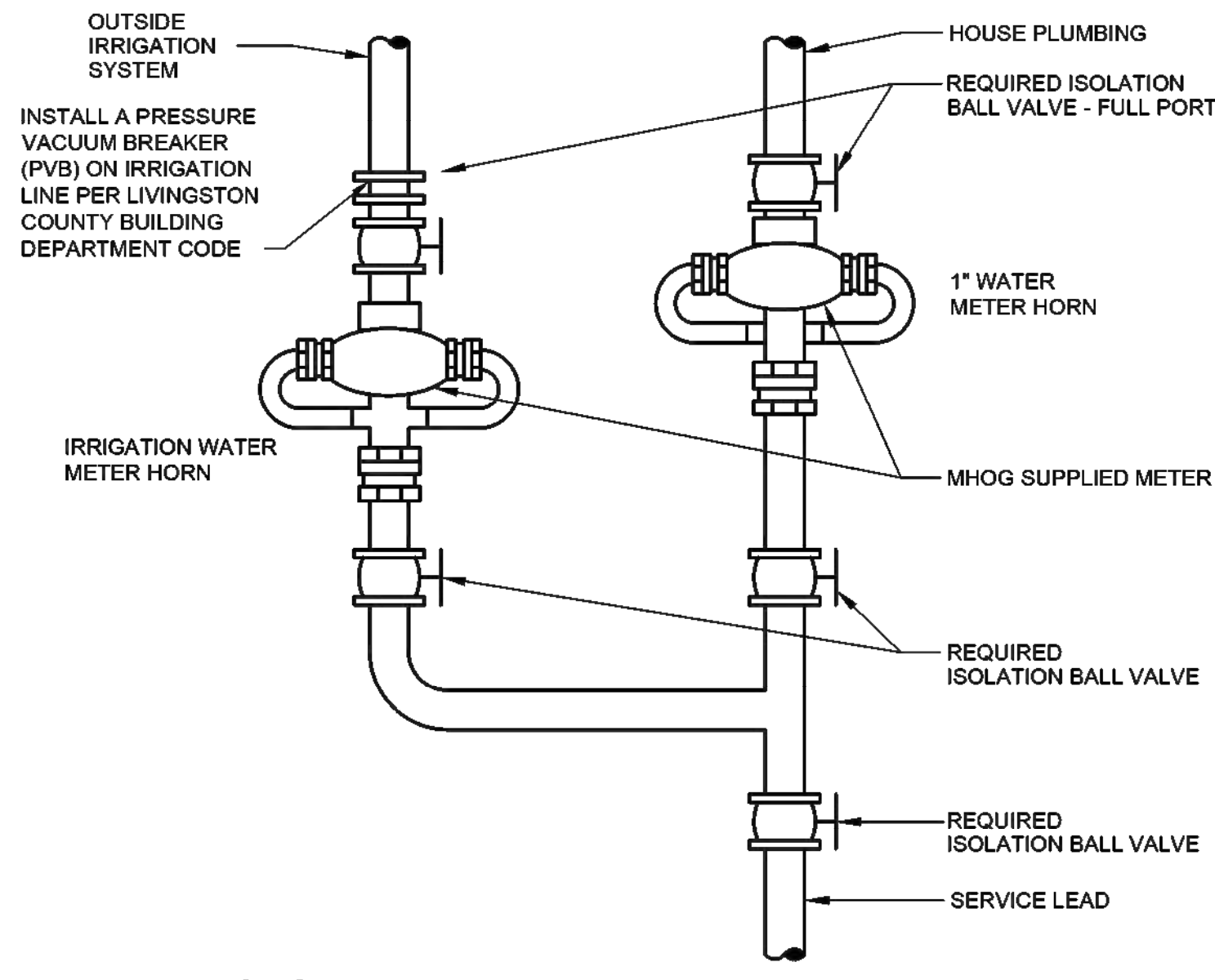
STANDARD DETAILS





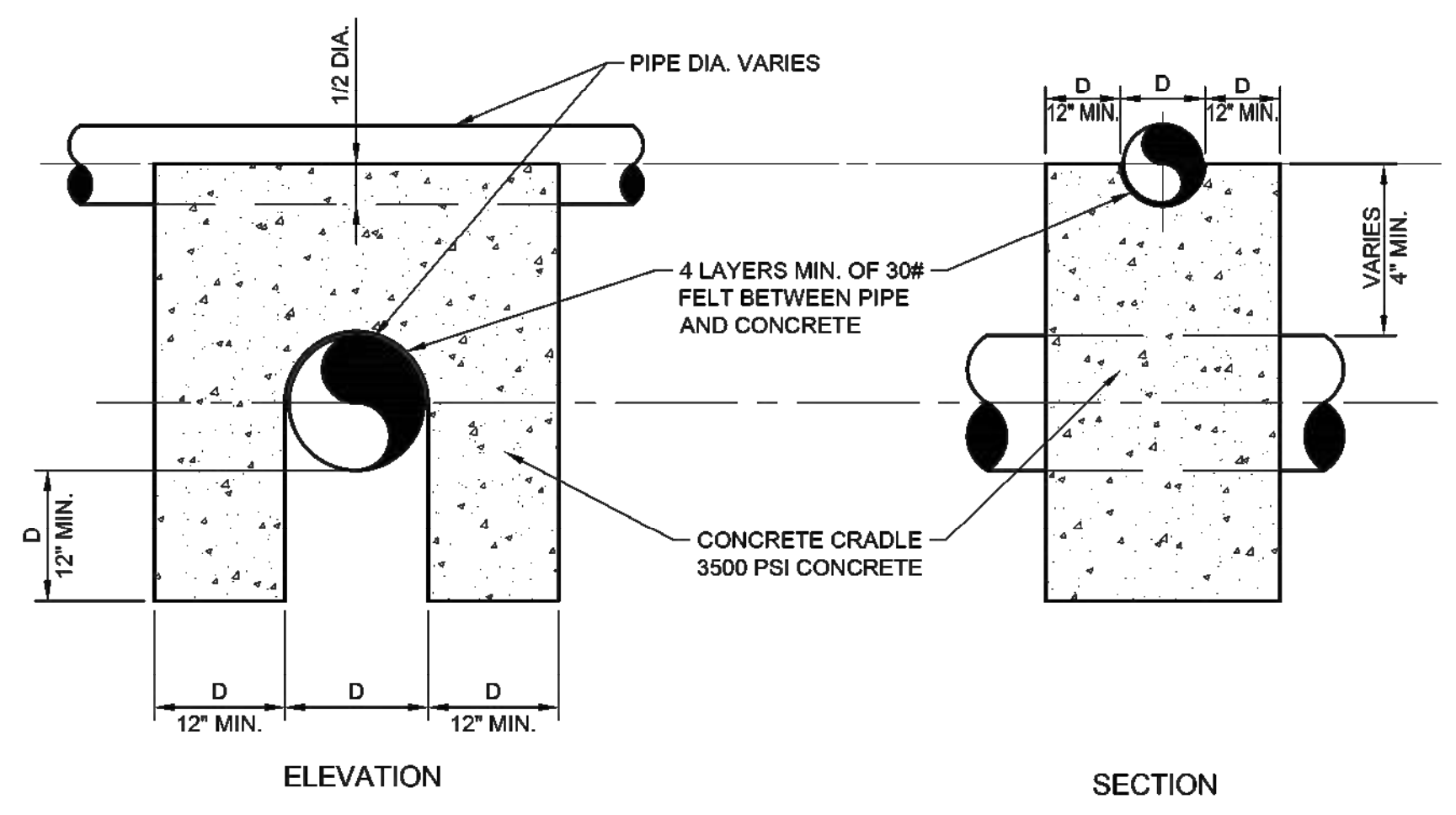
- NOTES:
1. VALVE BOX SHALL NOT REST ON VALVE OR MAIN LINE PIPE.
  2. A VALVE STEM EXTENSION WITH CENTERING RING IS REQUIRED FOR VALVES BURIED DEEPER THAN 6'.

**GATE VALVE AND BOX**



- NOTES:
1. ALL METERS ARE TO BE INSTALLED HORIZONTALLY IN A DRY, CLEAN, SANITARY LOCATION THAT IS READILY ACCESSIBLE. THIS DRAWING IS NOT TO SCALE & IS ONLY A REPRESENTATION OF HOW THE VALVES AND METERS SHOULD BE INSTALLED. THE SECOND METER IS OPTIONAL FOR IRRIGATION USAGE. METERS SHOULD NOT BE INSTALLED IN LINE (ONE RIGHT AFTER THE OTHER).
  2. PROPERTIES DESIGNATED "HIGH HAZARD" PER THE MHOg CROSS CONNECTION RULES MANUAL WILL REQUIRE THE INSTALLATION OF A REDUCED PRESSURE ZONE (RPZ) BACK FLOW PREVENTION DEVICE.

**TYPICAL METER HORN INSTALLATION**



**CONCRETE CRADLE DETAIL**

SCALE: NONE



**MHOg CASTING DETAIL**

NO SCALE

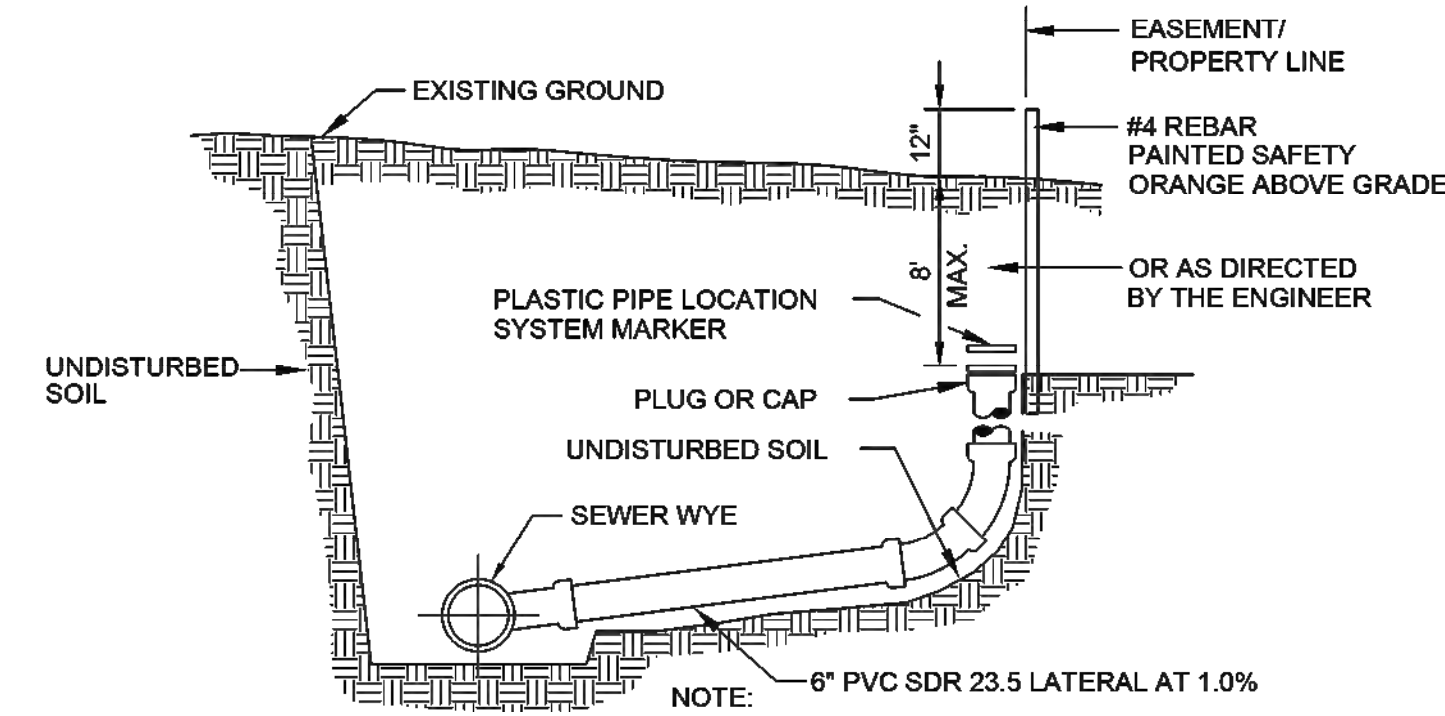


MARION HOWELL OCEOLA GENOA  
Sewer and Water Authority

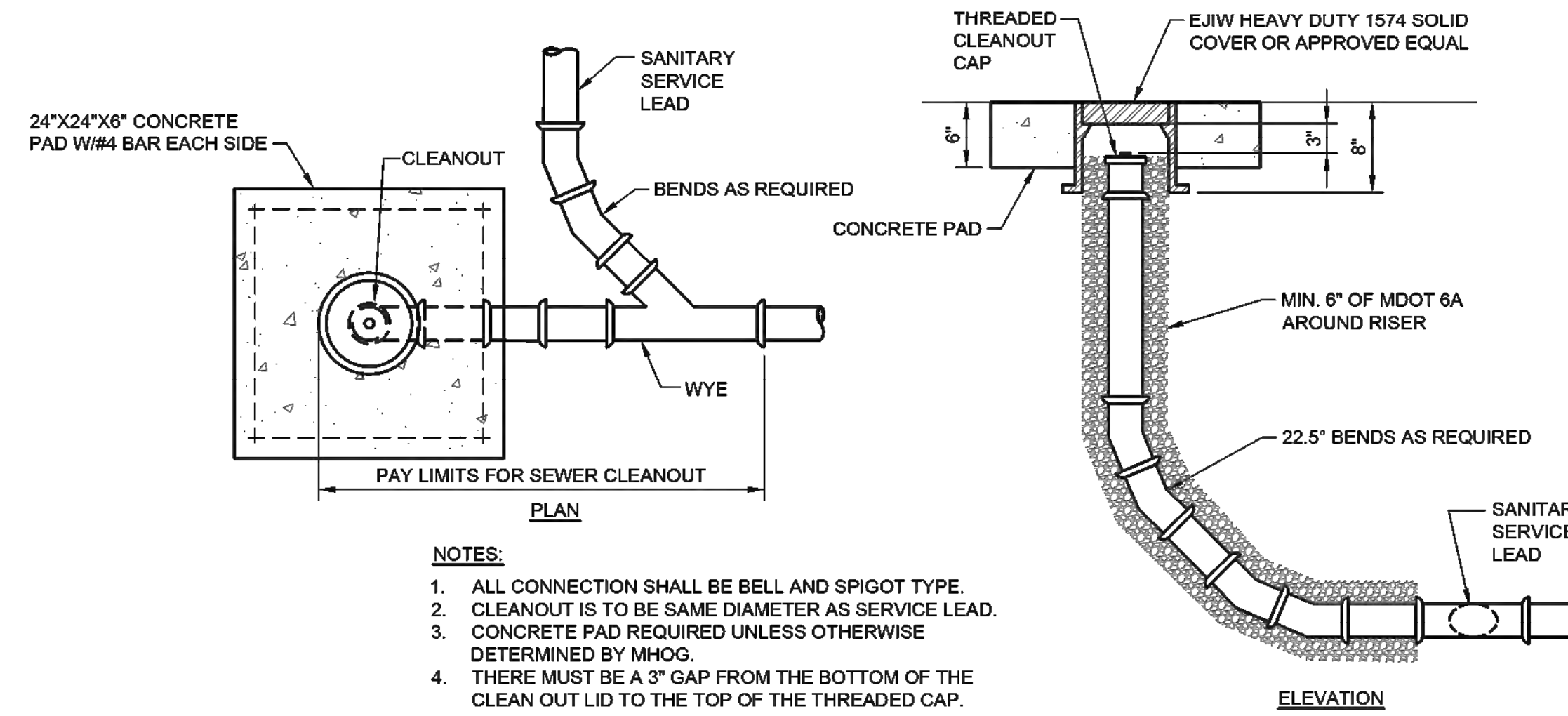
STANDARD DETAILS

Scale:	NONE
Issued Date	JANUARY - 2014
UPDATED:	MAY 2015
UPDATED:	FEBRUARY 2016
UPDATED:	APRIL 2016
UPDATED:	OCTOBER 2017
UPDATED:	FEBRUARY 2019
UPDATED:	NOVEMBER 2022

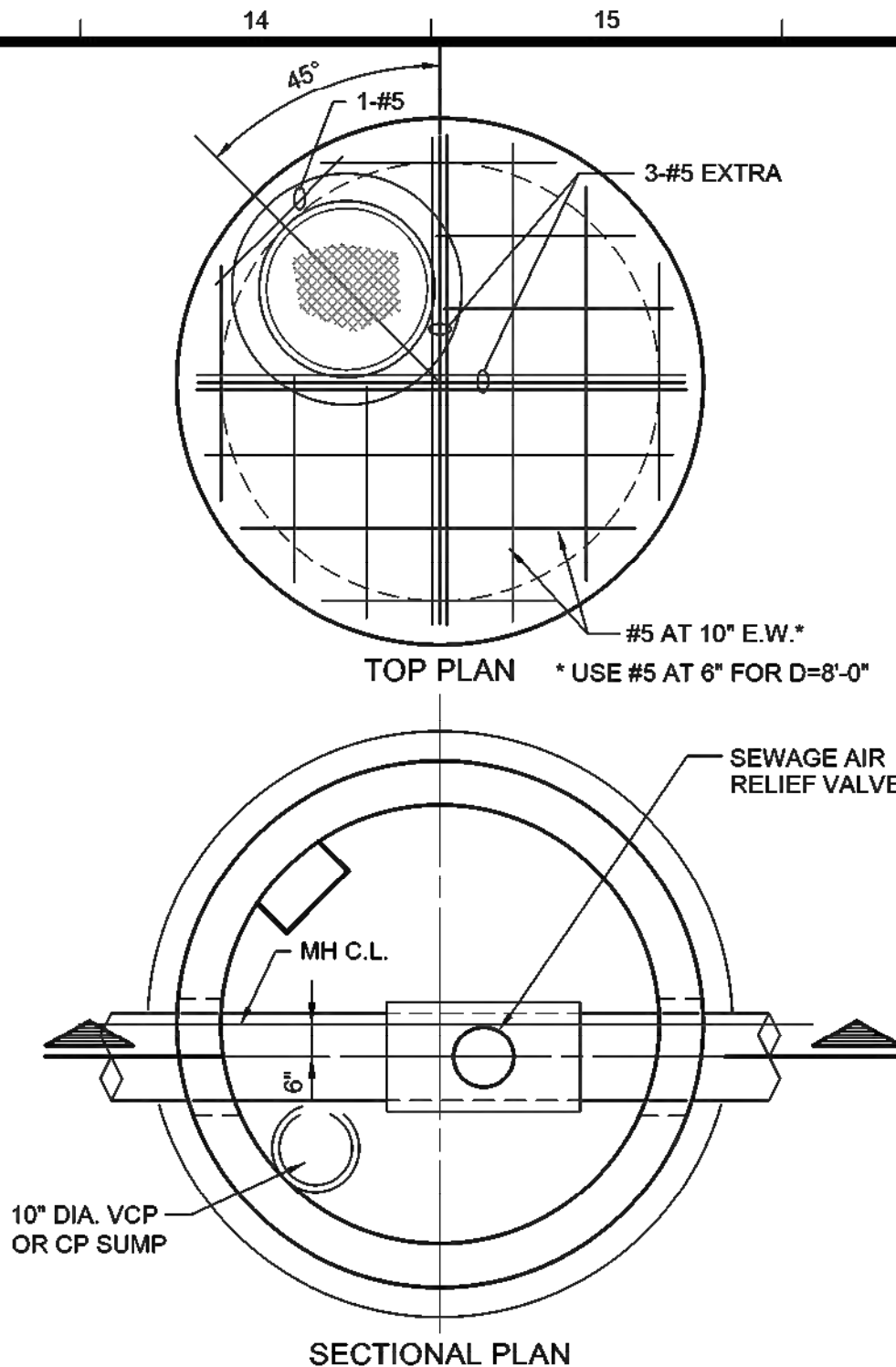




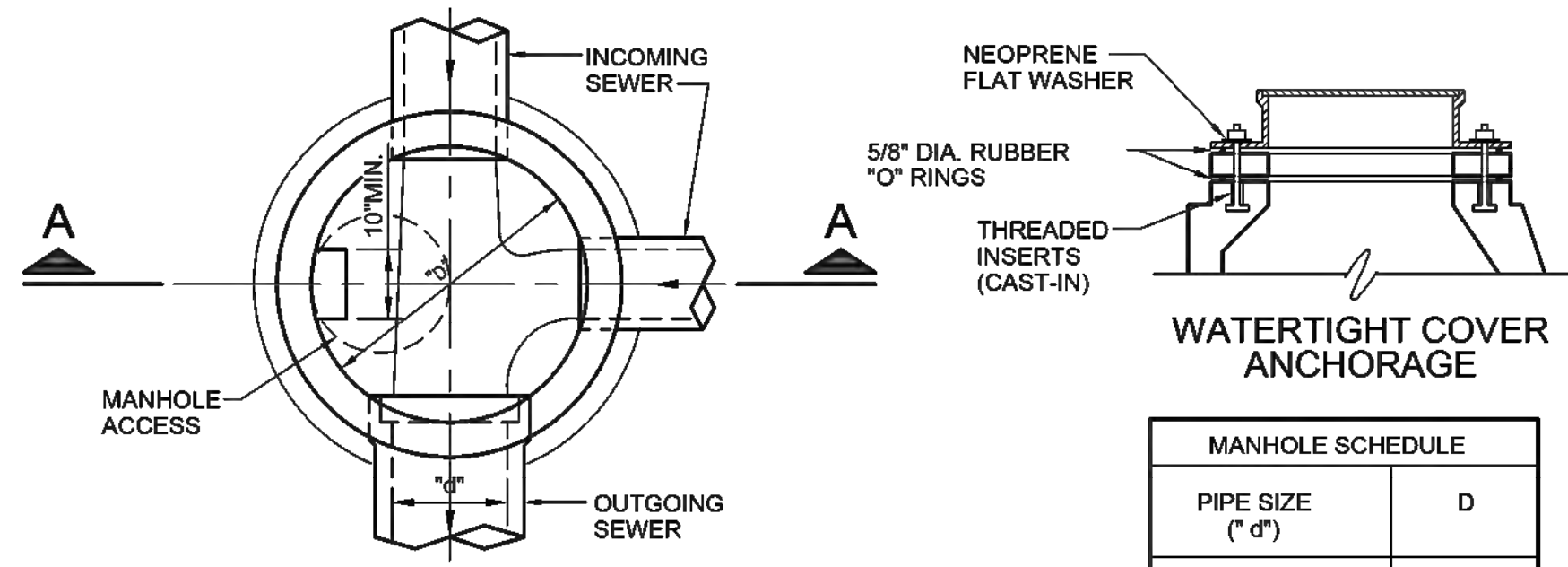
**SANITARY SEWER LATERAL**



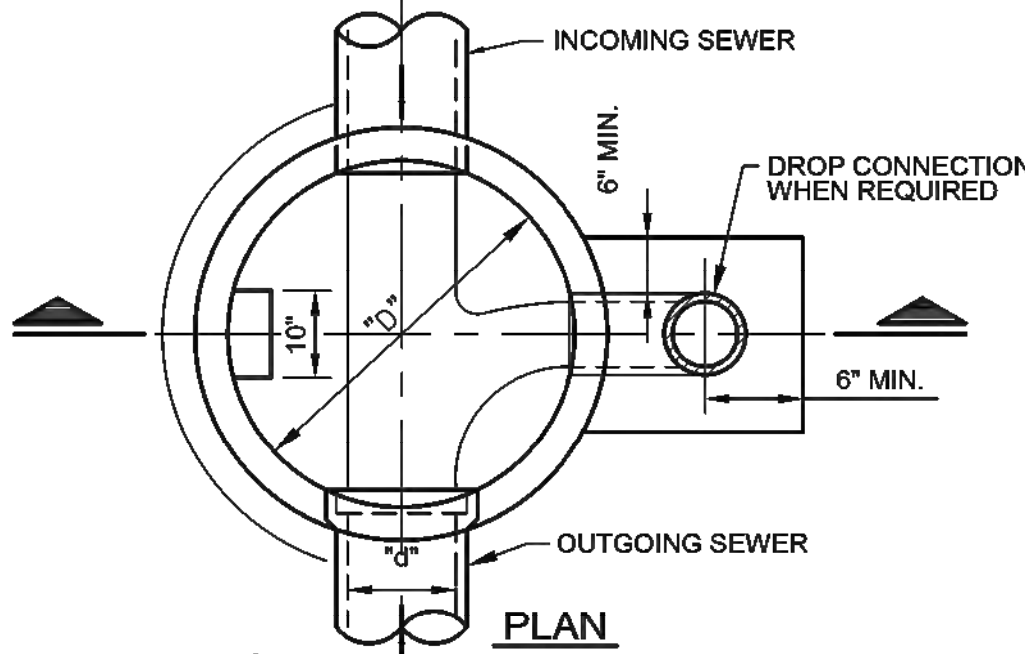
**SEWER CLEANOUT DETAIL**



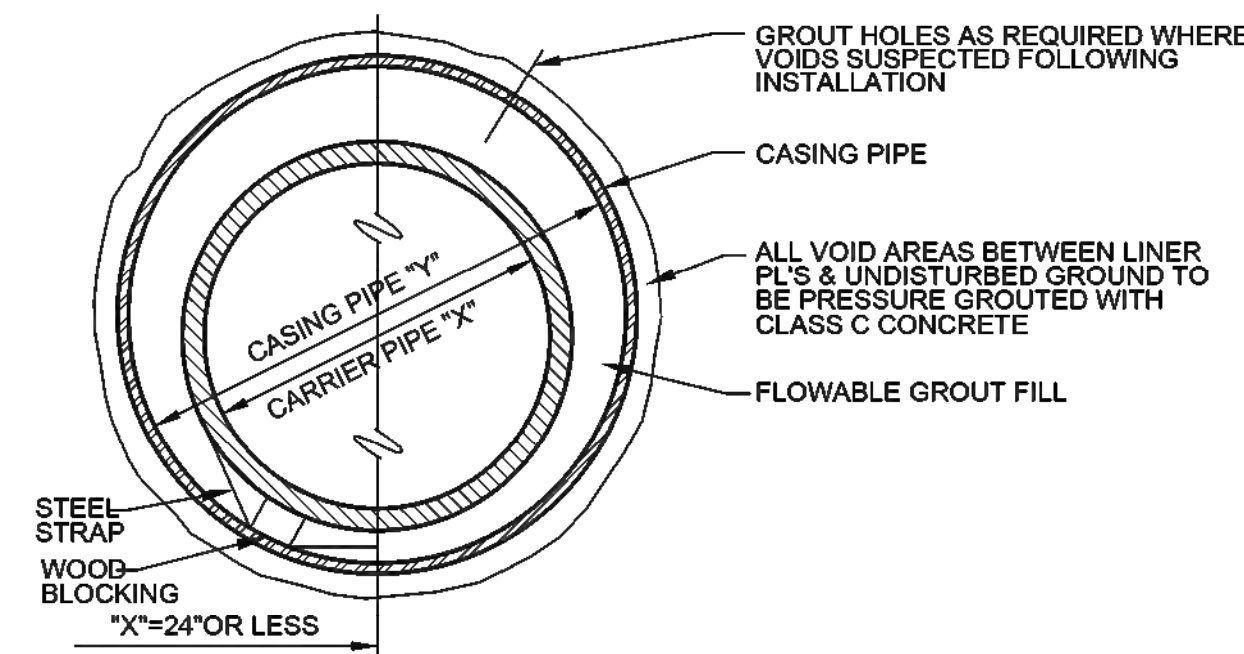
**AIR RELIEF STRUCTURE**



MANHOLE SCHEDULE	
PIPE SIZE (\" d)	D
8\"-24\"	48\"
27\"-36\"	60\"
42\"-48\"	72\"
54\"	84\"

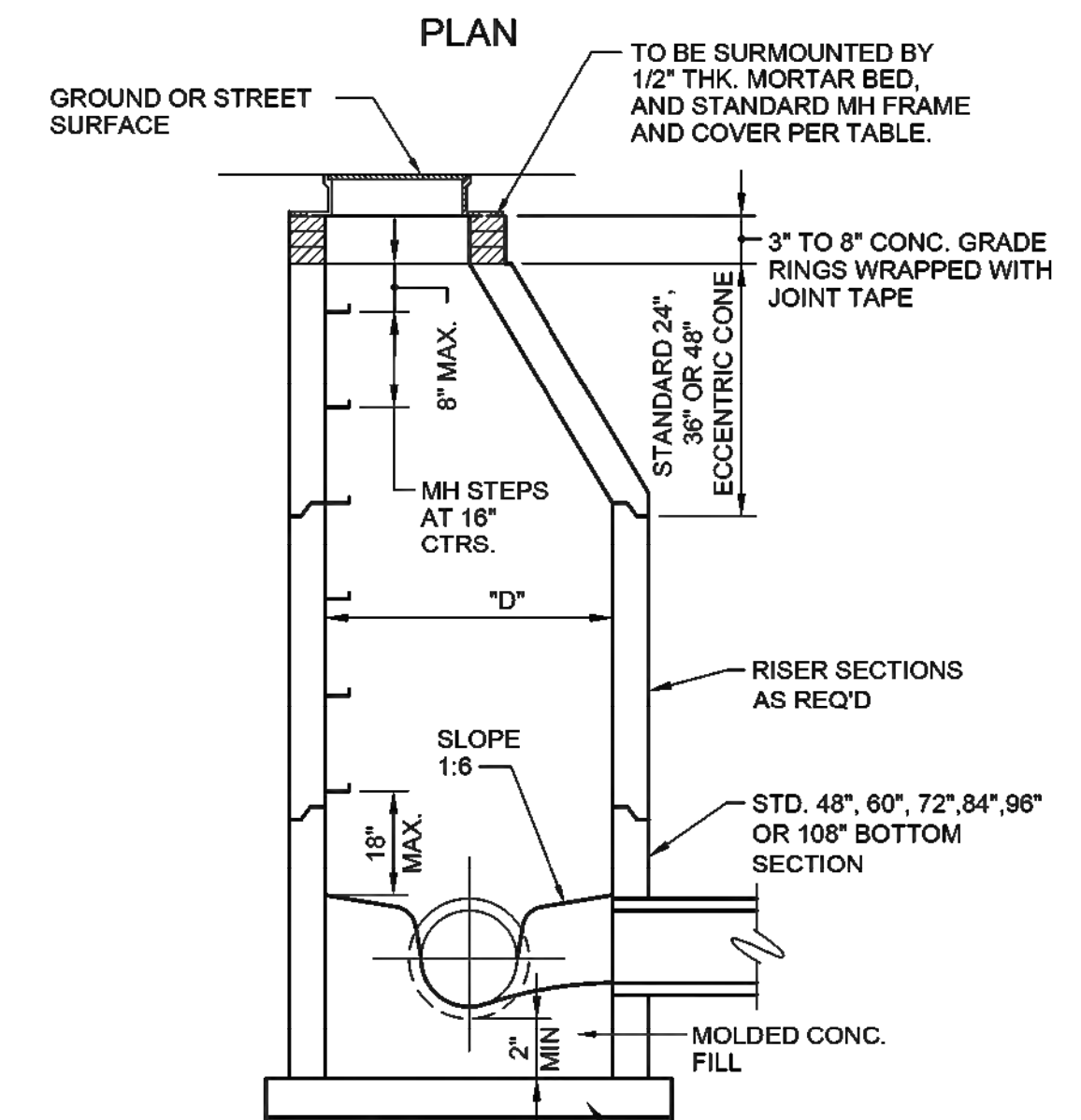


**DROP CONNECTION**



**CASING PIPE**

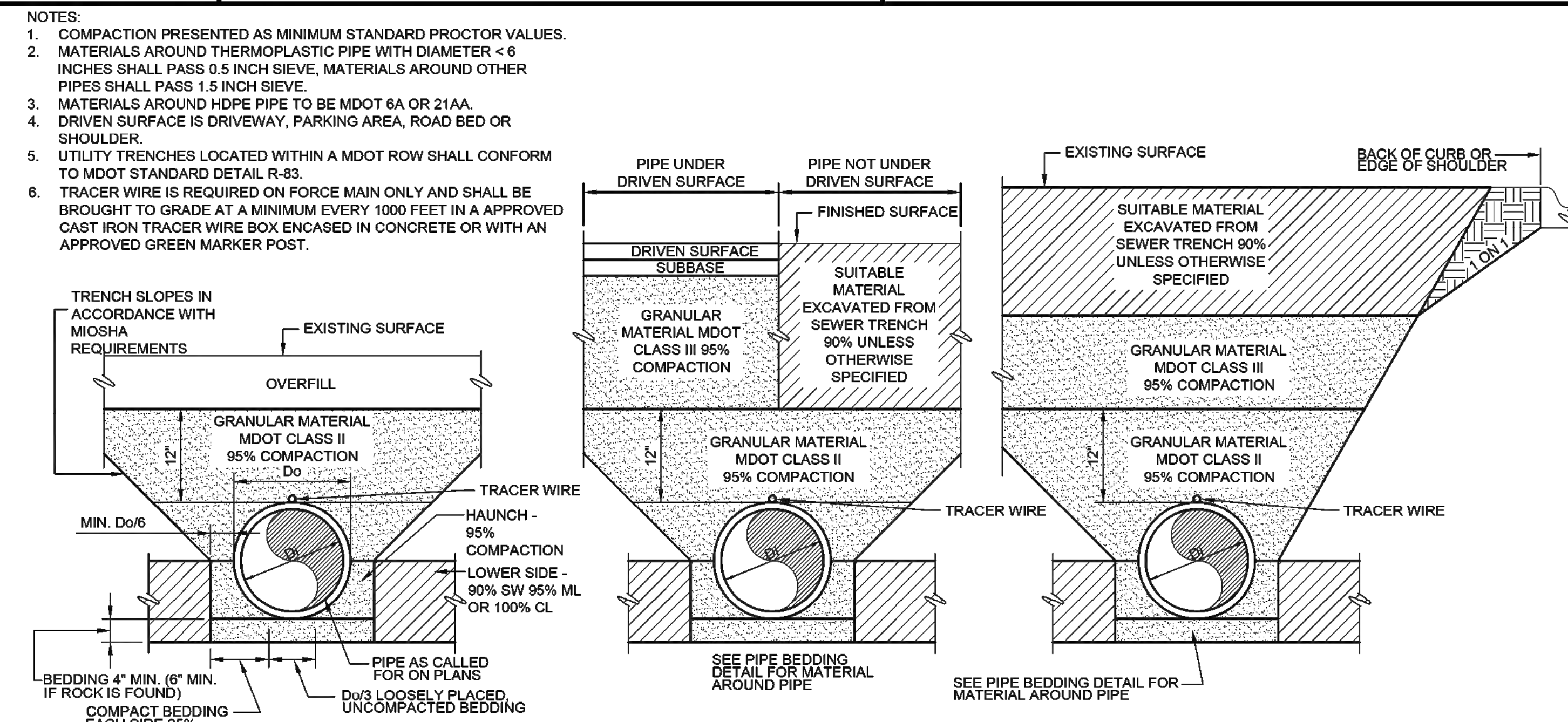
TABLE	
\"X	\"Y(MIN)
6\"-8\"	20\"
10\"-12\"	24\"
14\"-15\"	30\"
18\"-21\"	36\"
24\"	42\"



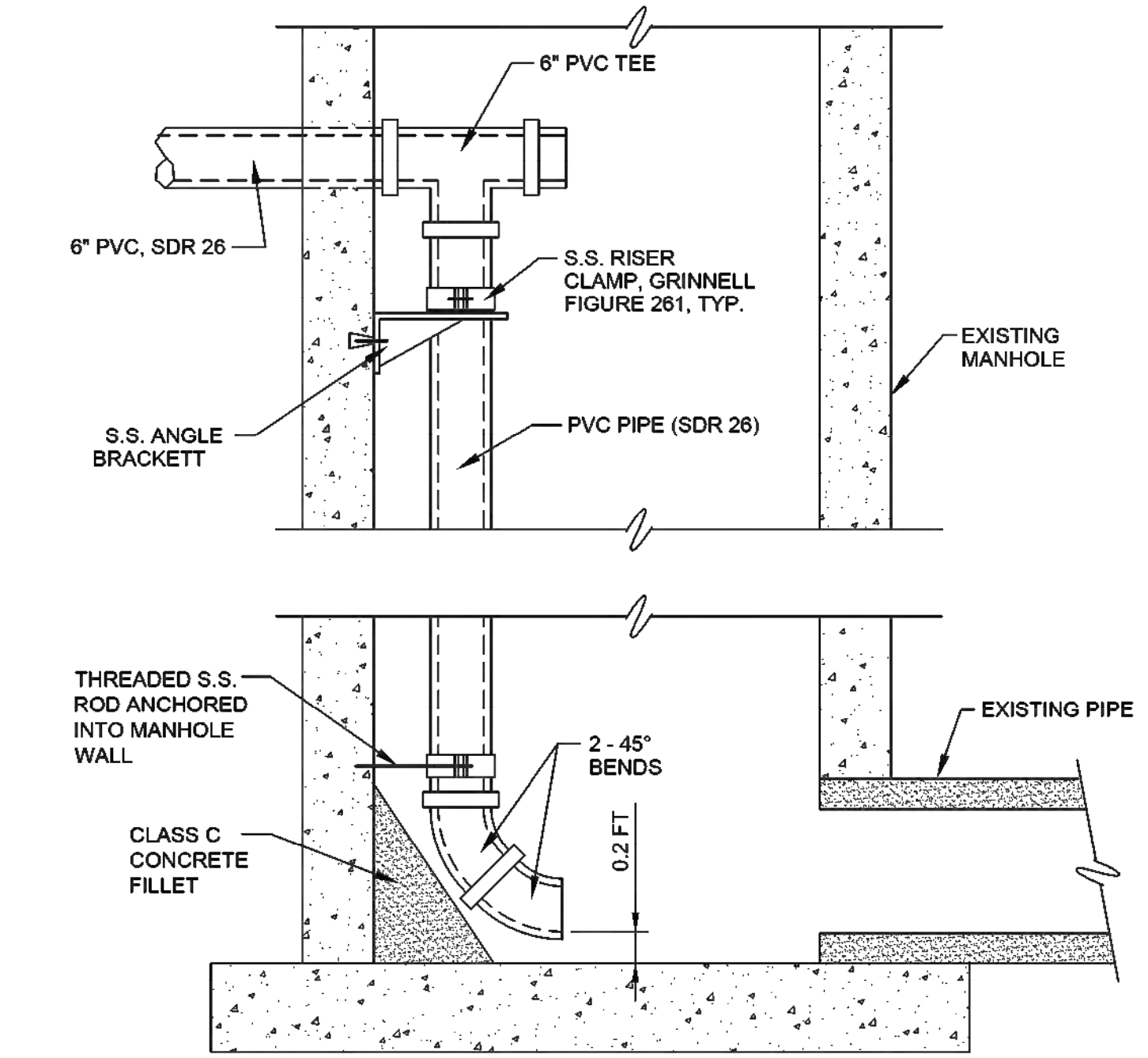
**STANDARD MANHOLE**

- NOTES:
- ALL SANITARY MANHOLES TO BE PRECAST REINFORCED CONCRETE WITH PREMIUM JOINTS. SEE SPECIFICATIONS FOR BASE SLAB AND PIPE OPENINGS AND CONNECTIONS.
  - MANHOLE CONES SHALL BE THE ECCENTRIC TYPE.
  - PROVIDE 6\" OF COMPACTED GRANULAR MATERIAL UNDER ALL PRECAST CONCRETE BASE SLABS.
  - FORCE MAINS CONNECT DIRECTLY TO A MANHOLE SHALL BE INSTALLED SO THAT THE ELEVATION OF THE PIPE CROWNS MATCH. THE FORCE MAIN SHALL BE DIRECTED DOWNWARD INTO THE FLOW CHANNEL.
  - FOR SANITARY SEWERS ALL PIPES SHALL ENTER MANHOLE THROUGH RUBBER BOOTED CONNECTION.

FRAME & COVER FOR SANITARY SEWER MANHOLES			
TYPE	TYPE OF COVER	MANUFACTURER OR EQUAL	
		EAST JORDAN	NEENAH
MH	SANITARY - SOLID SELF-SEALING	1040.0000	R-1642
MH	SANITARY - SOLID WATERTIGHT	1040-APT	R-1916-F
CO	SOLID	1574A	R-1973-A



**PIPE BEDDING TRENCH EXCAVATION & PIPE BEDDING**



**INTERIOR SEWER LATERAL DROP CONNECTION**

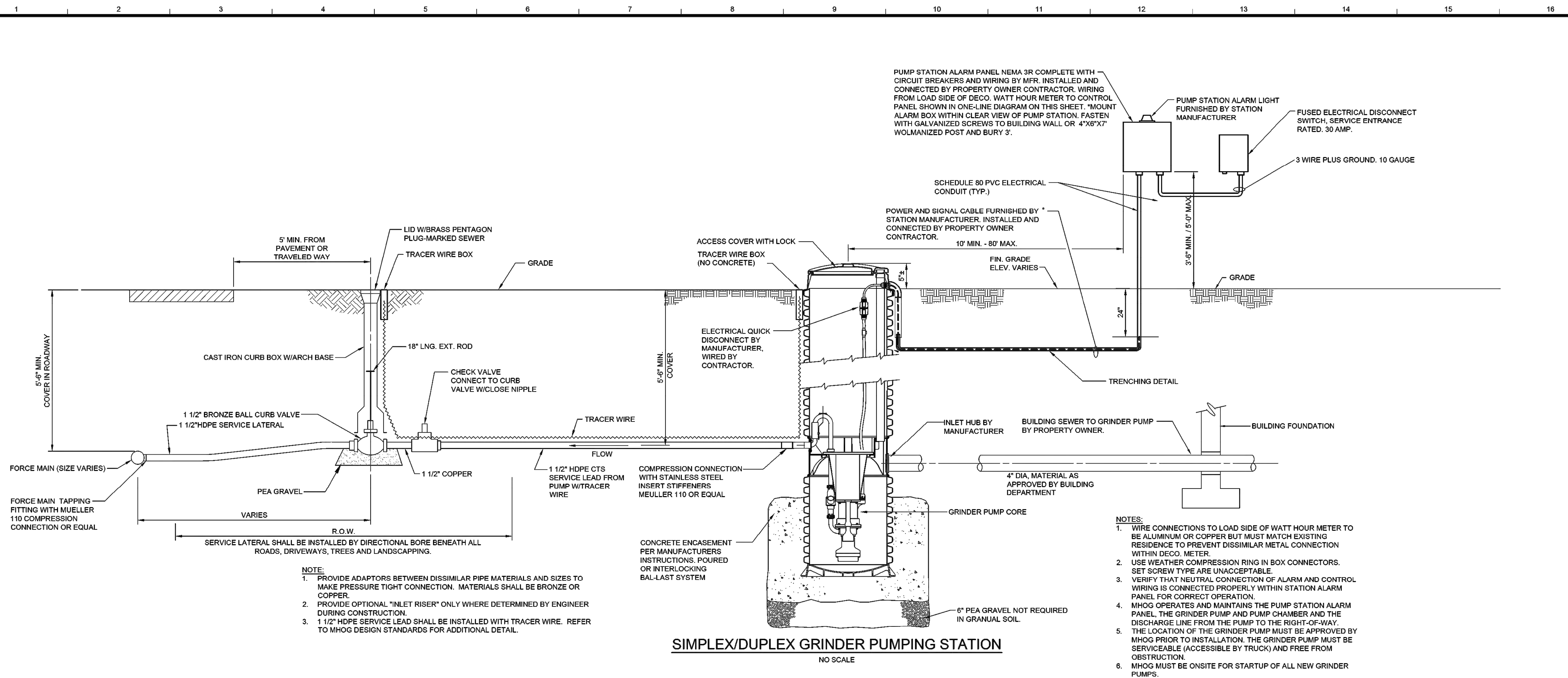


**MARION HOWELL OCEOLA GENOA**  
Sewer and Water Authority

Scale: NONE  
 Issued Date: JANUARY - 2014  
 UPDATED: MAY 2015  
 UPDATED: FEBRUARY 2016  
 UPDATED: APRIL 2016  
 UPDATED: OCTOBER 2017  
 UPDATED: FEBRUARY 2019

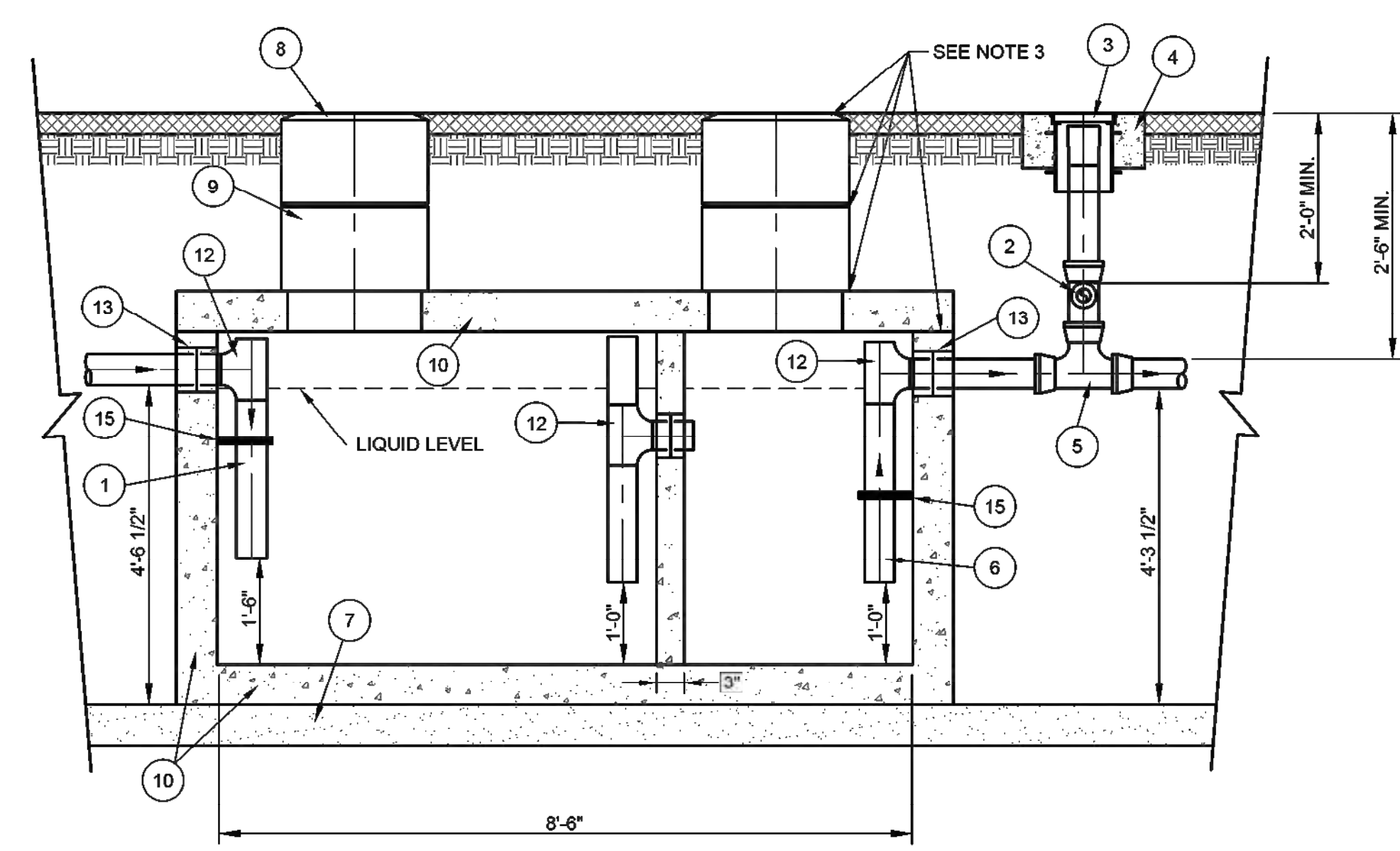
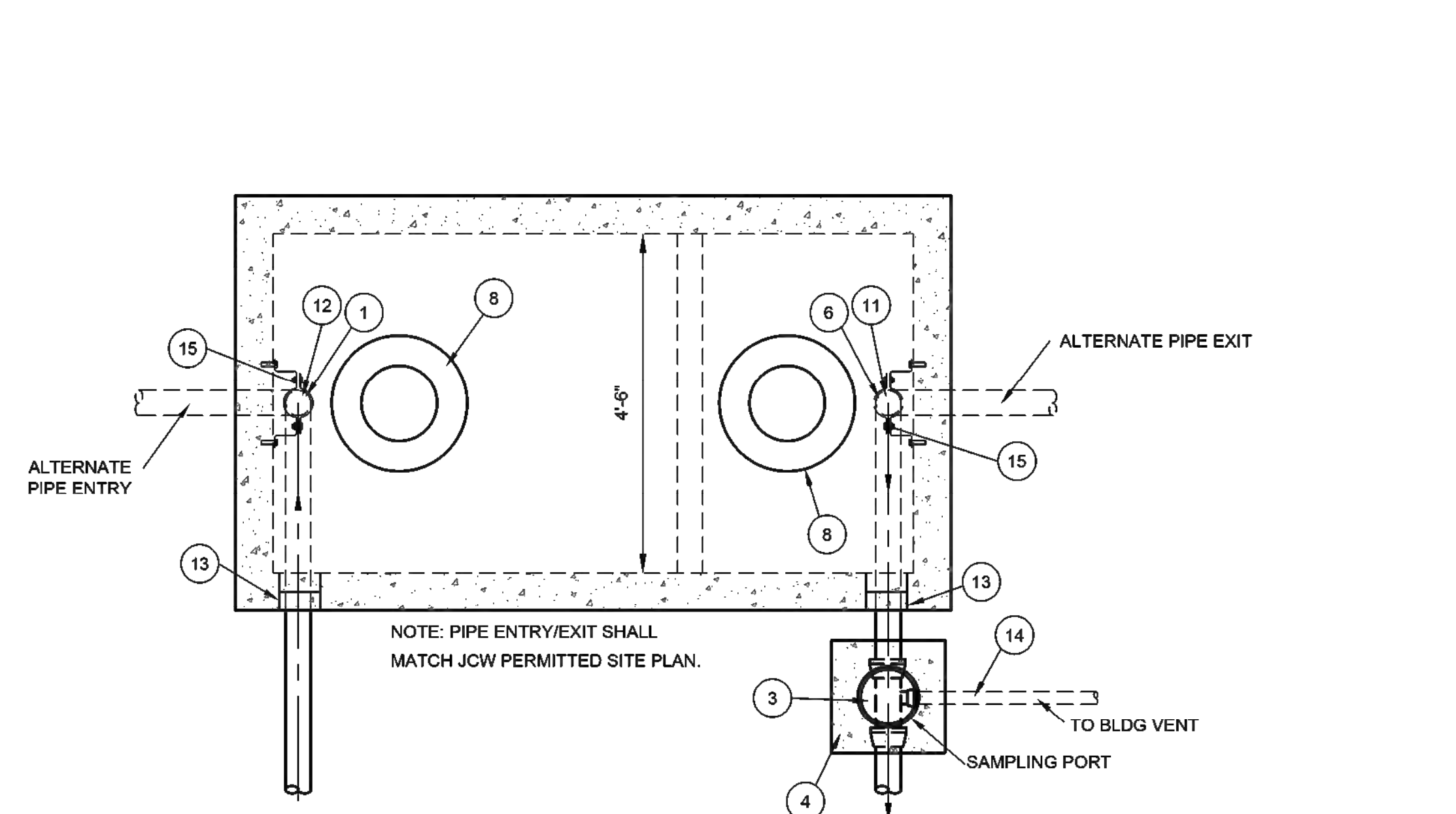
**STANDARD DETAILS**





**SIMPLEX/DUPLEX GRINDER PUMPING STATION**

NO SCALE



**GREASE INTERCEPTOR 1000 GALLON**

NO SCALE

ITEM	DESCRIPTION
1	4" PVC INLET PIPE*
2	4"x4"x2" TEE WITH 2" PIPE TO BUILDING VENT*
3	THREADED C/O CAP JOSAM 58860 OR APP EQUAL**
4	CONCRETE PAD
5	4"x4"x4" TWO-WAY CLEANOUT TEE*
6	4" PVC OUTLET*
7	4" - 6" GRAVEL BEDDING
8	HEAVY-DUTY CAST IRON FRAME AND COVER ***
9	CONCRETE ADJUSTMENT RINGS
10	REINFORCE AS REQUIRED FOR SERVICE CONDITIONS
11	4" PVC 90° ELBOW*
12	4" PVC TEE*
13	A-LOK OR PRESS SEAL PSX PIPE/WALL CONNECTOR
14	2" VENT PIPE (IDENTIFY PIPE TYPE, CLASS & JOINT AS REQUIRED FOR PROJECT)
15	STAINLESS STEEL PIPE SUPPORT CLAMP ****

\* 6" PIPE MAY BE SUBSTITUTED TO MATCH UPSTREAM PIPE DIAMETER.  
 \*\* REFER TO CLEAN OUT DETAIL(S) ON STANDARD DETAIL SHEET.  
 \*\*\* CLAY & BAILEY 2008 EV OR EQUAL (FROST PROOF COVERS OPTIONAL)  
 \*\*\*\* FM STAINLESS FASTENERS #63 OR EQUAL. 1/2"x2-1/2" SS BRACKET W/ 1/2"x1-1/2" FULLY THREADED SS HEX BOLT WITH 1/2" SS WASHER AND 1/2"x1-3/4" SS ANCHORS. CLAMP TO BE FACTORY INSTALLED.

- NOTES:**
1. THREE COVERS AND RISERS SHOWN. TWO COVERS AND RISERS CENTERED OVER UPPER TWO BAFFLES ARE OPTIONAL.
  2. INTERCEPTOR SIZE - 1000 GAL MINIMUM (REVISE THE SIZE DIMENSIONS, AS NEEDED, FOR LARGER CAPACITY INTERCEPTORS)
  3. ALL JOINTS AT THE FRAME & COVER\*, CONCRETE ADJUSTMENT RINGS AND THE LID OF THE INTERCEPTOR SHALL BE SEALED WITH A MINIMUM OF TWO (2) ROWS OF 3/4 TO 1 INCH PREFORMED BUTYL JOINT SEALER AND A 6" BUTYL JOINT WRAP AROUND SLEEVE (EZ WRAP). THE ENDS OF THE 6" EZ WRAP SHALL OVERLAP BY 12".
  4. PIPING ON THE INTERIOR OF THE INTERCEPTOR SHALL BE PVC WITH SOLVENT-CEMENTED JOINTS. GREASE INTERCEPTOR INCLUDING ADJUSTMENT RINGS AND CASTINGS SHALL BE WATER TESTED FOR WATER TIGHTNESS AFTER THE BACKFILL OPERATIONS HAVE BEEN COMPLETED. WATER TESTING SHALL CONSIST OF THE FOLLOWING: 1. SEAL THE TANK. 2. FILL WITH WATER. 3. LET STAND FOR 24 HOURS. 4. REFILL TANK. 5. TANK IS APPROVED IS WATER LEVEL IS HELD FOR 1 HOUR.
  6. ONLY KITCHEN WASTE SHALL BE DIVERTED TO THE GREASE TRAP.



**MARION HOWELL OCOELA GENOA**  
Sewer and Water Authority

**STANDARD DETAILS**

Scale: NONE  
 Issued Date: JANUARY - 2014  
 UPDATED: MAY 2015  
 UPDATED: FEBRUARY 2016  
 UPDATED: APRIL 2016  
 UPDATED: OCTOBER 2017  
 UPDATED: FEBRUARY 2019  
 UPDATED: NOVEMBER 2022

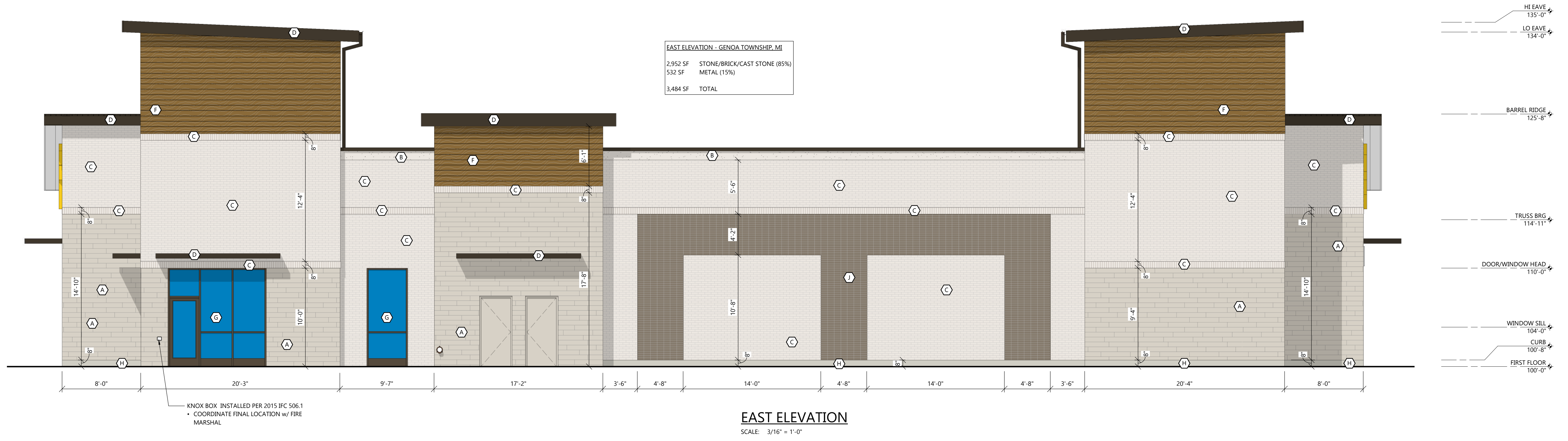
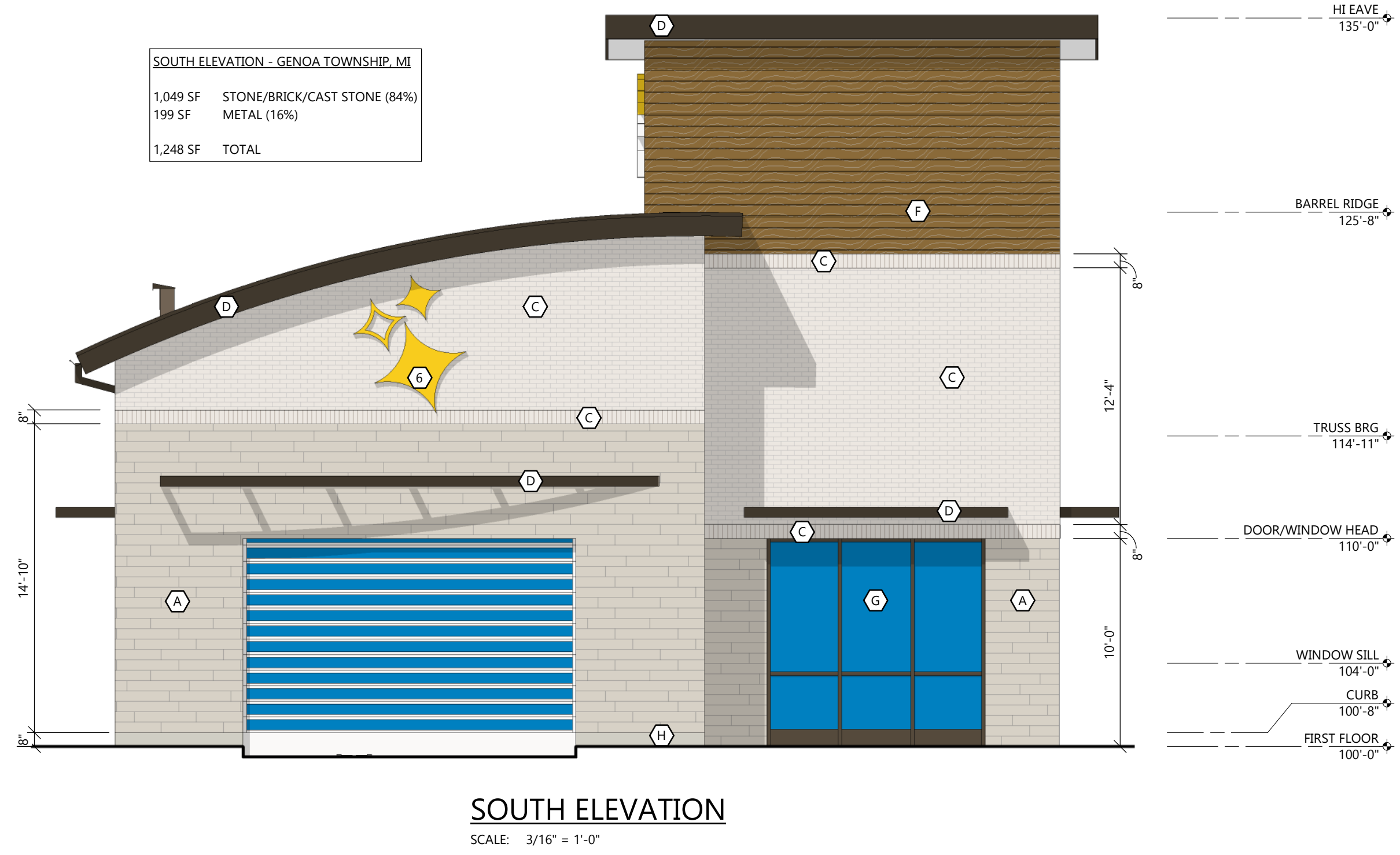


**GENERAL NOTES**

- ALL SIGNAGE SHOWN FOR INFORMATIONAL PURPOSES ONLY. ALL ADVERTISING SIGNAGE SUBJECT TO SEPARATE SIGN PERMIT SUBMITTAL AND APPROVAL.

**EXTERIOR MATERIAL KEY**

	<b>STONE VENEER</b> MFR: EL DORADO STONE STYLE: VANTAGE 30 (6"H x 30"L x ~1"D) COLOR: WHITE ELM w/ MATCHING MORTAR JOINT
	<b>PRECAST STONE MOULDING</b> COLOR: BROWN TEXTURE: SMOOTH
	<b>BRICK VENEER (SEE ELEVATIONS FOR ORIENTATION)</b> MFR: SUMMIT BRICK COLOR: ALASKAN TEXTURE: SMOOTH
	<b>PREFINISHED METAL TRIM AND ACCESSORIES</b> MFR: CTMRS (OR EQUAL) COLOR: PT-9 (DARK BRONZE)
	<b>PREFINISHED STANDING SEAM METAL ROOF PANEL</b> MFR: CTMRS (OR EQUAL) STYLE: LARGE BATTEN 24 GA COLOR: PT-9 (DARK BRONZE)
	<b>PREFINISHED ALUMINUM BATTENS</b> MFR: LUMABUILT STYLE: MOSAIC 1-1/2 BATTENS COLOR: HAZELNUT BROWN
	<b>ALUMINUM STOREFRONT SYSTEM</b> GLAZING: CLEAR FRAME: DARK BRONZE
	<b>CONCRETE CURB</b> TEXTURE: HAND RUB COLOR TO MATCH LIMESTONE
	<b>BRICK VENEER</b> MFR: SUMMIT BRICK COLOR: MATCH SW 7025 BACKDROP TEXTURE: SMOOTH



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920-926-9800  
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COLLABORATION

**PROJECT INFORMATION**

PROPOSED CAR WASH FOR:  
**MISTER CAR WASH #1495 (LATSON)**  
1015 S. LATSON RD. • HOWELL, MI 48843

PROFESSIONAL SEAL

**PRELIMINARY DATES**

OCT. 2, 2023
OCT. 26, 2023
OCT. 31, 2023
DEC 08, 2023
DEC 11, 2023
DEC. 21, 2023
JAN 12, 2024

**NOT FOR CONSTRUCTION**

**JOB NUMBER**  
230105800

**SHEET NUMBER**  
**PRE-1**

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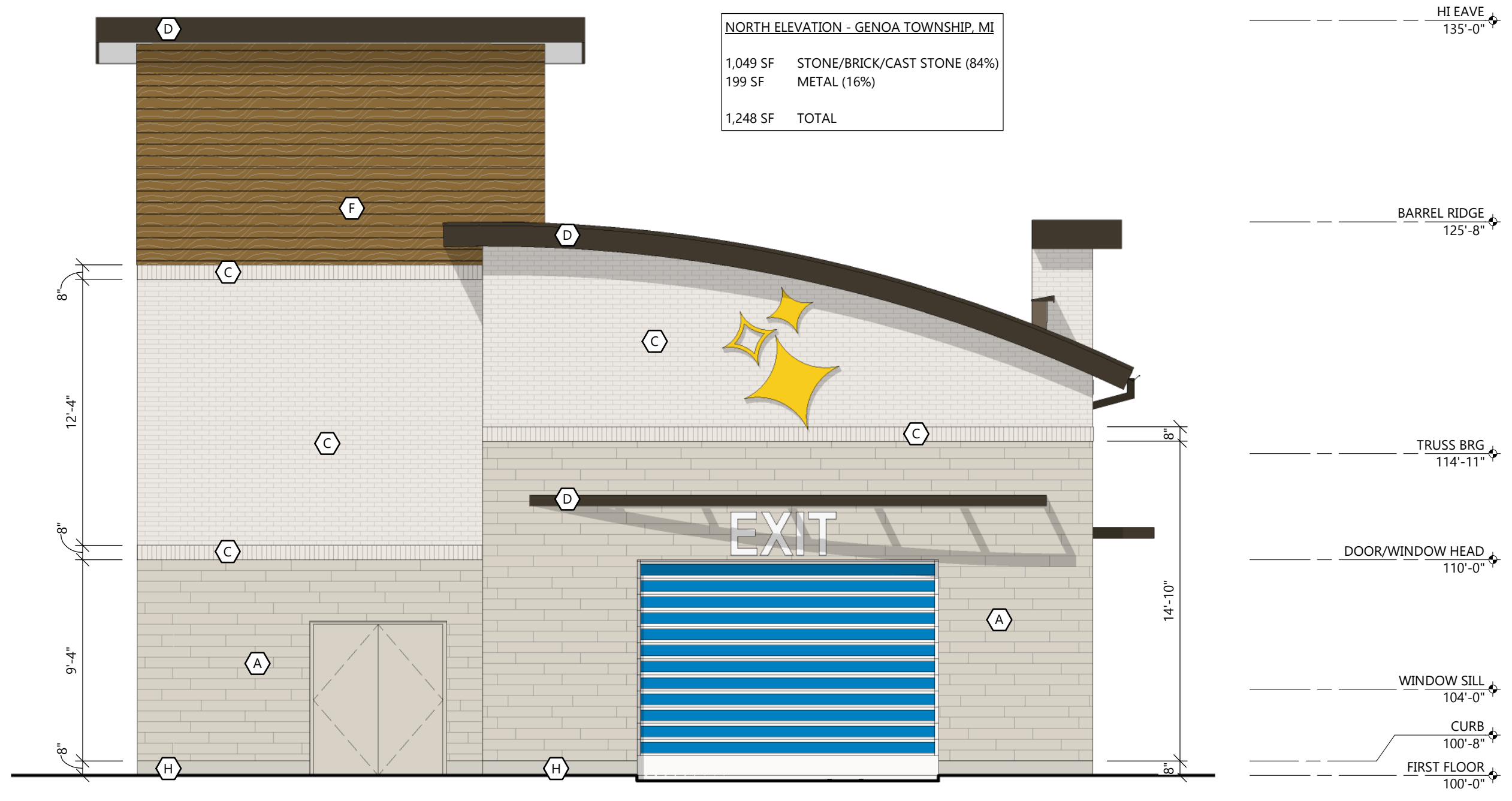


**GENERAL NOTES**

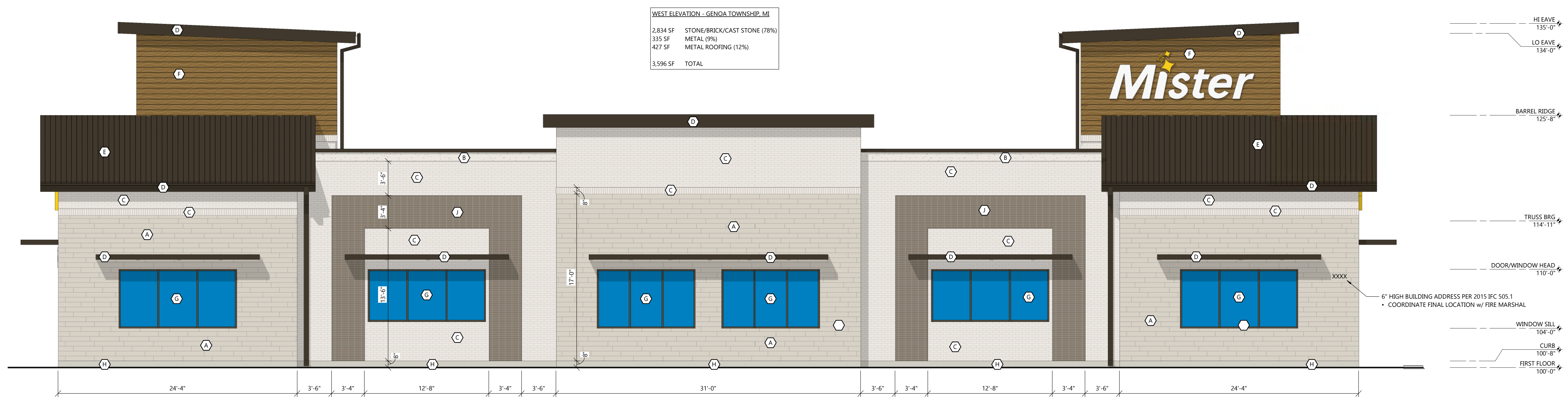
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	<b>ALUMINUM STOREFRONT SYSTEM</b> GLAZING: CLEAR FRAME: DARK BRONZE
	<b>CONCRETE CURB</b> TEXTURE: HAND RUB COLOR TO MATCH LIMESTONE
	<b>BRICK VENEER</b> MFR: SUMMIT BRICK COLOR: MATCH SW 7025 BACKDROP TEXTURE: SMOOTH



**NORTH ELEVATION**  
SCALE: 3/16" = 1'-0"



**WEST ELEVATION**  
SCALE: 3/16" = 1'-0"

PRELIMINARY EXTERIOR ELEVATIONS - 130' TUNNEL (RH)

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COLLABORATION

**PROJECT INFORMATION**

PROPOSED CAR WASH FOR:  
**MISTER CAR WASH #1495 (LATSON)**  
1015 S. LATSON RD. • HOWELL, MI 48843

PROFESSIONAL SEAL

**PRELIMINARY DATES**

OCT. 2, 2023
OCT. 26, 2023
OCT. 31, 2023
NOV. 10, 2023
DEC 08, 2023
DEC 11, 2023
DEC. 21, 2023
JAN 4, 2024
JAN 12, 2024

**JOB NUMBER**  
230105800

**SHEET NUMBER**  
**PRE-2**

**NOT FOR CONSTRUCTION**

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COLLABORATION



PROJECT INFORMATION

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1015 S. LATSON RD. • HOWELL, MI 48843

PROFESSIONAL SEAL

PRELIMINARY DATES

OCT. 2, 2023  
OCT. 26, 2023  
JAN 12, 2024

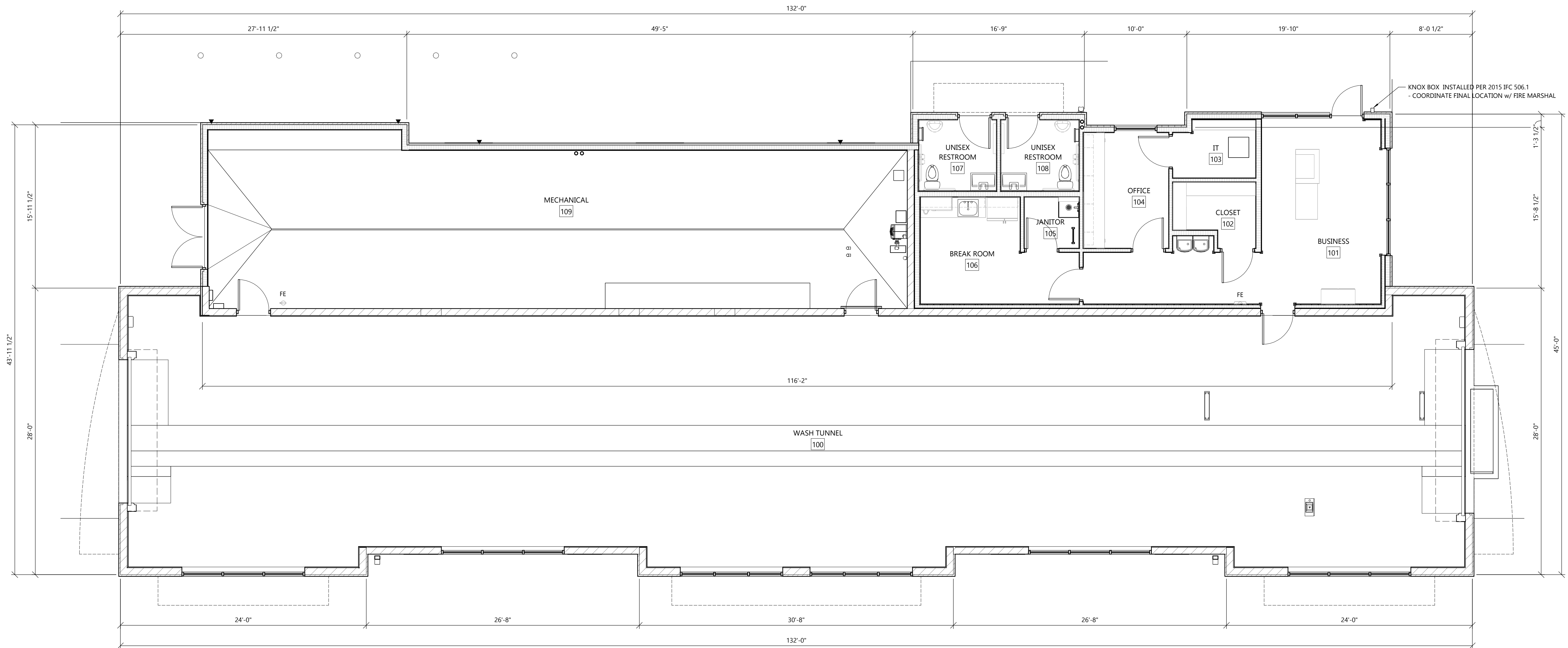
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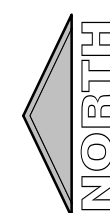
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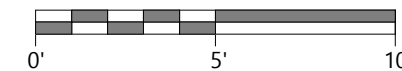


KNOX BOX INSTALLED PER 2015 IFC 506.1  
- COORDINATE FINAL LOCATION W/ FIRE MARSHAL



FLOOR PLAN

SCALE: 3/16" = 1'-0"

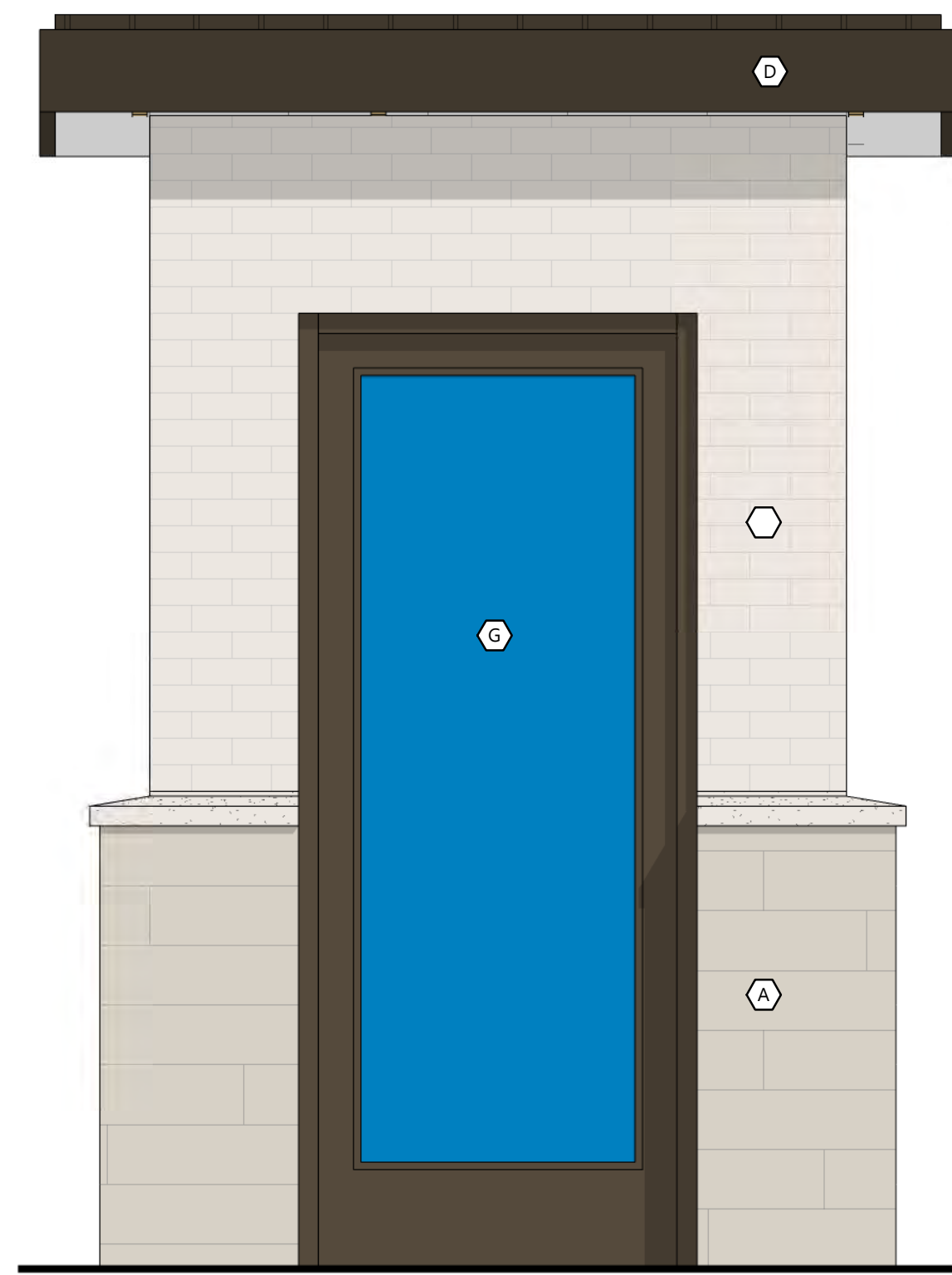


PRELIMINARY FLOOR PLAN





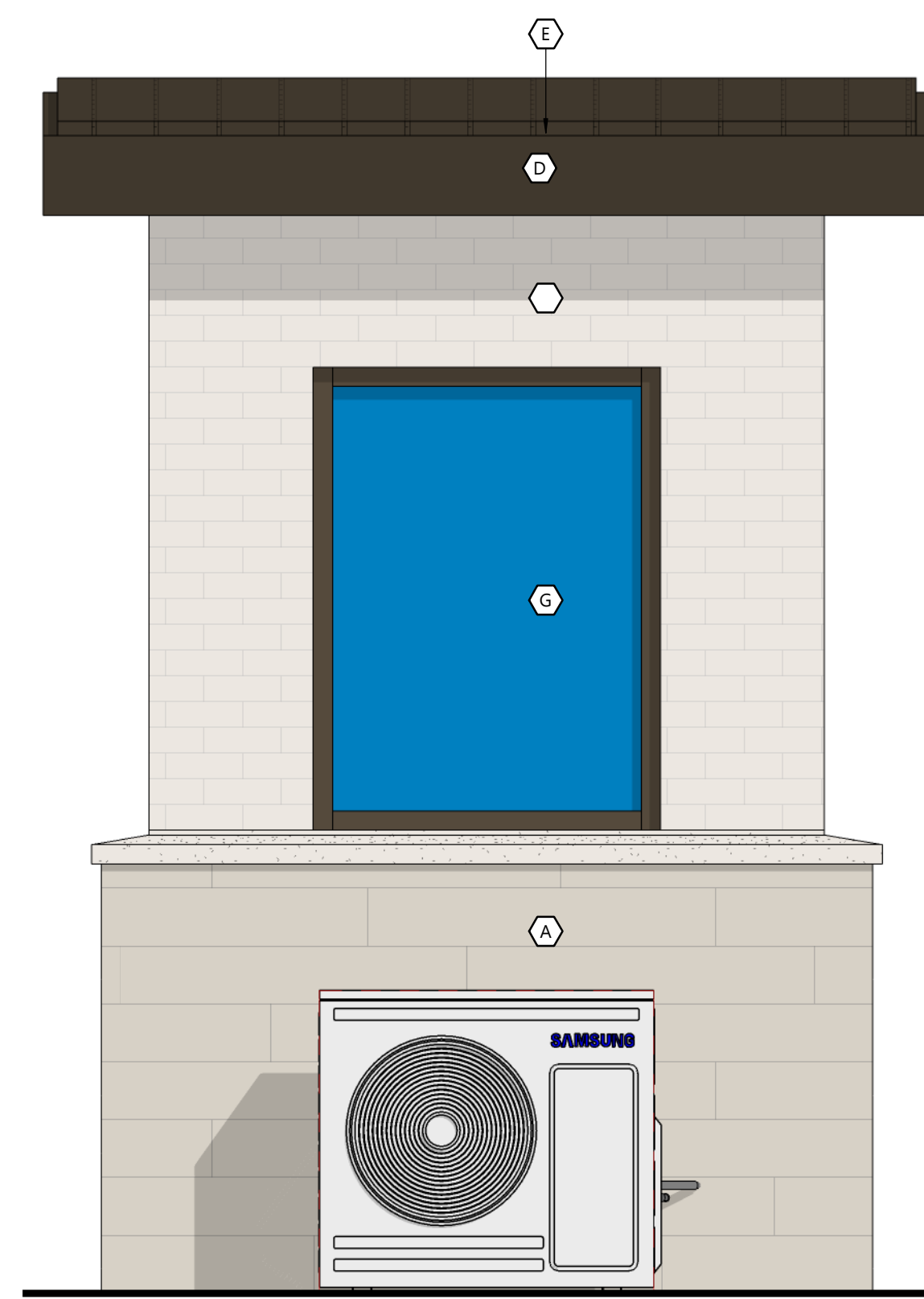
**LEFT ELEVATION**  
SCALE: 3/4" = 1'-0"



**FRONT ELEVATION**  
SCALE: 3/4" = 1'-0"



**RIGHT ELEVATION**  
SCALE: 3/4" = 1'-0"



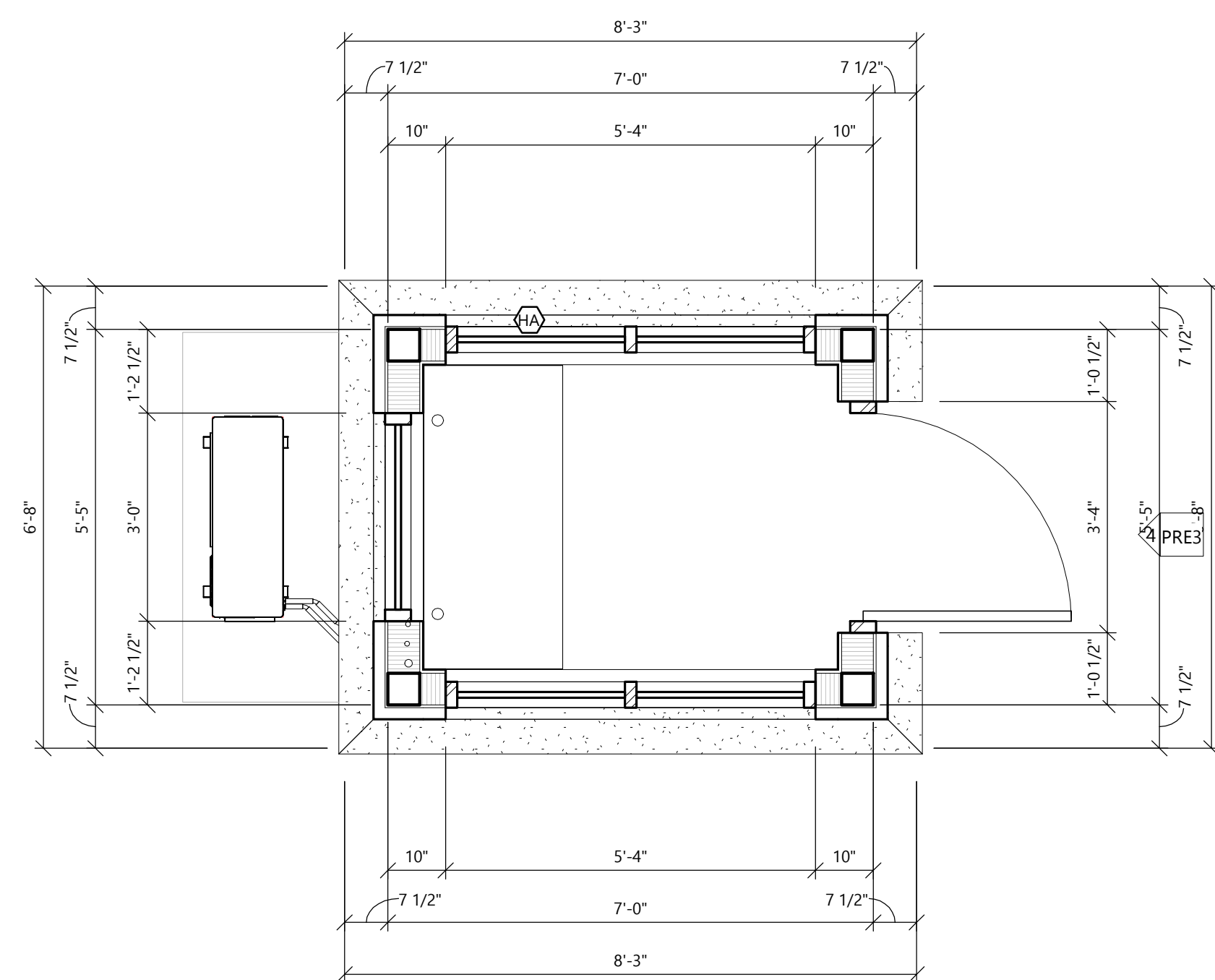
**REAR ELEVATION**  
SCALE: 3/4" = 1'-0"

**GENERAL NOTES**

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**EXTERIOR MATERIAL KEY**

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	<b>PRECAST STONE MOULDING</b> COLOR: BROWN TEXTURE: SMOOTH
	<b>BRICK VENEER (SEE ELEVATIONS FOR ORIENTATION)</b> MFR: SUMMIT BRICK COLOR: ALASKAN TEXTURE: SMOOTH
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	<b>CONCRETE CURB</b> TEXTURE: HAND RUB COLOR TO MATCH LIMESTONE
	<b>BRICK VENEER</b> MFR: SUMMIT BRICK COLOR: MATCH SW 7025 BACKDROP TEXTURE: SMOOTH



**SHELTER PLAN**  
SCALE: 1/2" = 1'-0"

PRELIMINARY ATTENDANT SHELTER PLANS AND DETAILS



**PROJECT INFORMATION**

PROPOSED CAR WASH FOR:  
**MISTER CAR WASH #1495 (LATSON)**  
1015 S. LATSON RD. • HOWELL, MI 48843

PROFESSIONAL SEAL

**PRELIMINARY DATES**  
OCT. 2, 2023  
JAN 12, 2024

**NOT FOR CONSTRUCTION**

**JOB NUMBER**  
230105800

**SHEET NUMBER**  
**PRE-4**

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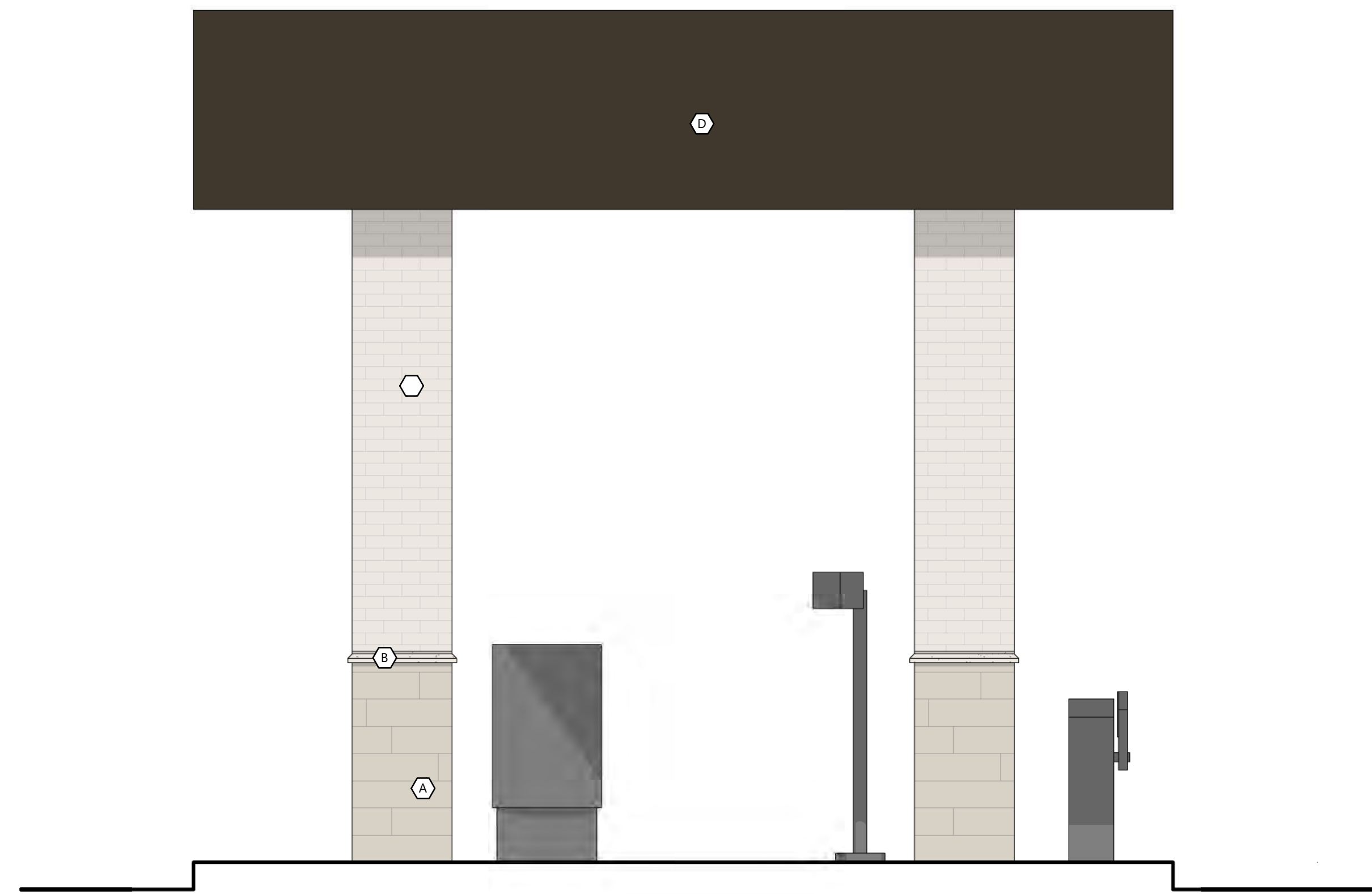


**GENERAL NOTES**

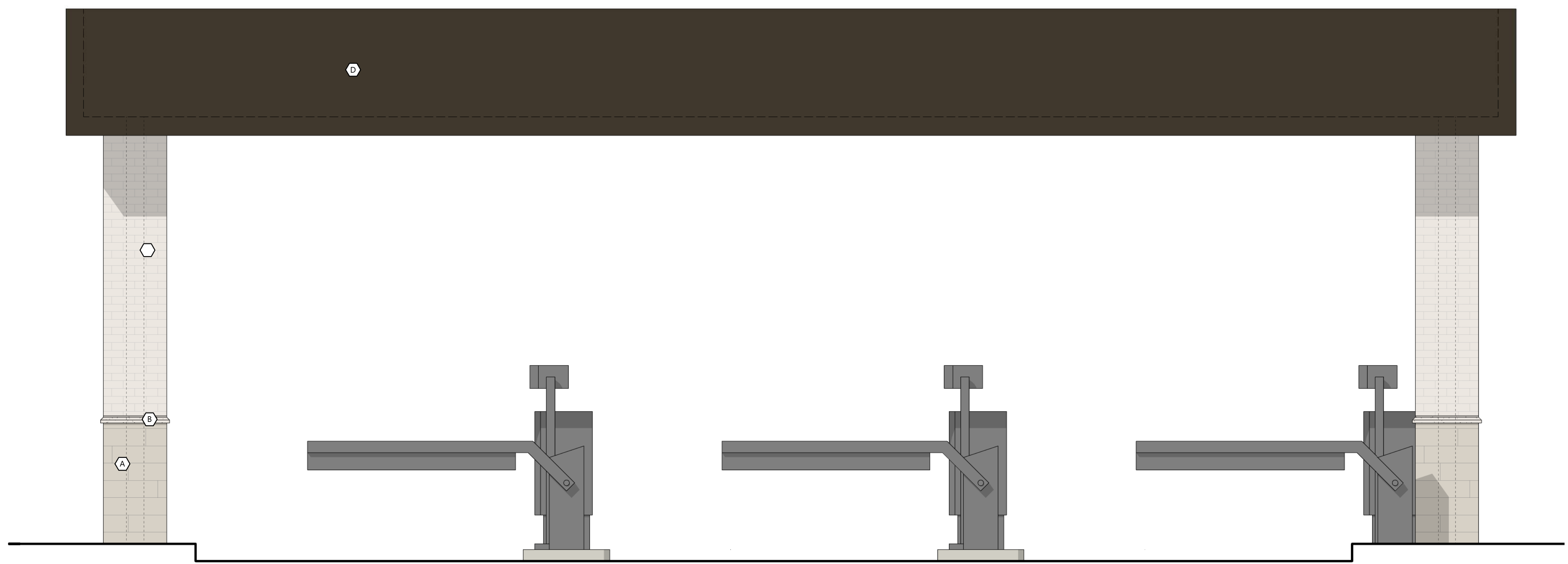
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**EXTERIOR MATERIAL KEY**

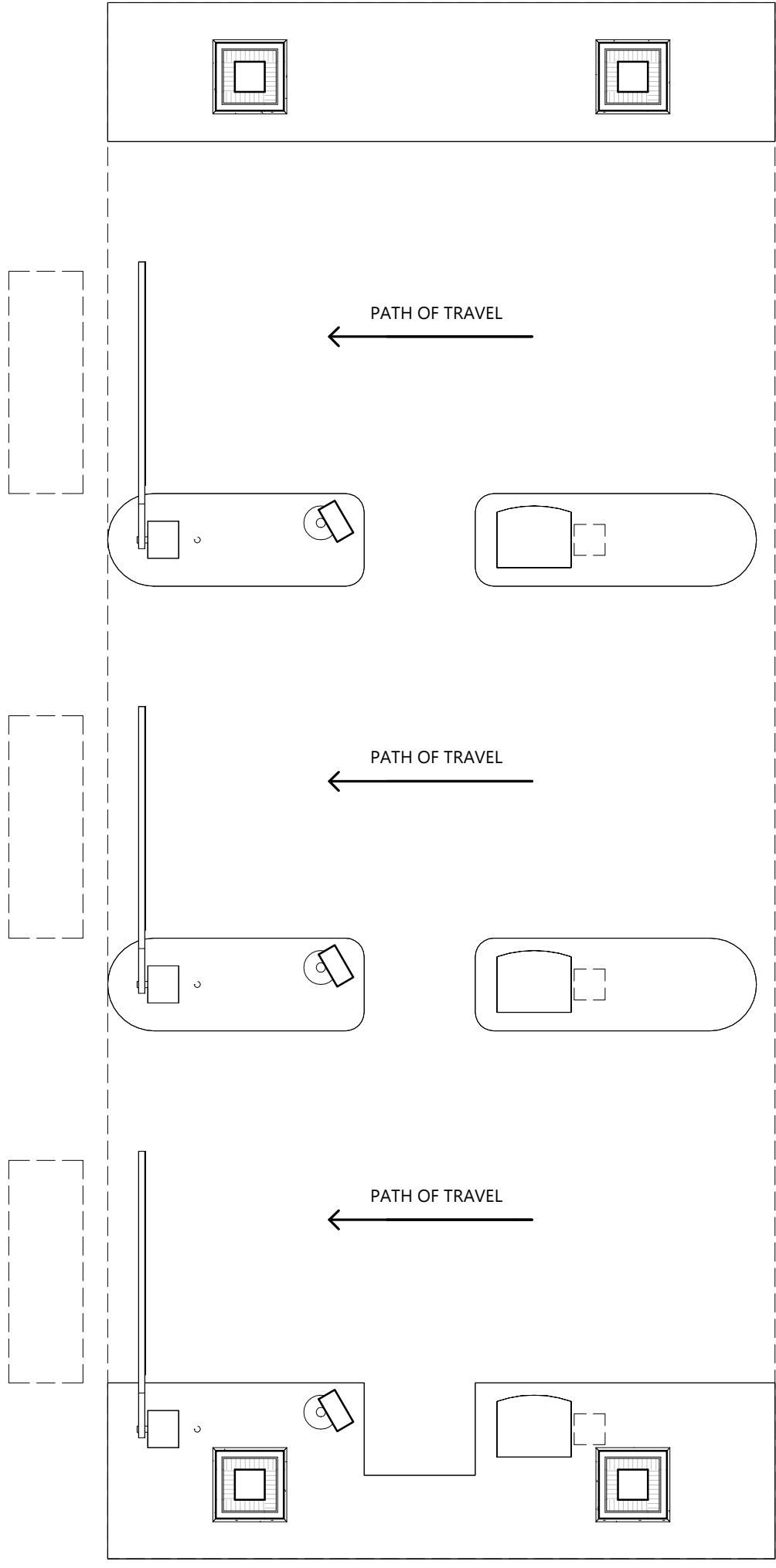
	<b>STONE VENEER</b> MFR: EL DORADO STONE STYLE: VANTAGE 30 (6" H x 30" L x -1" D) COLOR: WHITE ELM w/ MATCHING MORTAR JOINT
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**CANOPY ELEVATION**  
SCALE: 1/2" = 1'-0"



**CANOPY ELEVATION**  
SCALE: 1/2" = 1'-0"



**CANOPY PLAN**  
SCALE: 1/4" = 1'-0"

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COLLABORATION

**Mister**

**PROJECT INFORMATION**

PROPOSED CAR WASH FOR:  
**MISTER CAR WASH #1495 (LATSON)**  
1015 S. LATSON RD. • HOWELL, MI 48843

PROFESSIONAL SEAL

**PRELIMINARY DATES**

OCT. 2, 2023
JAN 12, 2024

**NOT FOR CONSTRUCTION**

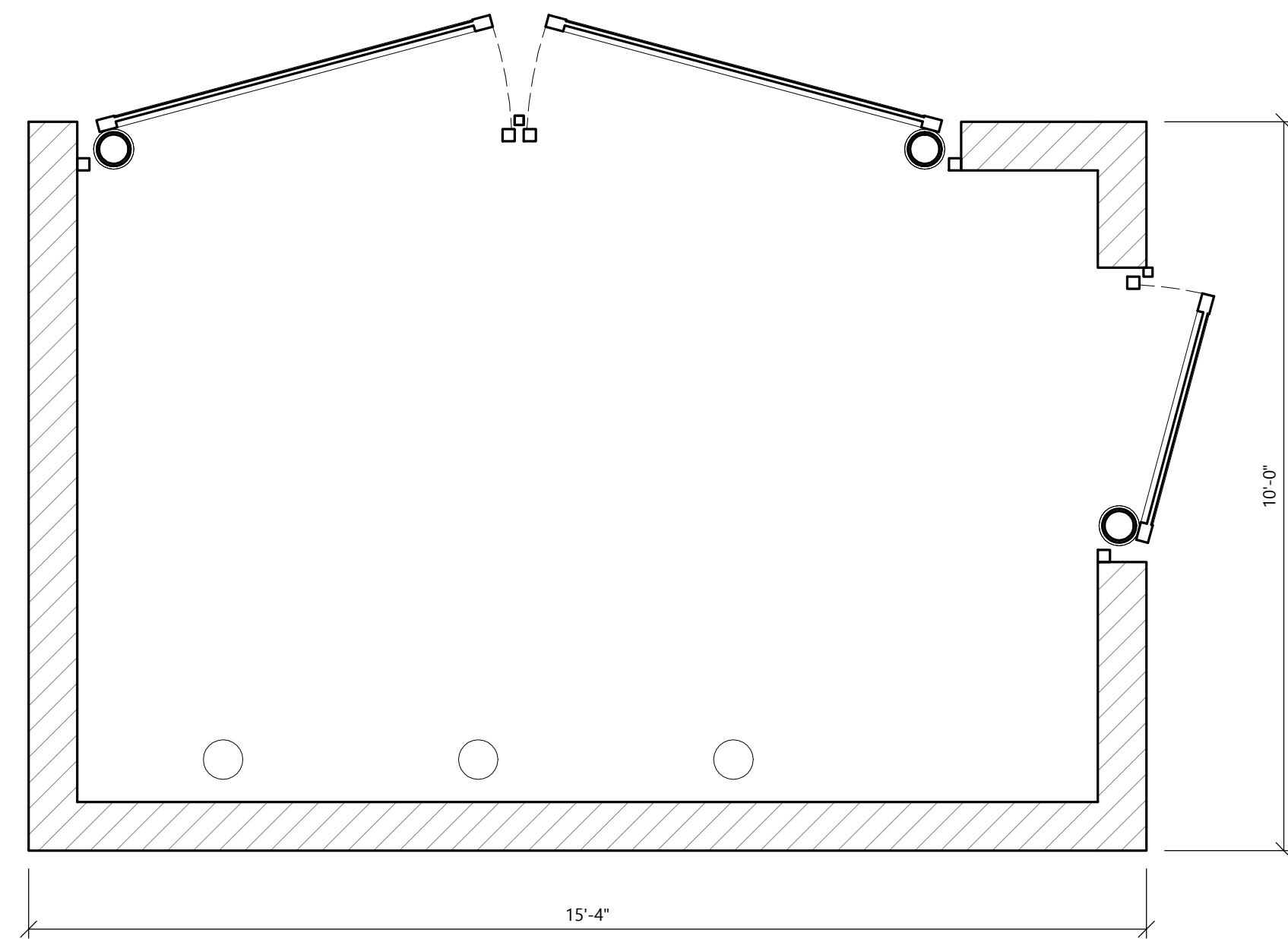
**JOB NUMBER**  
230105800

**SHEET NUMBER**  
**PRE-5**

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**GENERAL NOTES**

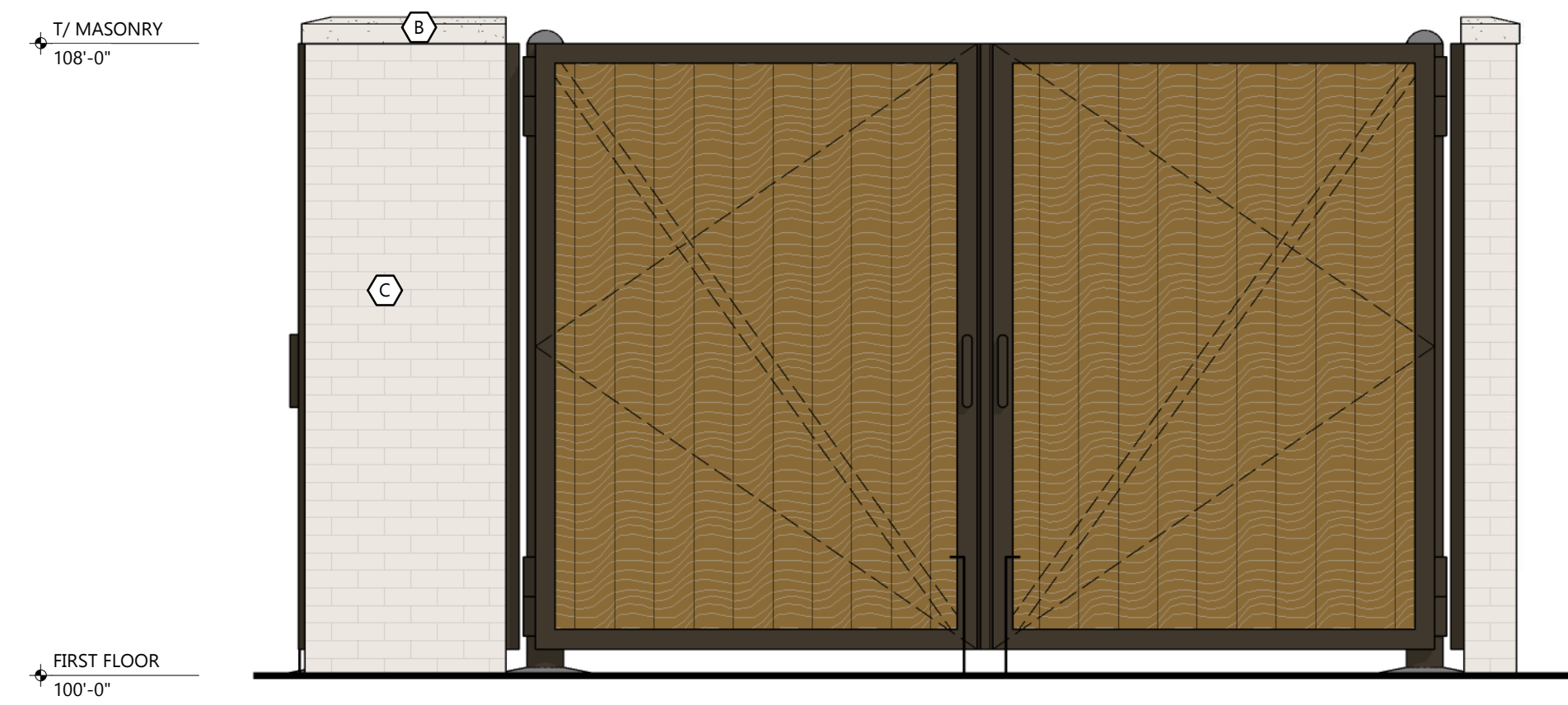
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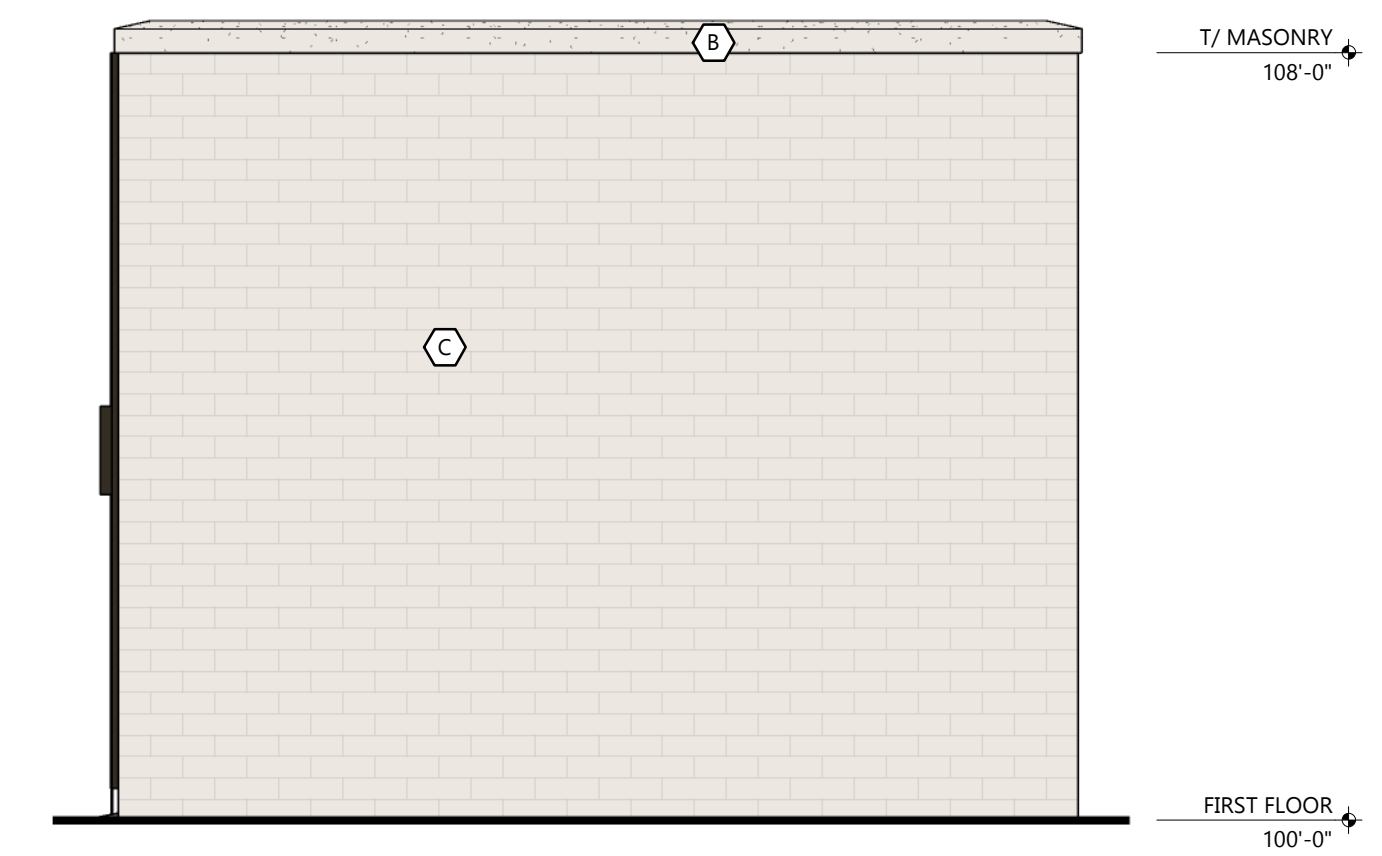
**PLAN - DUMPSTER & VACUUM ENCLOSURE**  
SCALE: 1/2" = 1'-0"

**EXTERIOR MATERIAL KEY**

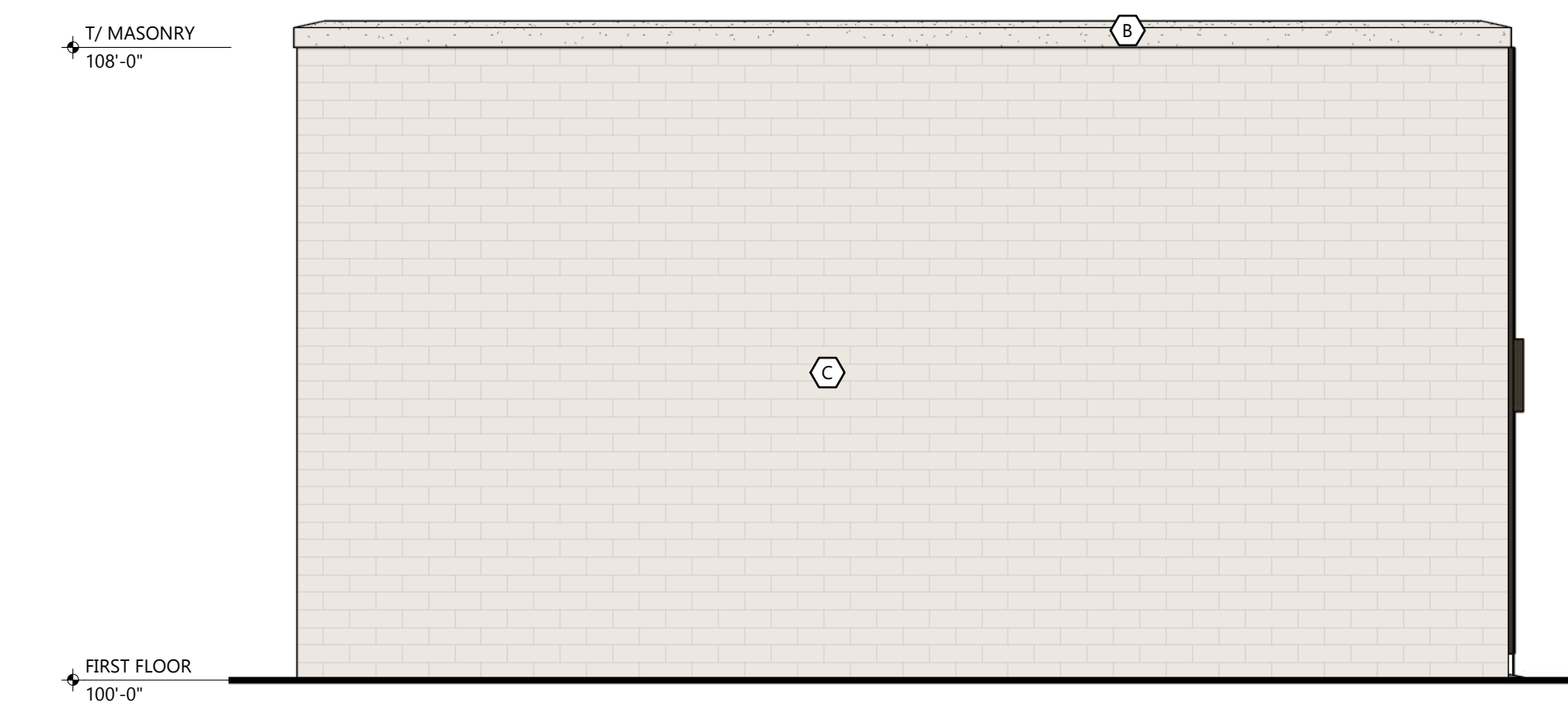
<b>A</b>	STONE VENEER MFR: EL DORADO STONE STYLE: VANTAGE 30 (6" H x 30" L x -1" D) COLOR: WHITE ELM w/ MATCHING MORTAR JOINT
<b>B</b>	PRECAST STONE MOULDING COLOR: BROWN TEXTURE: SMOOTH
<b>C</b>	BRICK VENEER (SEE ELEVATIONS FOR ORIENTATION) MFR: SUMMIT BRICK COLOR: ALASKAN TEXTURE: SMOOTH
<b>D</b>	PREFINISHED METAL TRIM AND ACCESSORIES MFR: CTMRS (OR EQUAL) COLOR: PT-9 (DARK BRONZE)
<b>E</b>	PREFINISHED STANDING SEAM METAL ROOF PANEL MFR: CTMRS (OR EQUAL) STYLE: LARGE BATTEN 24 GA COLOR: PT-9 (DARK BRONZE)
<b>F</b>	PREFINISHED ALUMINUM BATTENS MFR: LUMABUILT STYLE: MOSAIC 1x6 BATTENS COLOR: HAZELNUT BROWN
<b>G</b>	ALUMINUM STOREFRONT SYSTEM GLAZING: CLEAR FRAME: DARK BRONZE
<b>H</b>	CONCRETE CURB TEXTURE: HAND RUB COLOR TO MATCH LIMESTONE
<b>J</b>	BRICK VENEER MFR: SUMMIT BRICK COLOR: MATCH SW 7025 BACKDROP TEXTURE: SMOOTH



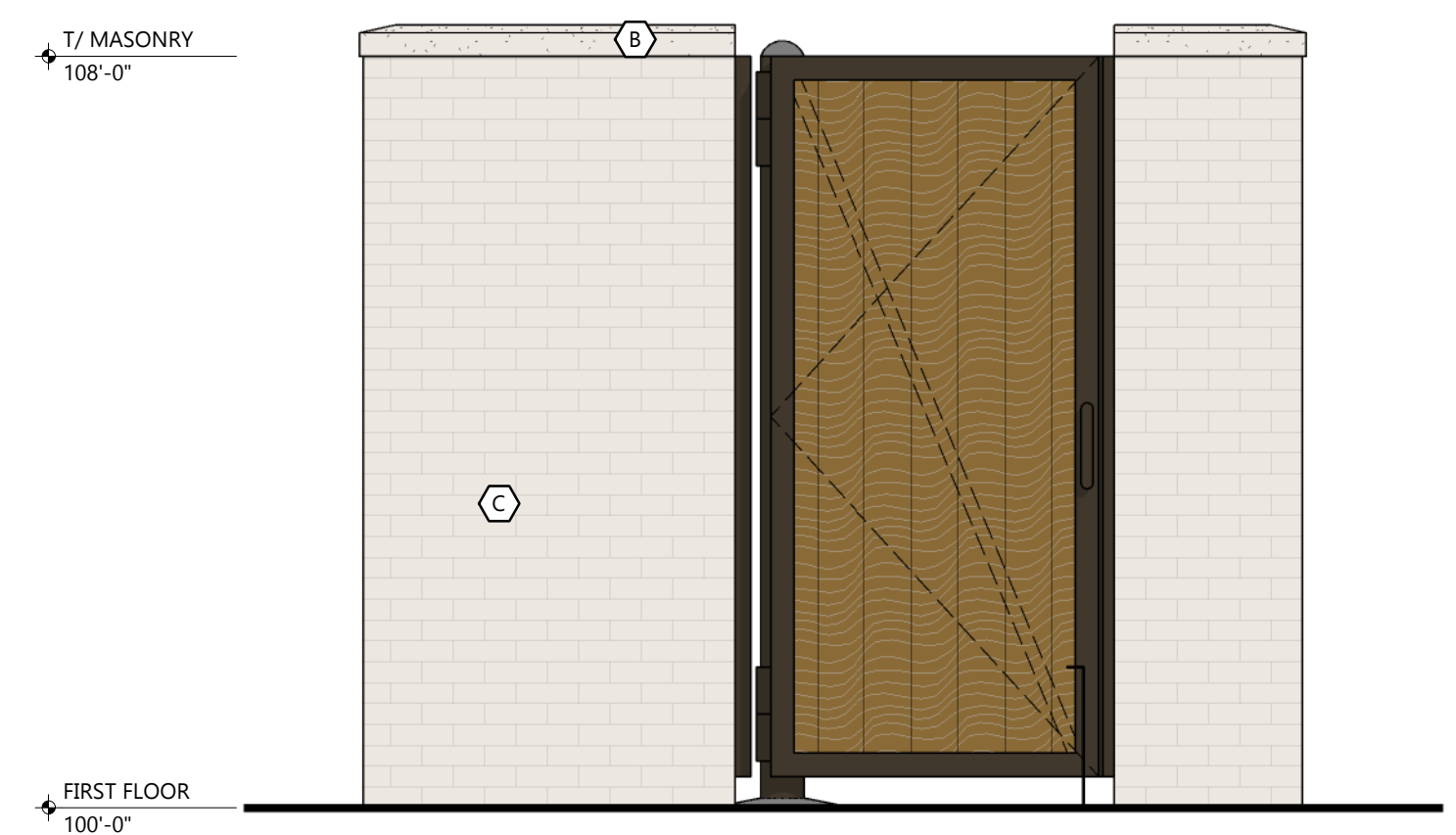
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SCALE: 1/2" = 1'-0"



**ELEVATION - RIGHT**  
SCALE: 1/2" = 1'-0"



**ELEVATION - REAR**  
SCALE: 1/2" = 1'-0"



**ELEVATION - LEFT**  
SCALE: 1/2" = 1'-0"

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COLLABORATION

**PROJECT INFORMATION**

PROPOSED CAR WASH FOR:  
**MISTER CAR WASH #1495 (LATSON)**  
1015 S. LATSON RD. • HOWELL, MI 48843

PROFESSIONAL SEAL

**PRELIMINARY DATES**

OCT. 2, 2023
JAN 12, 2024

**NOT FOR CONSTRUCTION**

**JOB NUMBER**  
230105800

**SHEET NUMBER**  
**PRE-6**

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**GENERAL NOTES**

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	<b>STONE VENEER</b> MFR: EL DORADO STONE STYLE: VANTAGE 30 (6" H x 30" L x -1" D) COLOR: WHITE ELM w/ MATCHING MORTAR JOINT
	<b>PRECAST STONE MOULDING</b> COLOR: BROWN TEXTURE: SMOOTH
	<b>BRICK VENEER (SEE ELEVATIONS FOR ORIENTATION)</b> MFR: SUMMIT BRICK COLOR: ALASKAN TEXTURE: SMOOTH
	<b>PREFINISHED METAL TRIM AND ACCESSORIES</b> MFR: CTMRS (OR EQUAL) COLOR: PT-9 (DARK BRONZE)
	<b>PREFINISHED STANDING SEAM METAL ROOF PANEL</b> MFR: CTMRS (OR EQUAL) STYLE: LARGE BATTEN 24 GA COLOR: PT-9 (DARK BRONZE)
	<b>PREFINISHED ALUMINUM BATTENS</b> MFR: LUMABULLET STYLE: MOSAIC 1x6 BATTENS COLOR: HAZELNUT BROWN
	<b>ALUMINUM STOREFRONT SYSTEM</b> GLAZING: CLEAR FRAME: DARK BRONZE
	<b>CONCRETE CURB</b> TEXTURE: HAND RUB COLOR TO MATCH LIMESTONE
	<b>BRICK VENEER</b> MFR: SUMMIT BRICK COLOR: MATCH SW 7025 BACKDROP TEXTURE: SMOOTH

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100 Camelot Drive  
Fond du Lac, WI 54935  
920-926-9800  
excelengineer.com

COLLABORATION

**PROJECT INFORMATION**

PROPOSED CAR WASH FOR:  
**MISTER CAR WASH #1495 (LATSON)**  
1015 S. LATSON RD. • HOWELL, MI 48843

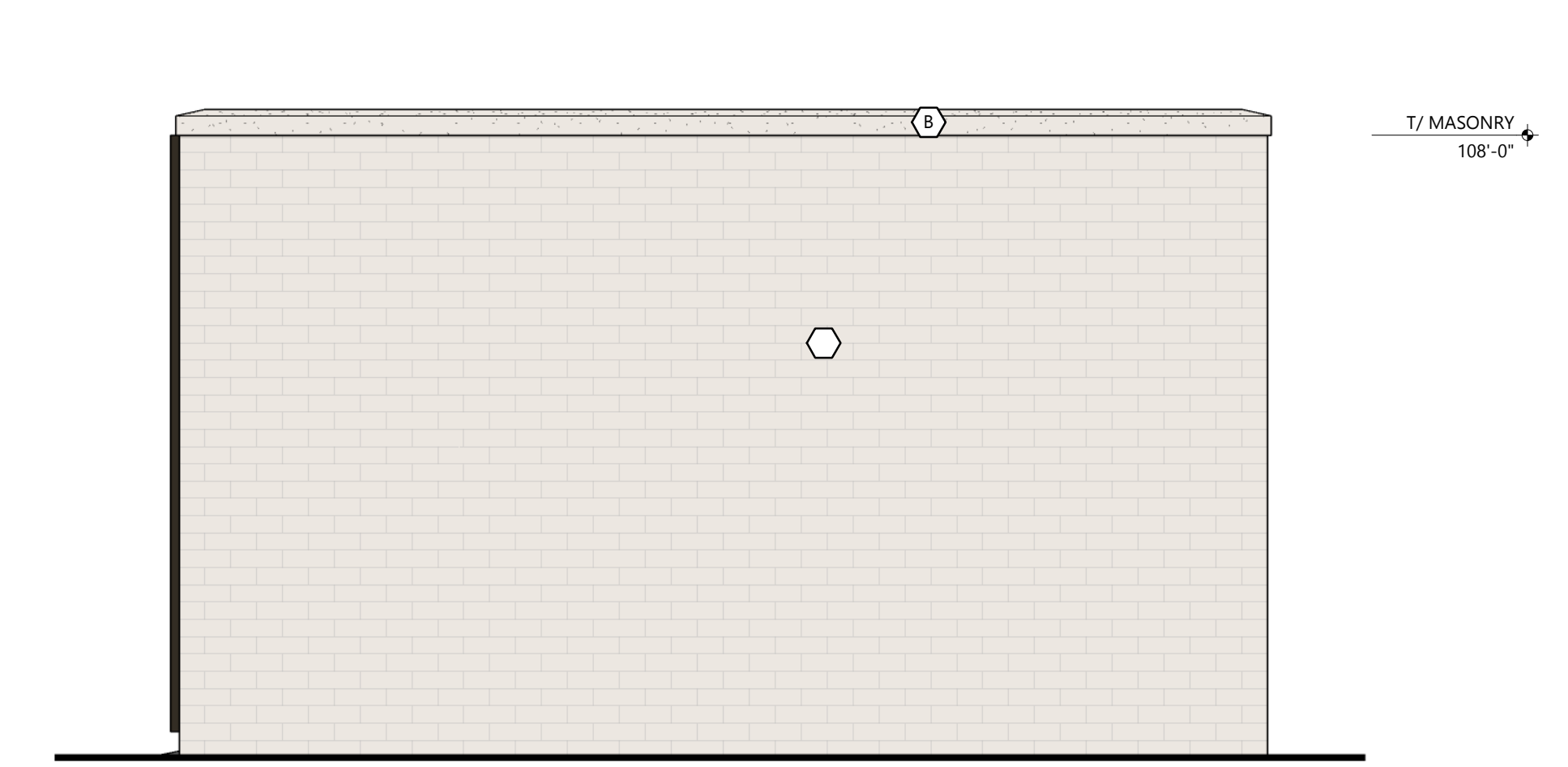
PROFESSIONAL SEAL

**PRELIMINARY DATES**  
OCT. 2, 2023  
JAN 12, 2024

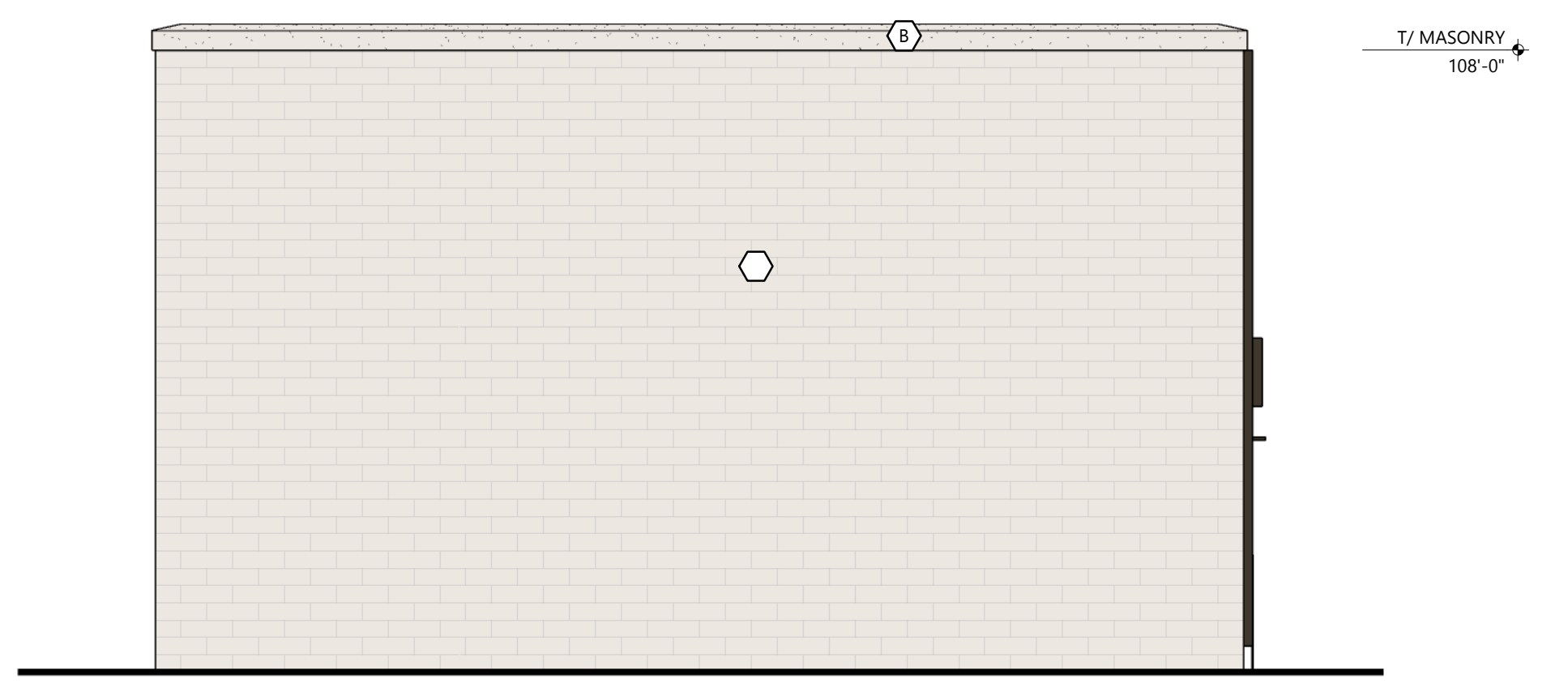
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**JOB NUMBER**  
230105800

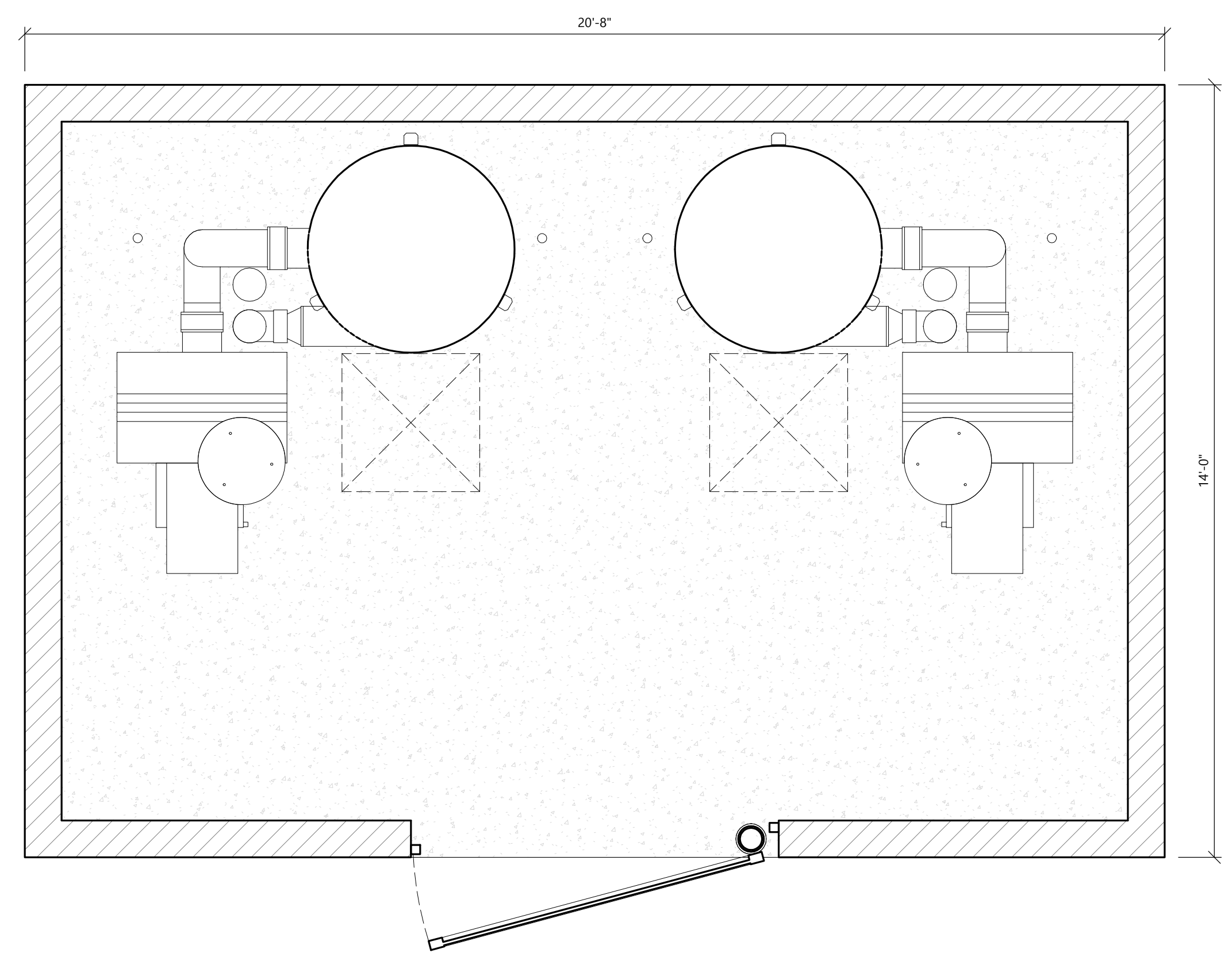
**SHEET NUMBER**  
**PRE-7**



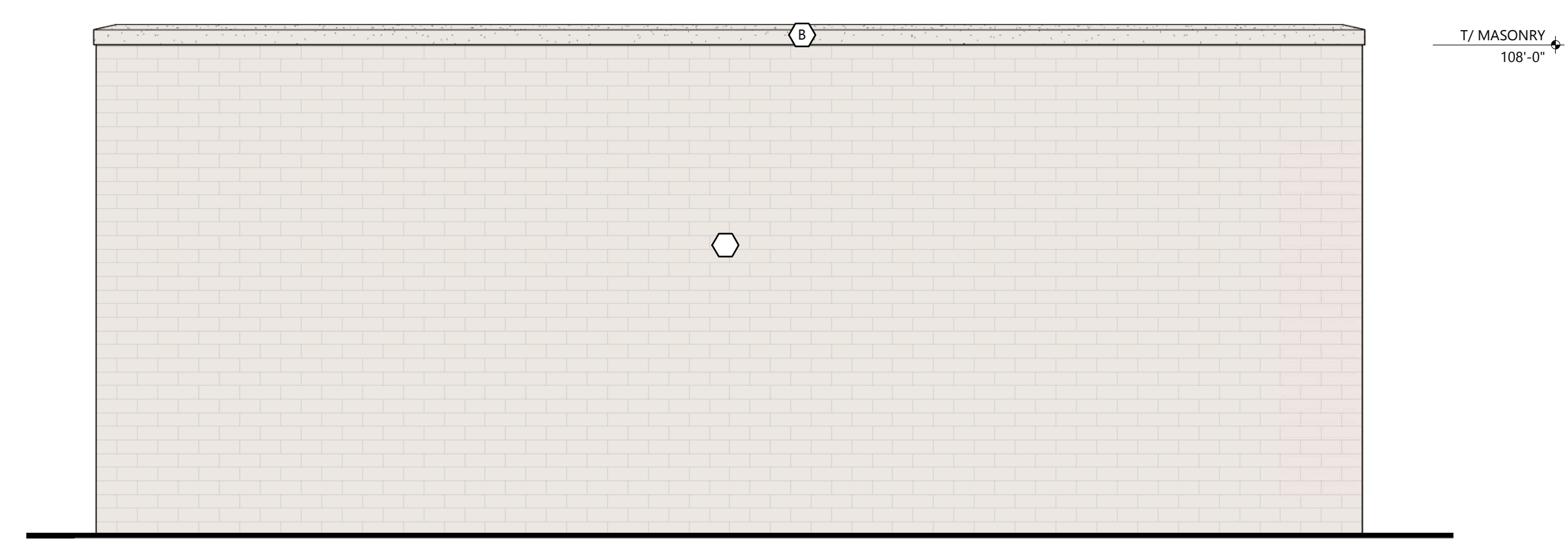
**2 RIGHT ELEVATION**  
PRE-7 SCALE: 1/2" = 1'-0"



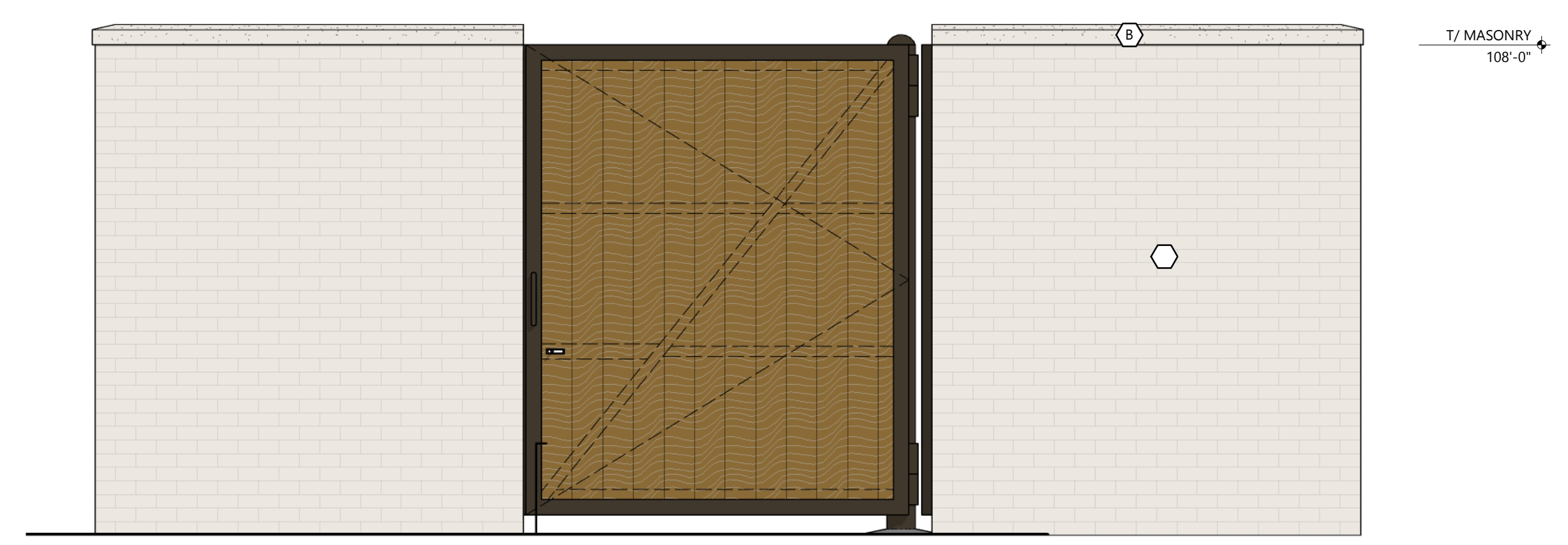
**3 LEFT ELEVATION**  
PRE-7 SCALE: 1/2" = 1'-0"



**1 PLAN - VACUUM EQUIPMENT ENCLOSURE**  
PRE-7 SCALE: 1/2" = 1'-0"



**5 REAR ELEVATION**  
PRE-7 SCALE: 1/2" = 1'-0"



**4 FRONT ELEVATION**  
PRE-7 SCALE: 1/2" = 1'-0"

C:\New\Local\23105800\_Arch\_General\_V23\_prelim.dwg  
2023/10/12 3:46:05 PM





OVERVIEW	
Lumen Package	7000 - 48000
Voltage Range	48 - 120
Efficient Power (LPW)	97 - 90
Weight (Net)	33 (13.6)

QUICK LINKS			
Ordering Guide	Performance	Photometrics	Dimensions

**CONSTRUCTION**

- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Designed to mount to square or round poles.
- Fixtures are finished with LYS® DuraGrip powder coat finishing process. The DuraGrip finish withstands extreme weather, chemical, without cracking or peeling. Color available in matte black, anthracite, or white.
- Fixtures weight: 33 lbs in carton.

**Optical System**

- State-of-the-art one-piece silicone optic shield delivers industry leading optical control with an integrated gasket to provide IP65 rated sealed optical chamber in 1 component.
- Patented silicone refractor optic provides exceptional silicone refractor optics in HFS Type 2. 3 SW, FT, FA, and AM.
- Refractor optic refractor optic is coated with anti-reflective and provides a typical light beam spread of 85°.
- 2m uplight.
- Available in 3000K, 4000K, and 5000K color temperatures per ANSI C183-27. Also Available in ProSpectr Color Temperature and with blue intensity at 6000K.
- Optional output passive infrared (PIR) motion and detection sensor. PIR sensor can be commissioned via QIS or Android configuration app.
- LSI Ar™ LHM™ remote control system options reduce energy and maintenance costs when utilizing light quality 24/7. (see page 9 for more details).

LSI Industries, Inc. 10001 Alameda Blvd., Fremont, CA 94538 | 415.458.1100 | www.lsi.com



OVERVIEW	
Lumen Package	4000 - 32000
Voltage Range (V)	38 - 140
Efficient Power (LPW)	75 - 90
Weight (Net)	33 (13.6)

QUICK LINKS			
Ordering Guide	Performance	Photometrics	Dimensions

**CONSTRUCTION**

- Fixtures are finished with LYS® DuraGrip powder coat finishing process. The DuraGrip finish withstands extreme weather, chemical, without cracking or peeling.
- Luminaire assembly incorporates a pressure sensitive vent to provide air flow and reduce heat and moisture.

**Optical System**

- Features an array of select, mid-power, high-brightness, high-efficiency LED 3000K, 4000K, 5000K color temperatures. 80 CRI (typical).
- Choice of Symmetric or Asymmetric distribution. Asymmetric provides a wider distribution pattern. Optimal symmetric with efficient beam area available.
- Forward Throw distribution provides an industry leading beam distribution pattern that illuminates the area under the pole canopy and beyond. The forward throw optic directs the light to the recessed from the top canopy maximizing the need for supplemental lighting.
- Optical lens available in an option to adjust lightness of the luminaire.
- 6m Luminaire Packages: 3000K, 4000K, 5000K, 6000K, 8000K and 24000K Lumine.

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OVERVIEW	
Lumen Package	8000 - 41000
Voltage Range	24 - 120
Efficient Power (LPW)	120 - 100
Weight (Net)	30 (13.6)

QUICK LINKS			
Ordering Guide	Performance	Photometrics	Dimensions

**CONSTRUCTION**

- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Hard die-cast aluminum wiring access door located underneath.
- Designed to mount to square or round poles.
- Fixtures are finished with LYS® DuraGrip powder coat finishing process. The DuraGrip finish withstands extreme weather, chemical, without cracking or peeling. Other standard LED Finishes available. Consult factory.
- Fixtures weight: 30 lbs in carton.

**Optical System**

- State-of-the-art one-piece silicone optic shield delivers industry leading optical control with an integrated gasket to provide IP65 rated sealed optical chamber in 1 component.
- Patented silicone refractor optic provides exceptional silicone refractor optics in HFS Type 2. 3 SW, FT, FA, and AM.
- Refractor optic refractor optic is coated with anti-reflective and provides a typical light beam spread of 85°.
- 2m uplight.
- Available in 3000K, 4000K, and 5000K color temperatures per ANSI C183-27. Also Available in ProSpectr Color Temperature and with blue intensity at 6000K.
- Optional output passive infrared (PIR) motion and detection sensor. PIR sensor can be commissioned via QIS or Android configuration app.
- LSI Ar™ LHM™ remote control system options reduce energy and maintenance costs when utilizing light quality 24/7. (see page 9 for more details).

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OVERVIEW	
Lumen Package	1200 - 2200
Voltage Range (V)	38 - 140
Efficient Power (LPW)	75 - 90
Weight (Net)	33 (13.6)

QUICK LINKS			
Ordering Guide	Performance	Photometrics	Dimensions

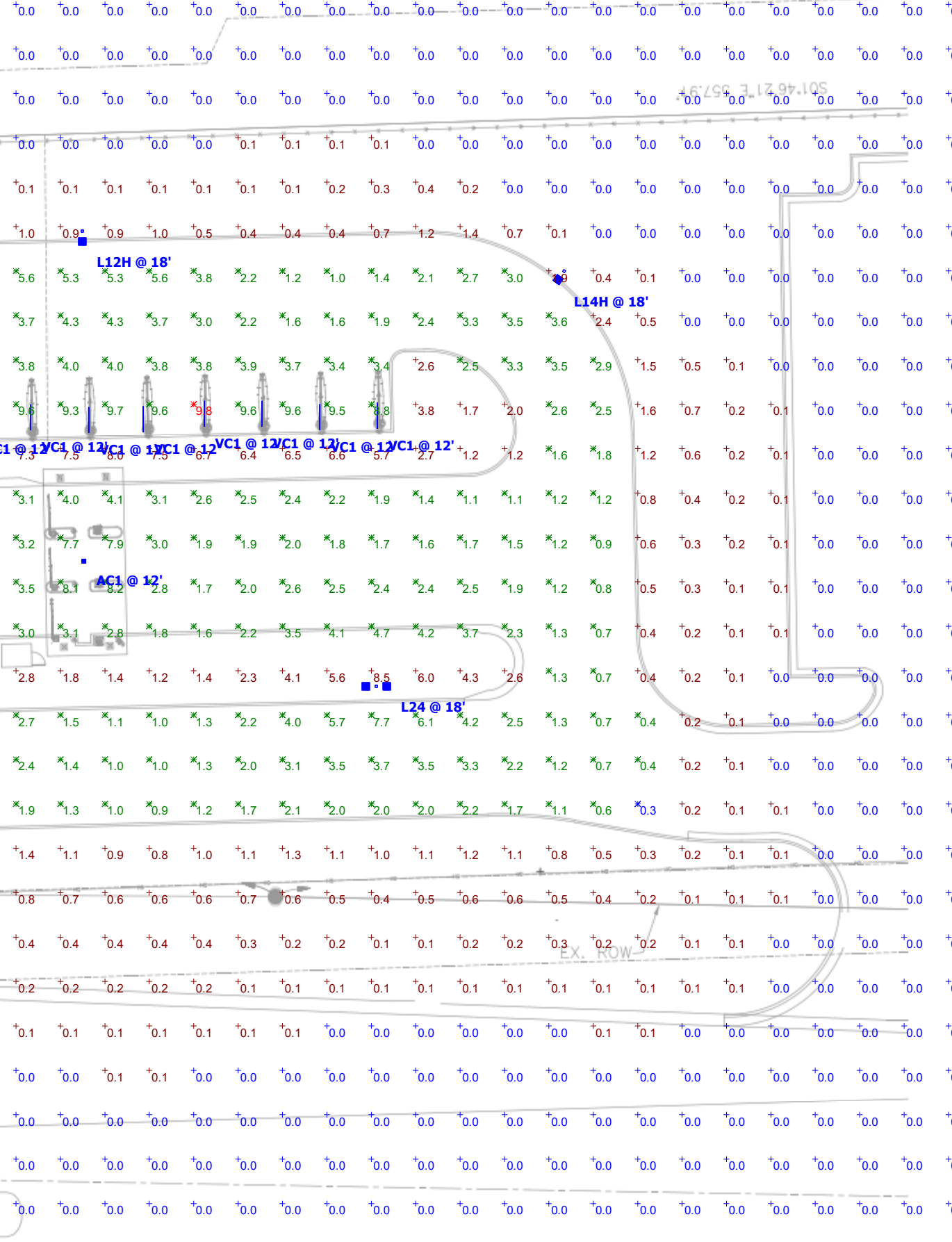
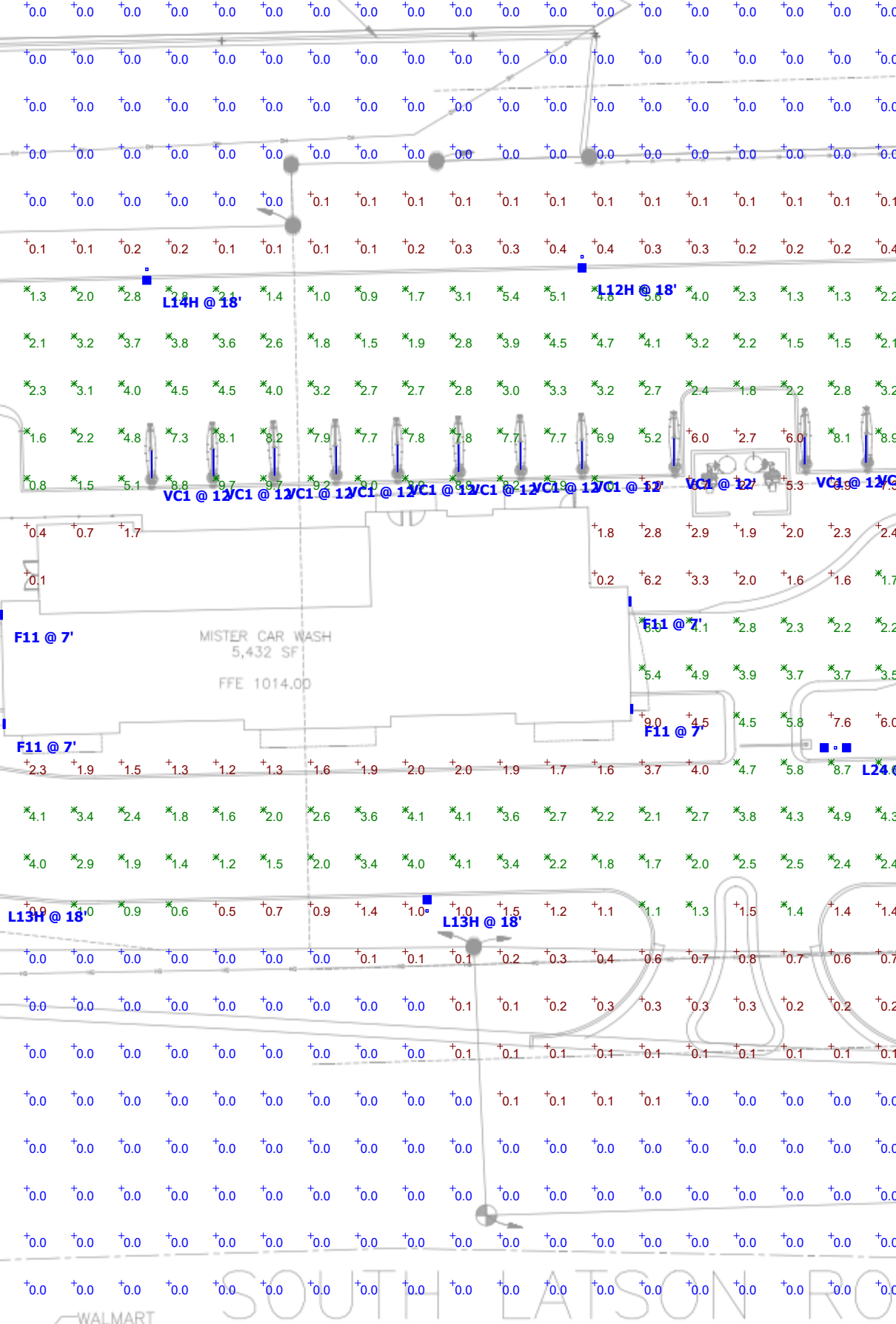
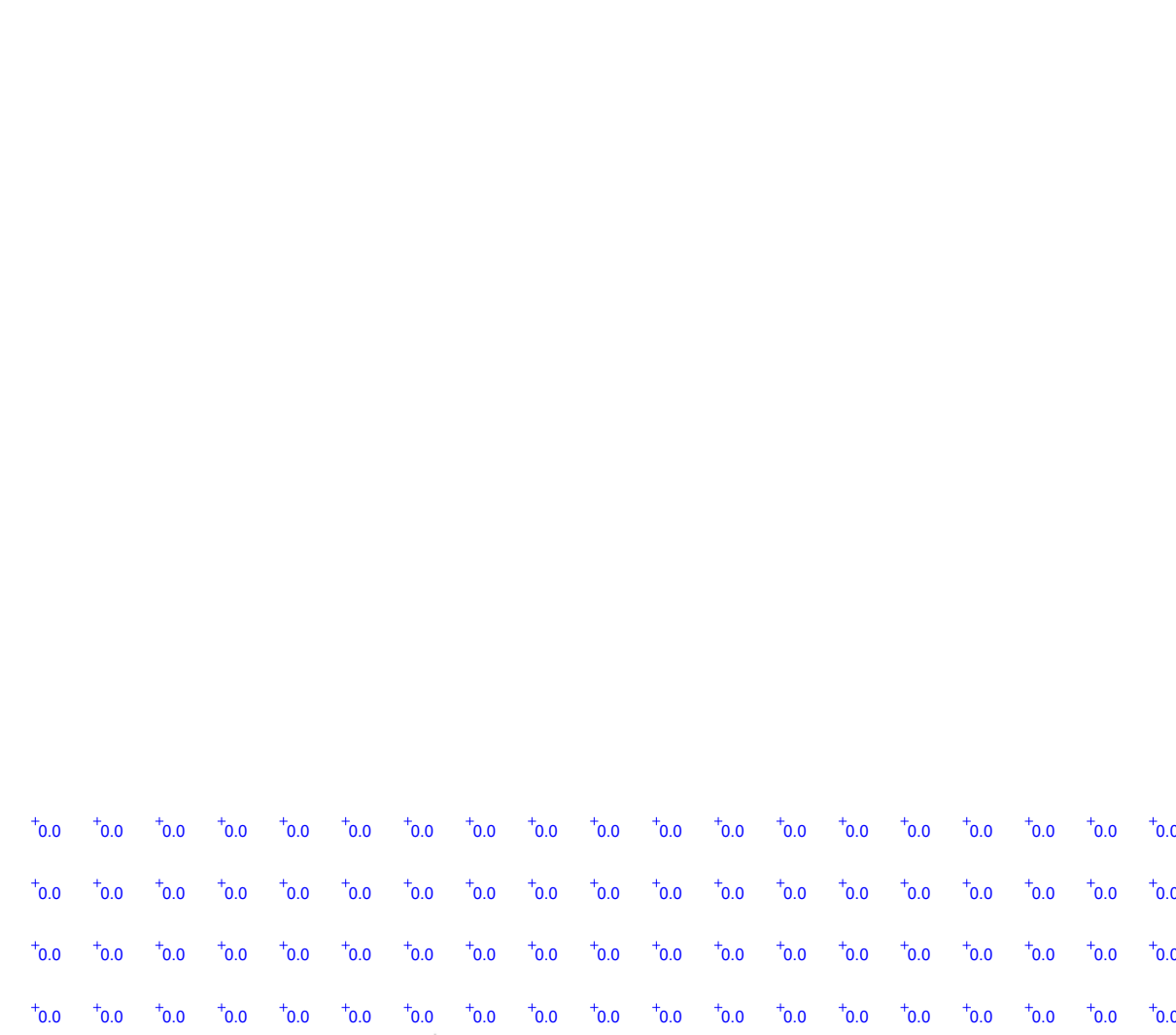
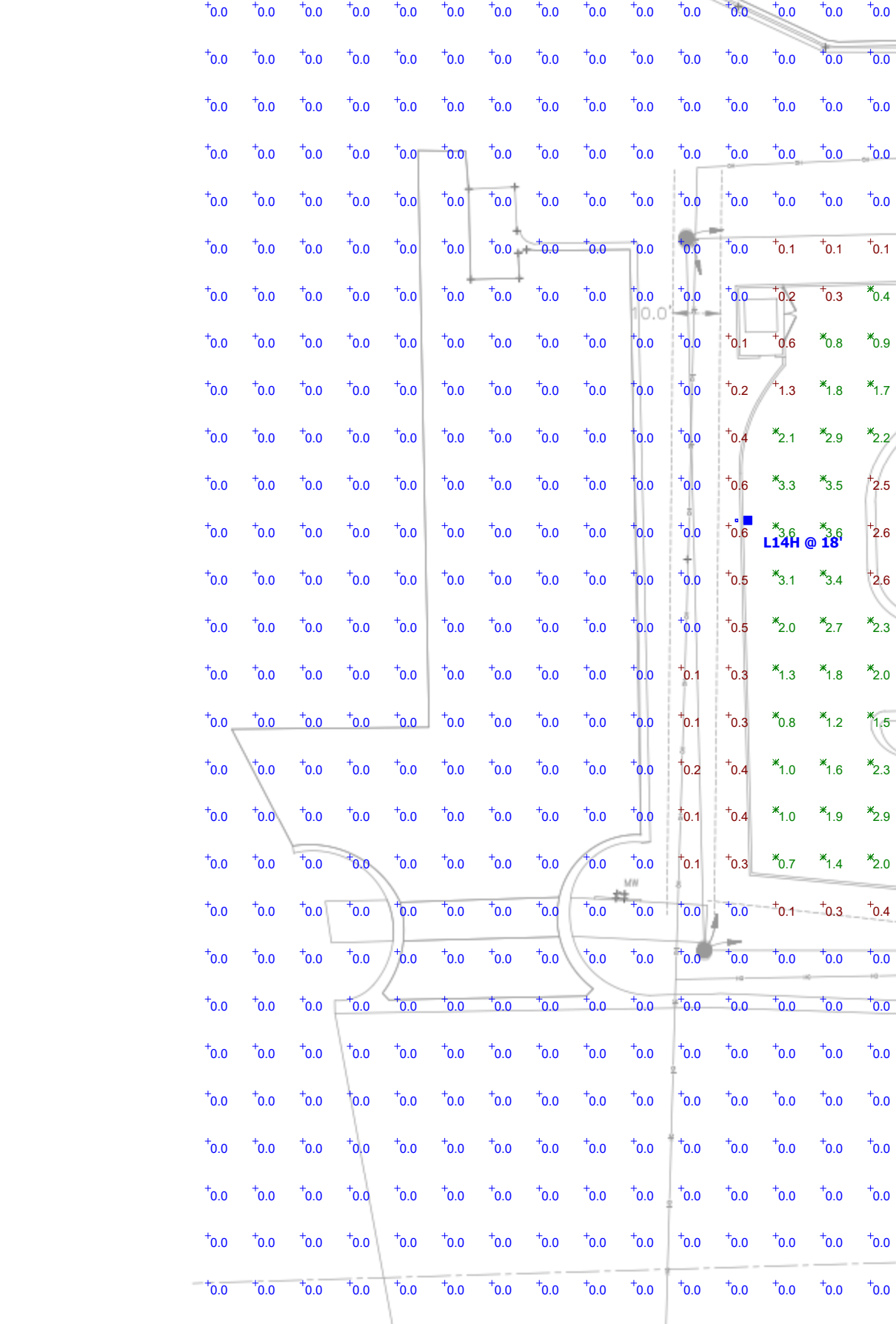
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- Fixtures weight: 33 lbs in carton.

**Optical System**

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- Available in 3000K, 4000K, and 5000K color temperatures per ANSI C183-27. Also Available in ProSpectr Color Temperature and with blue intensity at 6000K.
- Optional output passive infrared (PIR) motion and detection sensor. PIR sensor can be commissioned via QIS or Android configuration app.
- LSI Ar™ LHM™ remote control system options reduce energy and maintenance costs when utilizing light quality 24/7. (see page 9 for more details).

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Fond du Lac, WI 54935  
920-026-0800  
excelengineer.com

COLLABORATION  
**Mister**

PROJECT INFORMATION

**PROPOSED CARWASH**  
**MISTER CAR WASH**  
1015 S. LASTON RD. • HOWELL, MI 48843

PROFESSIONAL SEAL

**PRELIMINARY DATES**  
OCT. 2, 2023  
OCT. 26, 2023  
JAN. 12, 2024

JOB NUMBER  
230105800

SHEET NUMBER

NOT FOR CONSTRUCTION

**Statistics**

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc. Zone #1	+	0.7 Fc	9.8 Fc	0.0 Fc	N/A	N/A
PARKING LOT	X	3.3 Fc	9.8 Fc	0.3 Fc	32.7:1	11.0:1

**Schedule**

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Number Luminaires	Lumens Per Fixture	Light Loss Factor	Wattage	Wattage
[Symbol]	F11	4	LSI INDUSTRIES, INC.	XWM-FT-LED-3L-40-UE-BR2	WALL MOUNTED LED WALL SCONCE, DARK BRONZE FINISH	1	3351	0.85	23	
[Symbol]	L12H	2	LSI INDUSTRIES, INC.	MRM-LED-12L-SIL-2-40-70CRI-IL		1	7985	0.85	85	
[Symbol]	L14H	3	LSI INDUSTRIES, INC.	MRM-LED-12L-SIL-FT-40-70CRI-IL		1	8434	0.85	85	
[Symbol]	AC1	1	LSI INDUSTRIES, INC.	CRUS-SC-SLW-50		1	5954	0.85	38	
[Symbol]	VC1	19	G&G Industrial Lighting	GPX-50-40K-GC	VACUUM CANOPY ARCH LIGHT	1	3600	0.85	27	
[Symbol]	L13H	2	LSI INDUSTRIES, INC.	MRM-LED-12L-SIL-3-40-70CRI-IL		1	9143	0.85	85	
[Symbol]	L24	2	LSI INDUSTRIES, INC.	MRM-LED-12L-SIL-FT-40-70CRI		1	13143	0.85	170	
[Symbol]	L15	0	LSI INDUSTRIES, INC.	MRM-LED-12L-SIL-SW-40-70CRI		1	12672	0.85	85	





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UNDERBODY  
**RINSE**





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UNLIMITED MEMBER

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EXIT

  
EXCEL









  
EXCEL









GENOA CHARTER TOWNSHIP  
Application for Site Plan Review

GENOA TOWNSHIP

OCT 04 2023

RECEIVED

TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:

APPLICANT NAME & ADDRESS: KEVIN BAHNAM, 1015 LATSON ROAD LLC  
*If applicant is not the owner, a letter of Authorization from Property Owner is needed.*

OWNER'S NAME & ADDRESS: 1015 LATSON ROAD LLC, 29592 BECK RD, WIXOM, MI 48393

SITE ADDRESS: 111 S. LATSON RD PARCEL #(s): 4711-09-100-004  
4711-04-300-017

APPLICANT PHONE: (248) 767-5337 OWNER PHONE: (248) 767-5337

OWNER EMAIL: kbahnam@usa2goquickstores.com

LOCATION AND BRIEF DESCRIPTION OF SITE: SITE IS LOCATED ON EAST SIDE OF  
LATSON AND IS A VACANT SITE. SITE IS JUST SOUTH OF  
GRAND RIVER AVE.

BRIEF STATEMENT OF PROPOSED USE: COMMERCIAL BUILDING WITH  
MULTIPLE LEASABLE TENANT SPACES FOR GENERAL  
COMMERCIAL USE. BUILDING IS 9,675 SFT AND HAS SOME  
OUTDOOR <sup>EAT</sup>ING SPACE.

THE FOLLOWING BUILDINGS ARE PROPOSED: 9675 SFT COMMERCIAL  
BUILDING WITH LEASABLE TENANT SPACES INCLUDING  
DRIVE-THRU COFFEE SHOP ON NORTH END OF BUILDING.

I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: [Signature]

ADDRESS: 29592 Beck Rd, Wixom MI 48393

Contact Information - Review Letters and Correspondence shall be forwarded to the following:

1.) Scott Toussignant of BOSS ENGINEERING at scottt@bosseng.com  
Name Business Affiliation E-mail Address

### FEE EXCEEDANCE AGREEMENT

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: [Signature] DATE: 10-2-23

PRINT NAME: Karam Bahram PHONE: 248-767-5337

ADDRESS: 29592 Beck Rd, Wixom MI 48393





GENOA CHARTER TOWNSHIP  
Special Land Use Application

GENOA TOWNSHIP

OCT 04 2023

RECEIVED

This application **must** be accompanied by a site plan review application and the associated submittal requirements. (The Zoning Official may allow a less detailed sketch plan for a change in use.)

APPLICANT NAME & ADDRESS: Kevin Bahnam, 1015 Latson Road LLC, 29592 Beck Road, Wixom, MI 48393

*Submit a letter of Authorization from Property Owner if application is signed by Acting Agent.*

APPLICANT PHONE: (248) 767-5337 EMAIL: kbahnam@usa2goquickstores.com

OWNER NAME & ADDRESS: Same as above

SITE ADDRESS: 1111 S Latson Rd PARCEL #(s): 4711-09-100-004, 471-04-300-017

OWNER PHONE: ( ) EMAIL:

Location and brief description of site and surroundings:

Site is located on the East side of South Latson road, just south of Grand River Ave. The site is currently vacant and zoned GCD with HDR and GCD zoning to the east, GCD to the north, and NRPUD to the south and west. Site is immediately south of the existing O-Reilly Auto Parts on the south side of the Latson and Grand River Ave intersection. The site is currently vacant with tall grasses.

Proposed Use:

The proposed use will be a commercial building with multiple leasable tenant spaces. A coffee shop with drive thru is proposed on the north side of the building and outdoor seating is provided on the south side for a restaurant use.

Describe how your request meets the Zoning Ordinance General Review Standards (section 19.03):

- a. Describe how the use will be compatible and in accordance with the goals, objectives, and policies of the Genoa Township Comprehensive Plan and subarea plans, and will promote the Statement of Purpose of the zoning district in which the use is proposed.

The proposed use will still have commercial identity and promote internal revenue and jobs within the township. The site is currently vacant and the proposed development will provide a nice landscaped corridor along the east side of Latson Road as the site is currently vacant and generally cleared land with a few trees.

- b. Describe how the use will be designed, constructed, operated, and maintained to be compatible with, and not significantly alter, the existing or intended character of the general vicinity.

The proposed drive thru and multiple other tenant spaces will provide a variety of mixed uses that fit within the GCD zoning.

The surrounding parcels are all commercial in use with the exception of the HDR zoning behind the property. So this proposed use will be consistent with the types of developments surrounding it.

- c. How will the use be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage structures, water and sewage facilities, refuse disposal and schools?

The site has access from Latson Road via an existing commercial drive approach and will have proposed cross access with the adjacent development to the north. Public water is available at the rear of the property and an existing sanitary lead is stubbed at the property. The site will be designed to accommodate fire truck circulation and will have adequate signing to promote vehicular and pedestrian safety. Continuation of a 8' sidewalk will be along the Latson Rd frontage.

d. Will the use involve any uses, activities, processes, or materials potentially detrimental to the natural environment, public health, safety, or welfare by reason of excessive production of traffic, noise, vibration, smoke, fumes, odors, glare, or other such nuisance? If so, how will the impacts be mitigated?

The proposed use will provide adequate stacking spaces for the drive thru to ensure no impact on traffic on Latson Road. The use will contain a 6' screen wall at the rear of the property where it is adjacent to HDR zoning. The site lighting will be designed in compliance with Twp Ordinance to ensure no excess lighting. The site will not generate odors, smoke, fumes, or vibration.

e. Does the use have specific criteria as listed in the Zoning Ordinance (sections 3.03.02, 7.02.02, & 8.02.02)? If so, describe how the criteria are met.

7.02.02 (j) 1) The building will be setback 50 feet from any adjacent right-of-way or property line. 2) Proposed use is a drive thru coffee shop not a drive through restaurant. 3) A single point of access to Latson Rd is provided. 4) A cross access with the adjacent development to the north is being proposed.

I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I AGREE TO DESIGN, CONSTRUCT AND OPERATE, AND MAINTAIN THESE PREMISES AND THE BUILDINGS, STRUCTURES, AND FACILITIES WHICH ARE GOVERNED BY THIS PERMIT IN ACCORDANCE WITH THE STATED REQUIREMENTS OF THE GENOA TOWNSHIP ZONING ORDINANCE, AND SUCH ADDITIONAL LIMITS AND SAFEGUARDS AS MAY BE MADE A PART OF THIS PERMIT.

THE UNDERSIGNED Kevin Bahnam, 1015 Latson Road LLC STATES THAT THEY ARE THE FREE OWNER OF THE PROPERTY OF PROPERTIES DESCRIBED ABOVE AND MAKES APPLICATION FOR THIS SPECIAL LAND USE PERMIT.

BY: [Signature]

ADDRESS: 29572 Beck Rd, Wixom MI 48393

**Contact Information** - Review Letters and Correspondence shall be forwarded to the following:

Scott Tousignant of Boss Engineering at scottt@bosseng.com  
Name Business Affiliation Email

**FEE EXCEEDANCE AGREEMENT**

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: [Signature] DATE: 10-2-23

PRINT NAME: Karam Bahnam PHONE: 248-767-5337



- The LCRC's requirements for the stormwater and their response to the traffic impact study and what improvements they agree to make.

Commissioner McBain suggested reducing the number of vacuum bays, she reiterated her concerns regarding the traffic flow on the site and agrees with additional landscaping being needed on Latson Road.

**Moved** by Commissioner Rauch, supported by Commissioner Chouinard, to table Open Public Hearing Item #1 petitioned by CWP West, LLC. **The motion carried unanimously.**

**OPEN PUBLIC HEARING #2...** Consideration of a special land use application, environmental impact assessment and site plan to allow for a proposed multi-tenant commercial center including a drive through coffee shop and outdoor seating restaurant located on vacant parcels#:4711-04-300-017 and 4711-09-100-~~017~~004 Latson Road, east side of Latson Road, south side of Grand River Avenue. The request is petitioned by Kevin Bahnam, 1015 Latson Road LLC.

- A. Recommendation of Special Use Application.
- B. Recommendation of Environmental Impact Assessment (10-26-23)
- C. Recommendation of Site Plan (10-25-23)

Mr. Brent LaVanway of Boss Engineering, Mr. Jeff Klatt, the architect, and Mr. Frank Jarbou of CWP West, LLC were present.

Mr. LaVanway provided a review of the project. This is a multi-use tenant building on the site adjacent to the previous agenda item and one of the tenants will include a drive thru. There is a partial existing wall on the east side and they are again proposing to add additional evergreens where there is no wall. They will be requesting two variances from the ZBA, one is for the location of the parking and the proximity of a drive thru to an existing drive thru.

Mr. Klatt showed colored building renderings and material samples. The building is modern with clear lines and the colors are consistent with other buildings in the area.

Mr. Borden reviewed his letter dated November 8, 2023.

1. Special Land Uses (Section 19.03):

- a. The special land use standards of Section 19.03 are generally met.
- b. In order to make favorable findings related to compatibility and impacts, the conditions of Sections 7.02.02(i) and (j) and the buffer zone requirements of Section 12.02.03 must be met to the Commission's satisfaction.
- c. If a favorable recommendation is made, the Commission may wish to include a condition that a sound study be provided for the drive-through speaker system when the tenant is known.

2. Drive-Through Use Conditions (Section 7.02.02(j)):

- a. The 500-foot spacing between drive-throughs is not met. The applicant states that they will seek a variance from ZBA.

3. Site Plan Review:

- a. The applicant will seek a variance from ZBA for the deficient front yard parking setback.
- b. He suggested the applicant add some vertical elements to help break up the overall building length of the rear façade.
- c. Building materials and color scheme are subject to review and approval by the Planning Commission.
- d. The proposed driveway does not meet the spacing requirements of Section 15.06.02 of the township ordinance.
- e. The lighting plan must be revised to match the currently proposed site plan. It was not updated when the outdoor seating was removed.
- f. The landscape plan is deficient in width for the Latson Road greenbelt and width and screen wall for the easterly buffer zone.
- g. There are minor discrepancies between the landscape plan and table that need to be corrected.

Additionally, the applicant must address any comments provided by the Township Engineer or Brighton Area Fire Authority regarding public facilities and services.

Ms. Byrne reviewed her letter dated November 8, 2023, noting they are the same as the previous site and that LCRC approval will be needed for the drive and the stormwater.

1. The petitioner should obtain approval from the Livingston County Road Commission (LCRC) for the proposed site driveway prior to final site plan approval.
2. The Petitioner is proposing a closed pipe type underground detention basin comprised of five 42-inch diameter pipes to provide 16,890 cubic feet of storage. The proposed building, site drive, and parking improvements do not allow enough space for any at-grade storm water detention or retention.
3. Soil borings and infiltration testing should be provided within the proposed detention basin footprint and should show the documented high ground water elevation. Soil borings shall be provided to a depth of at least 20 feet. The Petitioner has noted that no geotechnical work has been completed for the site yet, but the geotechnical from the northern parcel was used for the current design. The infiltration rate and soil borings being used for the current design should be confirmed prior to construction of the storm system.
4. The proposed underground detention basin will tie into the existing storm sewer on Latson Road. The Petitioner will need to obtain approval from the LCRC to connect to their storm sewer and said approval should be provided to the Township prior to final site plan approval. In the past the LCRC has not allowed any increase in storm volume into their storm sewer. The underground detention design has been revised since the last submittal to allow for additional infiltration to limit the storm volume that would outlet into the LCRC sewer.



5. The Petitioner has provided a traffic impact study for the proposed development. The study included expected traffic volumes from other proposed developments in the area in the no-build condition and recommended signal timing and length be modified at the Grand River Avenue and Latson Road for both the no-build and build condition. The Livingston County Road Commission will review the traffic impact study as part of their approval for the proposed site driveways and they will need to review the recommendation of optimized signal timings at the Grand River Avenue and Latson Road intersection.

Mr. LaVanway stated they have addressed all of the concerns of the Brighton Area Fire Authority Fire Marshal's letter dated November 3, 2023.

The call to the public was made at 8:08 pm with no response.

Commissioner Rauch complimented the architect on the building design, materials, and colors. He stated that the petitioner is proposing a building that is too large for this site. The size is what necessitates the need for the 10 parking spaces in the front of the site and the need for two variances.

Mr. Jarbou stated they are proposing to develop a great project with a great design and materials, but there is a financial aspect. The property is very narrow and they have met most of the requirements. Commissioner McCreary noted that a financial hardship is not a reason to be granted a variance.

Commissioner Rauch noted that this site is proposing asphalt and Mister Car Wash is proposing concrete. He would like them to be the same. He is also concerned with the location of the driveways, and suggested the applicant complete the sidewalk to meet the one in front of the apartment complex.

Mr. Borden noted that the large number of parking spaces is due to the proposed uses of two restaurants. If this is changed, then the parking would be reduced and there would not be a need to have it in the front.

Mr. Lavanway stated he would like to redesign this project so that the curb cuts and traffic flows of the two sites work together.

The suggested changes to be made were noted as:

- Meeting the requirements for no parking in the front by reducing the size of the building or changing the uses.
- Changing the driveway accesses.
- Connecting the sidewalk to meet the existing sidewalk in front of the apartment complex.
- Update the rear building elevations as suggested by Mr. Borden.
- Provide details regarding site signage, the monument sign, and landscaping along Latson Road.

**Moved** by Commissioner Rauch, supported by Commissioner Lowe, to table Open Public Hearing Item #2 petitioned Kevin Bahnam of 1015 Latson Road, LLC. **The motion carried unanimously.**

The Planning Commission took a five minute break at 8:25 pm.

**OPEN PUBLIC HEARING #3...** Consideration of a sketch plan application, environmental impact assessment and sketch plan for proposed bike trails located at the Fillmore Park. The park is located at 7075 McClements, northwest corner of McClements and Kellogg Roads. The request is petitioned by the Livingston County Planning Department.

- A. Recommendation of Environmental Impact Assessment (10-25-23)
- B. Disposition of Site Plan. (10-25-23)

Ms. Martha Haglund, Principal Planner with the Livingston County Planning Department, stated they would like to use the western portion of the site to install mountain bike trails. They will be crossing Kellogg Road and have received approval from the Livingston County Road Commission for crossing signage. The work is being done by volunteers so she anticipates it taking 3-4 years to complete.

She has responded to Mr. Borden and Ms. Byrne's review letters.

Mr. Borden reviewed his letter dated November 8, 2023.

1. The submittal does not identify the proposed setbacks; however, the front yard setback requirement is not met at the trail crossing across Kellogg Road. He noted that since this is a trail, it could be considered similar to a sidewalk. Commissioner Rauch agrees; however, having it 50 feet off the road would allow it to be safer.
2. If granted, sketch plan approval is valid for only one year, though the project timeline extends out to 2026. The applicant will need to apply for and obtain extensions to cover the full project, which will be evaluated based on Ordinance standards and may or may not be granted.
4. Ms. Haglund did respond to his comment regarding the internal signs setbacks. They will be less than two square feet so they are exempt from sign regulations.

Additionally, the applicant must address any comments provided by the Township Engineer or Brighton Area Fire Authority regarding public facilities and services.

Ms. Byrne reviewed her letter dated November 8, 2023.

1. The petitioner has already obtained a permit from the Livingston County Road Commission regarding the signage required for the proposed trail crossing and this has been provided to the Township.
2. The petitioner has noted that an EGLE wetland permit will be required for some portions of the proposed trail improvements. This permit should be provided to the Township for their records once it is obtained.





February 6, 2024

Planning Commission  
Genoa Township  
2911 Dorr Road  
Brighton, Michigan 48116

<b>Attention:</b>	Amy Ruthig, Planning Director
<b>Subject:</b>	S. Latson Commercial Development – Special Land Use and Site Plan Review #3
<b>Location:</b>	1015 Latson Road – east side of Latson Road, south side of Grand River Avenue
<b>Zoning:</b>	GCD General Commercial District

Dear Commissioners:

At the Township’s request, we have reviewed the revised submittal for development of a multi-tenant commercial center, including a coffee shop with a drive-through (plans dated 1/16/24).

**A. Summary**

**1. Special Land Uses (Section 19.03):**

- a. The special land use standards of Section 19.03 are generally met.
- b. In order to make favorable findings related to compatibility and impacts, the conditions of Sections 7.02.02(i) and (j) and the buffer zone requirements of Section 12.02.03 must be met to the Commission’s satisfaction.
- c. If a favorable recommendation is made, the Commission may wish to include a condition that a sound study be provided for the drive-through speaker system when the tenant is known.
- d. The applicant must address any comments provided by the Township Engineer or Brighton Area Fire Authority regarding public facilities and services.

**2. Drive-Through Use Conditions (Section 7.02.02(j)):**

- a. The 500-foot spacing between drive-throughs is not met (approximately 120 feet). The applicant notes that they will seek a variance from ZBA.

**3. Site Plan Review:**

- a. Building materials and color scheme are subject to review and approval by the Planning Commission.
- b. The landscape plan is deficient in width and a full screen wall for the easterly buffer zone.

**B. Proposal/Process**

The applicant proposes development of an 8,925 square foot multi-tenant commercial building with space for up to 6 tenants. The plan includes a restaurant with a drive-through on the vacant 1.8 acre site.

Table 7.02 allows retail uses with up to 30,000 square feet of area as principal permitted uses; however, restaurants with drive-throughs require special land use approval in the GCD. As such, the request is also subject to the use conditions of Section 7.02.02(j).

Procedurally, the Planning Commission is to review the special land use, site plan, and Environmental Impact Assessment, and put forth recommendations to the Township Board following a public hearing.



*Aerial view of site and surroundings (looking east)*

### **C. Special Land Use Review**

Section 19.03 of the Zoning Ordinance identifies the review criteria for Special Land Use applications as follows:

- 1. Master Plan.** The Township Master Plan identifies the subject site as Mixed Use – West Grand River. This classification states that “regional commercial uses, such as auto-oriented uses (including fast-food) are only intended at interchange uses and where otherwise currently existing along Grand River Avenue.”

The subject site is located near a major roadway intersection and within close proximity to an interchange. Furthermore, there are other auto-oriented uses (gas stations and another drive-through) in the immediate area.

As such, the Commission may find that the proposal is consistent with the Master Plan and Future Land Use Map.

- 2. Compatibility.** Surrounding properties are primarily commercial/service in nature, though the site also abuts residential zoning and land use along its east side lot line.

The primary concerns under this criterion are related to potential impacts (noise, light, overall intensity of uses) upon the adjacent residential property.

The use conditions of Section 7.02.02(j) and buffer zone requirements of Section 12.02.03 are intended to help mitigate potential off-site impacts.

In order to make a favorable finding under this criterion, the above standards must be met to the Commission’s satisfaction.

The previous submittal also notes that the drive-through will be available from 6AM to 9PM and that a sound study can be provided once a tenant is known. The Commission may wish to include this as a condition if a favorable recommendation is made.

- 3. Public Facilities and Services.** Given that the site fronts Latson Road near Grand River Avenue and was previously developed, we anticipate that necessary public facilities and services are in place.

However, the applicant must address any comments provided by the Township Engineer and/or Brighton Area Fire Authority related to this criterion.

- 4. Impacts.** Similar to previous comments, use conditions and buffering requirements must be met to help ensure that the adjacent residential use is not adversely impacted by the proposed development.



**5. Mitigation.** If further concerns arise as part of the review process, the Township may require additional efforts to mitigate potential adverse impacts.

**D. Use Conditions (Drive-Through Restaurant)**

Drive-through restaurants are subject to the use requirements of Section 7.02.02(j), as follows:

**1. Principal and accessory buildings shall be setback fifty (50) feet from any adjacent public right of way line or property line.**

The proposed building provides setbacks of at least 50 feet from each lot line.

**2. The establishment of a new drive-through restaurant shall require the lot be separated a minimum of five hundred (500) feet from any other lot containing a drive-through restaurant.**

Based on staff research, the subject site is approximately 120 feet from the property across Latson Road, which contains a drive-through restaurant. As such, this condition is not met. The revised submittal notes that the applicant will seek a variance from ZBA.

**3. Only one (1) access shall be provided onto any street.**

The site plan depicts a single driveway on-site to/from Latson Road.

**4. Such restaurants constructed adjacent to other commercial developments shall have a direct vehicular access connection where possible.**

The site plan provides for cross-access with the adjacent commercial development to the north.

**E. Site Plan Review**

**1. Dimensional Requirements.** As noted in the table below, the revised site plan complies with the dimensional requirements of the GCD:

	Min. Lot Req.		Minimum Yard Setbacks (feet)				Max. Lot Coverage (%)	Max. Height
	Area (acres)	Width (feet)	Front Yard	Side Yard	Rear Yard	Parking Lot		
<b>GCD</b>	1	150	70	15	50	20 front 10 side/rear	35% building 75% impervious	35' 2 stories
<b>Proposed</b>	1.8	420	70	104 (N) 146 (S)	50	18 front 20 side 10 rear	11.3% building 74.2% impervious	20' 1 story

**2. Building Design and Materials.** The primary building materials are brick and stone, with relatively small amounts of wood paneling and metal as accent materials.

The revised submittal includes material calculations demonstrating compliance with the material standards of Section 12.01.

Building materials and colors are subject to review and approval by the Planning Commission.

**3. Pedestrian Circulation.** The site plan proposes an 8-foot wide concrete sidewalk along S. Latson.

The plan also provides internal pedestrian circulation between the parking areas and building entrances, as well as a crosswalk connection to the public sidewalk along Latson Road.

- 4. Vehicular Circulation.** The site plan proposes 1 curb cut for a full turning movement driveway along S. Latson. Cross-access is also provided with the proposed development to the north.

Drive aisles are of sufficient width for two-way traffic around the site.

The proposed driveway is nearly 400 feet from the existing driveway to the south (on the same side of Latson Road) and is aligned with the existing driveway across Latson Road.

The proposed un/loading area occupies a portion of a drive aisle in the northeast and southeast corners of the site; however, the revised plan includes a note that deliveries will be scheduled for off peak hours to avoid potential conflicts.

The applicant must address any comments provided by the Township Engineer and/or the Brighton Area Fire Authority with respect to vehicular circulation.

- 5. Parking.** Based on information contained in the submittal, the project requires 72 parking spaces, while 73 are provided.

The design and dimensions of parking spaces and drive aisles comply with Ordinance standards.

The number of stacking spaces and barrier-free spaces is also compliant.

- 6. Exterior Lighting.** The lighting plan identifies 9 light poles and 12 wall mounted fixtures (6 of which are ornamental/architectural).

Based on the detail sheets, aside from the ornamental/architectural fixtures, the proposed fixtures are downward direct LEDs, as required.

Pole heights and photometric readings (both on-site and along property lines) comply with Ordinance standards.

- 7. Landscaping.** The landscape plan has been reviewed for compliance with the standards of Section 12.02, as follows:

Standard	Required	Proposed	Comments
Front yard greenbelt	20' width 10 canopy trees	20' width 10 canopy trees	In compliance
Buffer Zone C (N)	10' width 9 canopy trees OR 9 evergreen trees OR 36 shrubs	23' width 5 canopy trees 16 shrubs	In compliance
Buffer Zone B (S)	20' width 6' wall OR 3' berm 7 canopy trees 7 evergreen trees 26 shrubs	20' width 3' berm 7 canopy trees 7 evergreen trees 27 shrubs	In compliance
Buffer Zone B (E)	20' width 6' wall OR 3' berm 14 canopy trees 14 evergreen trees 56 shrubs	10' width Partial wall 14 canopy trees 14 evergreen trees 56 shrubs	Deficient width and full length wall
Parking lot	8 canopy trees 790 SF landscaped area	8 canopy trees 1,400 SF landscaped area	In compliance

The Commission has the authority to modify landscaping requirements, per Section 12.02.13.

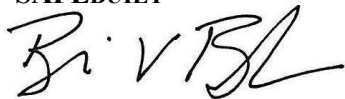


**8. Waste Receptacle.** The proposed waste receptacle has been reviewed for compliance with the standards of Section 12.04, as follows:

	<b>Requirement</b>	<b>Proposed</b>	<b>Comments</b>
Location	Rear yard or non-required side yard AND not less than 20' from residential	Rear yard 20' from residential	Requirements met
Access	Clear access w/ out damaging buildings/vehicles	Turning template demonstrates sufficient maneuvering area	Requirements met
Base design	9' x 15' concrete pad	Approximately 20' x 25' concrete pad	Requirement met
Enclosure	3-sided enclosure w/ gate Masonry walls 6' height/taller than receptacle	3 sides w/ gate across 4 <sup>th</sup> Masonry walls 6' height	Requirements met

Should you have any questions concerning this matter, please do not hesitate to contact our office.

Respectfully,  
**SAFE BUILT**



Brian V. Borden, AICP  
Michigan Planning Manager



February 6, 2024

Ms. Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

**Re: South Latson Commercial Development  
Site Plan Review No. 3**

Dear Ms. Ruthig:

Tetra Tech conducted a third review of the proposed South Latson Commercial Development site plan last dated January 16, 2024. The plan was prepared by Boss Engineering on behalf of 1015 Latson Road, LLC. The development is located on two parcels with a total of 3.38 acres on the east side of Latson Road, approximately 350 feet south of the Latson Road and Grand River Avenue intersection. The Petitioner is proposing to split the site into two parcels that are being reviewed separately, and this review includes a proposed 8,925 square foot general commercial building on the proposed south parcel. The proposed improvements include a new parking lot, storm sewer, and underground detention.

We offer the following comments for your consideration:

#### **GENERAL**

1. The Petitioner should obtain approval from the Livingston County Road Commission (LCRC) for the proposed site driveway prior to final site plan approval.

#### **DRAINAGE AND GRADING**

1. The Petitioner is proposing a closed pipe type underground detention basin comprised of five 42-inch diameter pipes to provide 16,890 cubic feet of storage. The proposed building, site drive, and parking improvements do not allow enough space for any at-grade storm water detention or retention.
2. Soil borings and infiltration testing should be provided within the proposed detention basin footprint and should show the documented high ground water elevation. Soil borings shall be provided to a depth of at least 20 feet. The Petitioner has noted that no geotechnical work has been completed for the site yet, but the geotechnical from the northern parcel was used for the current design. The infiltration rate and soil borings being used for the current design should be confirmed prior to construction of the storm system.
3. The proposed underground detention basin will tie into the existing storm sewer on Latson Road. The LCRC has indicated that the existing storm sewer is under MDOT jurisdiction and approval from MDOT will be required to connect to it. If approval from MDOT cannot be obtained the proposed site layout and storm management plan would change significantly, therefore we recommend that approval from MDOT be obtained prior to bringing the site plan before the Township Planning Commission.




**Ms. Amy Ruthig**  
**Re: South Latson Commercial Development**  
**Site Plan Review No. 3**  
**February 6, 2024**  
**Page 2**

**TRAFFIC AND PAVEMENT**

1. The LCRC completed a review of the traffic impact study and plans, and the study was revised per their recommendation. The study recommended signal modifications at the Grand River Avenue and Latson Road intersection, which would need to be reviewed and discussed with MDOT. The study also recommended restricting the northern most site driveway to right-in-right-out and aligning the southernmost site driveway to align directly with the existing Lowes driveway. Both site driveway recommendations have been addressed on the revised plans.

We recommend the Petitioner address the above comments prior to Township approval. Please call or email if you have any questions.

Sincerely,



Shelby Byrne, P.E.  
Project Engineer



# BRIGHTON AREA FIRE AUTHORITY

615 W. Grand River Ave.  
Brighton, MI 48116  
o: 810-229-6640 f: 810-229-1619

February 2, 2024

Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

RE: South Latson Commercial Development  
1111 S. Latson Rd.  
Genoa Twp., MI

Dear Amy,

The Brighton Area Fire Department has reviewed the above-mentioned site plan. The plans were received for review on January 17, 2024, The plans are dated October 4, 2023 with latest revisions dated January 16, 2024. The project is based on proposed redevelopment of an existing vacant parcel for a new 9,675 square foot multi-tenant commercial retail development. The plan review is based on the requirements of the International Fire Code (IFC) 2021 edition. **Previously acknowledged and complied with notes have been removed from this letter.**

1. Two-way emergency vehicle access roads shall be a minimum of 26-feet wide. With a width of 26-feet, one side (building side) of the drive shall be marked as a fire lane. Include additional signage along curb lines at least every 50-feet. Access roads to the site shall be provided and maintained during construction. Access roads shall be constructed to be capable of supporting the imposed load of fire apparatus weighing at least 84,000 pounds, this includes over the underground retention. **(The East drive clear width has been reduced to 23.5-feet and shall be increased to 26-feet as required. West drive fire lane signs are facing the incorrect direction.)**

IFC D 103.6  
IFC D 103.1  
IFC D 102.1  
IFC D 103.3

Additional comments will be given during the building plan review process (specific to the building plans and occupancy). The applicant is reminded that the fire authority must review the fire protection systems submittals (sprinkler & alarm) prior to permit issuance by the Building Department and that the authority will also review the building plans for life safety requirements in conjunction with the Building Department.

If you have any questions about the comments on this plan review please contact me at 810-229-6640.

Cordially,

A handwritten signature in black ink, appearing to read "R. Boisvert".

Rick Boisvert, CFPS  
Fire Marshal

cc: Kelly VanMarter, [kelly@genoa.org](mailto:kelly@genoa.org)



**GENOA TOWNSHIP IMPACT ASSESSMENT  
South Latson Commercial Development**

Prepared for:

**Owner / Applicant  
1015 Latson Road LLC  
Kevin Bahnam**

Prepared by:

**Scott Tousignant, P.E.**



3121 E. Grand River Howell, MI 48843  
517.540.4536 fax 517.540.1670  
www.bosseeg.com

**October 4, 2023  
Revised: October 26, 2023  
Revised: December 11, 2023  
Revised: January 16, 2024**

## DISCUSSION ITEMS

- A. Name(s) and address(es) of person(s) responsible for preparation of the Impact Assessment and a brief statement of their qualifications.

Prepared by:

Scott Tousignant, P.E.  
Professional Engineer/Project Manager  
Boss Engineering  
3121 E Grand River  
Howell, MI 48843

Prepared for:

Owner/Applicant:  
1015 Latson Road LLC / Kevin Bahnam  
29592 Beck Road  
Wixom, MI 48393

- B. Description of the site, including existing structures, man-made facilities, and natural features, all-inclusive to within 10' of the property boundary.***

The project site is on parcels # 4711-04-300-017 and # 4711-09-100-004 in Sections 4 & 9, Genoa Township, Livingston County, MI.

The subject site is bordered:

- On the north by the 1.14 acre +/- parcel zoned General Commercial (GCD) with an existing O'Reilly Auto Parts store.
- On the east by the 9.13 acre +/- parcel zoned General Commercial (GCD) with the Country Corners Shopping center.
- On the east and south by the 12.09 acre +/- parcel zoned High Density Residential (HDR) with the Prentis Estates Apartments. An approximately 4' tall berm is directly along the property line here on the adjacent HDR parcel and is planted with large Red and Scotch Pines ranging in size from 11" d.b.h. to 24" d.b.h. There is an additional evergreen screen just south of the berm along the east property line planted with White Cedar.
- On the west by S. Latson Road and the Non-Residential PUD shopping center with Walmart, PetSmart, Lowe's and various fast-food restaurants.
- The north side of the proposed project will be immediately adjacent to another proposed development project within the GCD zoning.

MHOG sanitary runs along the west property line and South Latson Road. MHOG water runs along the east property line in the adjacent parcel. See the Existing Conditions for locations.

The subject site is a vacant parcel of land consisting of tall, unmaintained grasses and minimal trees. There are currently two existing commercial drive approaches accessing the 2 subject properties. Both will be removed and replaced with a full access drive that aligns with the existing Lowe's drive on the opposite side of Latson Road.



**C. Impact on natural features: A written description of the environmental characteristics of the site prior to development, i.e., topography, soils, vegetative cover, drainage, streams, creeks or ponds.**

These currently vacant parcels are flat (2-6% slopes) and covered by grass and weeds. The 0.50 acre parcel at the south does feature a woodland with small trees and shrubs below 6" d.b.h. unless otherwise noted on the tree survey. Species within the woodland include *Pyrus* spp. (Pear), *Acer saccharinum* (Silver Maple), *Populus deltoides* (Eastern Cottonwood), *Prunus serotina* (Black Cherry), and *Pinus sylvestris* (Scotch Pine.)

The soils are largely Miami Loam with 2 to 6% slopes. Other soils on site are Conover Loam and Washtenaw Silt Loam. The site drains via surface flow from east to west to the South Latson Road storm sewer system. No wetlands/streams/creeks or other water bodies are located on site.

**D. Impact on storm water management: description of soil erosion control measures during construction.**

Storm water will be managed on site and installed before any building construction. Underground storm water detention is planned with a discharge to the South Latson Road storm system and ultimately to the regional detention basin to the south by I-96. Detailed construction plans will be reviewed by the Township Engineer and the Soil Erosion Control plans will be reviewed and permit issued by the Livingston County Drain Commissioners office prior to construction commencing. Ongoing/periodic soil erosion inspections will occur per County requirements to ensure soil erosion is managed proactively.

**E. Impact on surrounding land use: Description of proposed usage and other man-made facilities; how it conforms to existing and potential development patterns. Effects of added lighting, noise or air pollution which could negatively impact adjacent properties.**

Proposed uses on this General Commercial site include a Coffee Shop with Drive-Through and a variety of retail & restaurant spaces. The proposed uses conform to existing and potential development patterns and will not negatively impact adjacent properties with added lighting, noise or air pollution. The site development will comply with Township Ordinances for lighting levels as well as noise levels. The uses proposed do not impact adjacent properties with noise, light or air pollution.

An existing berm and evergreen screening in the adjacent parcel to the north along the High-Density Residential (HDR) property line screens that use from these proposed commercial uses. In addition, a 6-foot-tall screening fence is proposed for the northern portion and 8' high screen fence proposed for the southern portion of the east property line to screen the HDR use. An existing tree screen is on the property line and installing a screen fence would jeopardize and/or require removal of some of the mature trees currently screening the parcel. On the northern half of the east property line, there are no living units, so providing additional plantings to be a continuation of the landscaped screen to the adjacent HDR zoning is being proposed. A screen fence is proposed there as well given the reduction in landscape buffer width that is being sought. Proposed uses on this site are compatible with existing zoning and adjacent zoning on S. Latson Road.

**F. Impact on public facilities and services: Description of number of residents, employees, patrons, and impact on general services, i.e., schools, police, fire.**

The proposed commercial development does not add additional burden on the fire and police services as the site is surrounded by similar development that already receives coverage. The uses do not add population that impacts schools. The commercial retail will add to Township tax revenue as the site currently sits vacant. The commercial retail will add approximately 60 jobs which has a positive impact on the community.

**G. Impact on public utilities: description of public utilities serving the project, i.e., water, sanitary sewer, and storm drainage system. Expected flows projected in residential units.**

Storm water will be detained on-site via the use of an underground detention system. The storm water will be discharge at pre-development rates to the South Latson Road storm sewer system as the site currently sheet flows into this road storm system. Detailed construction plans would be reviewed by the Township Engineer and the Soil Erosion Control permit would be reviewed and issued by the Livingston County Drain Commissioner. MHOG sanitary sewer runs along the west property line and South Latson Road. It is expected that the site will be connected to MHOG sanitary sewer along South Latson Road and MHOG water along the east property line in the adjacent parcel. The commercial development, being supported by these public utilities is not anticipated to have a negative impact. The development is projected to be approximately 6 REU's (projecting possible end users of the commercial leasable space) which equates to approximately a peak flow usage of 7,000 gpd.

**H. Storage or handling of any hazardous materials: Description of any hazardous materials used, stored, or disposed of on-site.**

No storing or handling of any hazardous materials is expected for this development.

**I. Impact on traffic and pedestrians: Description of traffic volumes to be generated and their effect on the area.**

A traffic study has been performed. It is prepared under separate cover and submitted to the Township and Livingston County Road Commission. In summary of the Traffic Impact Study performed by Colliers Engineering & Design, *“Based on the results of this study, the following should be considered to provide acceptable traffic operations with the proposed development project. 1) Optimize signal timings at the intersection of Grand River Avenue and Latson Road. 2) Construct two driveways to Latson Road with the S. site driveway aligned with the existing Lowes driveway and the N. site driveway restricted to right-in-right-out only.”*

The Livingston County Road Commission will be required to review and approve the commercial driveway approaches on South Latson Road. Communications with LCRC indicate that the proposed drive locations are acceptable. A right-in/right-out access will be provided on the site to the north and a full access drive provided on the subject site directly across from the existing Lowe's access drive. A cross access easement will be provided for the adjacent site to the north.

**J. Special provisions: Deed restrictions, protective covenants, etc.**

None of record.



**K. Description of all sources:**

- Genoa Township Zoning Ordinance
- “Soil Survey of Livingston County Michigan” Soil Conservation Services, USDA
- Traffic Impact Study by Colliers Engineering & Design dated September 15, 2023



Engineering  
& Design

# Traffic Impact Study

December 19, 2023

**Latson Road Commercial Development  
Genoa Township, Livingston County, Michigan**

Prepared for:

Mr. Karam Bahnam  
1015 Latson Road, LLC  
29592 Beck Road  
Wixom, MI 48393

**Colliers Engineering & Design**  
20700 Civic Center Drive, Suite 170  
Southfield, MI 48076  
Main: 877 627 3772  
[Colliersengineering.com](http://Colliersengineering.com)



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## Introduction

This report presents the methodologies, analyses, results, and recommendations of a Traffic Impact Study (TIS) for the proposed commercial development project in Genoa Township, Livingston County, Michigan. The project site is located on the east side of Latson Road approximately 500 feet south of Grand River Avenue (I-96 BL) as shown on **Figure 1** and is currently vacant. The proposed development plans include construction of a 2,950 SF coffee-shop with drive-through, 2,700 SF sit-down restaurant, 4,025 SF of general retail space, and automated car wash. Two different site access alternatives were evaluated for the development per the request of LCRC as follows:

1. Alternative 1: A single site driveway to Latson Road aligned with the existing Lowes Drive.
2. Alternative 2: A single site driveway to Latson Road aligned with the existing Lowes Drive and right-in-right-out only driveway to Latson Road at the north end of the subject site.

A representation of the site plan is shown on **Figure 2**.

Latson Road is under jurisdiction of the Livingston County Road Commission (LCRC); whereby access permitting will be subject to LCRC review and standards. In accordance with LCRC standards a Traffic Impact Study (TIS) is required for site access permitting and project approvals. Additionally, the project is subject to Township review and approval as part of the site plan review process.

The purpose of this study is to identify the traffic related impacts, if any, of the proposed project on the adjacent road network. This study therefore includes analysis of the site access points as well as key off-site intersections surrounding the site. Analysis of the site access points will determine appropriate lane configurations as well as traffic control to process site traffic safely and efficiently. Key off-site intersections are analyzed to determine if new site-generated traffic passing through these locations would require improvements to mitigate any impacted traffic operations.

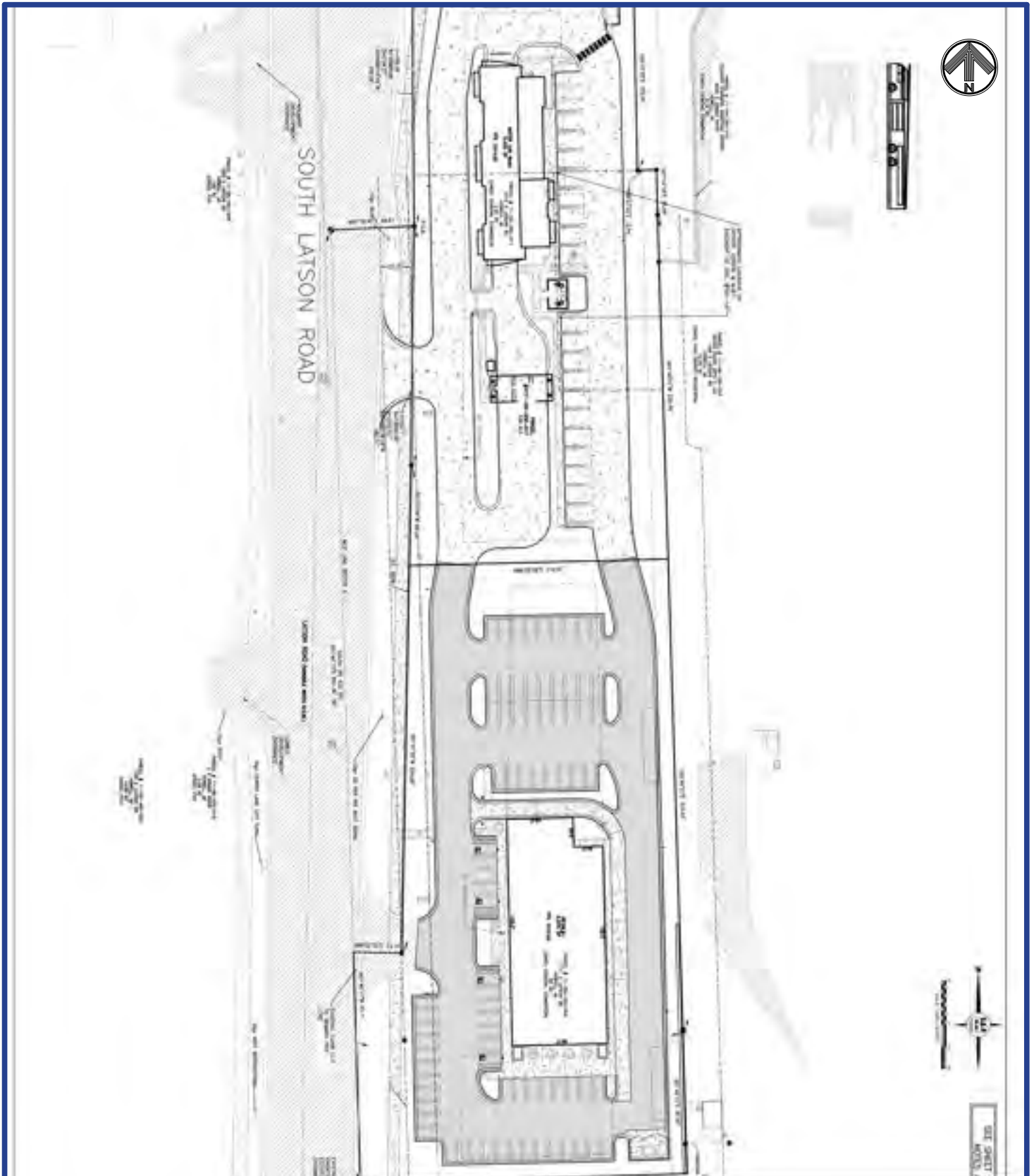
The scope of this study was developed based on Colliers Engineering & Design (CED) knowledge of the study area, understanding of the development program, accepted traffic engineering practice, and information published by the Institute of Transportation Engineers (ITE). Additionally, CED solicited input regarding the proposed scope of work from LCRC. The study analyses were completed using Synchro and SimTraffic, Version 11 traffic analysis software and in accordance with the methodologies and practices published by ITE and the applicable requirements of LCRC and the Township. This report is intended for use by LCRC and the Township to guide decisions related to development project approvals, access permitting, and identifying future roadway improvement needs.



**Latson Commercial Development  
Genoa Township, MI**

Figure 1  
Study Area Map





**Latson Commercial Development  
Genoa Township, MI**

Figure 2  
Site Plan

PAGE NO.	SCALE	DATE
3	No Scale	Oct '23



		MISTER CAR WASH
		EMP WEST LLC 10000 SOUTH LATSON ROAD GENOA TOWNSHIP, MI 48132
OVERALL SITE PLAN		

## Roadway Data

### Road Network

Vehicle transportation for the proposed development will be provided primarily via Latson Road and Grand River Avenue. The study intersections are identified below, and further details on the study roadways are summarized in **Table 1**.

**Table 1: Roadway Summary**

Roadway Data	Grand River Avenue	Latson Road
Functional Class	Principal Arterial	Minor Arterial
Direction	E-W	N-S
Speed Limit (mph)	45	55
Jurisdiction	MDOT	LCRC
Cross Section	5-Lane	5-Lane
AADT	31,000	22,000
AM Peak Hour Volume	2,075	1,380
PM Peak Hour Volume	3,250	2,370

### Study Intersections

#### Grand River Avenue & Latson Road

At the intersection of Grand River Avenue & Latson Road, all approaches have dual left-turn lanes, two through lanes, and an exclusive right-turn lane. The intersection is traffic signal controlled with leading protected only left-turn phasing, and right-turn overlap phasing provided for all approaches. Dynamic “No Turn on Red” signs are also provided for all approaches to prohibit right-turns during the opposing approaches protected left-turn phase. Vehicle and pedestrian actuation are provided for all approaches and movements and marked crosswalks are provided for crossing all legs.



**Figure 3: Grand River Avenue & Latson Road Intersection**



### Latson Road & Grand Oaks Drive

At the intersection of Latson Road & Grand Oaks Drive, the NB and SB approaches have an exclusive left-turn lane, through lane, and shared through/right-turn lane while the EB and WB approaches have an exclusive left-turn lane and shared through/right-turn lane. The intersection is traffic signal controlled with a leading permitted-protected left-turn phasing for the NB approach. Vehicle actuation is provided for all approaches and movements and marked crosswalks are provided for crossing the east, west, and north legs of the intersection with pedestrian actuation provided for the north crossing.



**Figure 4: Latson Road & Grand Oaks Drive Intersection**

### Existing Traffic Data

Existing weekday AM (7:00 to 9:00) and PM (4:00 to 6:00) peak hour turning movement counts were collected by CED at the study intersections. At the signalized intersections of Latson Road with Grand River Avenue and Grand Oaks Drive, counts were collected on Wednesday, November 13<sup>th</sup>, 2019. At the unsignalized Lowe's and Wal-Mart driveways with Latson Road, counts were collected on Thursday, August 10<sup>th</sup>, 2023.

Data were collected in 15-minute intervals to establish the current peak hour traffic volumes. Major weather events, holidays, and other local special events were avoided. During collection of the manual intersection turning movement count, pedestrian data and commercial truck percentages were also recorded and used in the traffic analysis. Peak hour factors (PHFs) and commercial truck percentages were calculated by approach based on the requirements of MDOT's *Electronic Traffic Control Device Guidelines*. Traffic volumes along Latson Road were balanced upward between the Wal-Mart driveway and Grand River Avenue. Between Grand Oaks Drive and the north Lowe's driveway, a dummy node was utilized to account for the large amount of traffic that turns in and out of the south Lowe's driveway. All relevant traffic volume data are included in Appendix A and the resulting 2023 baseline peak hour volumes utilized for this study are summarized on **Figure 6**.



GRAND RIVER AVENUE

WALMART DRIVE

N. SITE DRIVE

LATSON ROAD

SITE

LOWES DRIVE

S. SITE DRIVE

GRAND OAKS DRIVE

**Latson Commercial Development  
Genoa Township, MI**

Figure 5  
Lane Use and Traffic Control

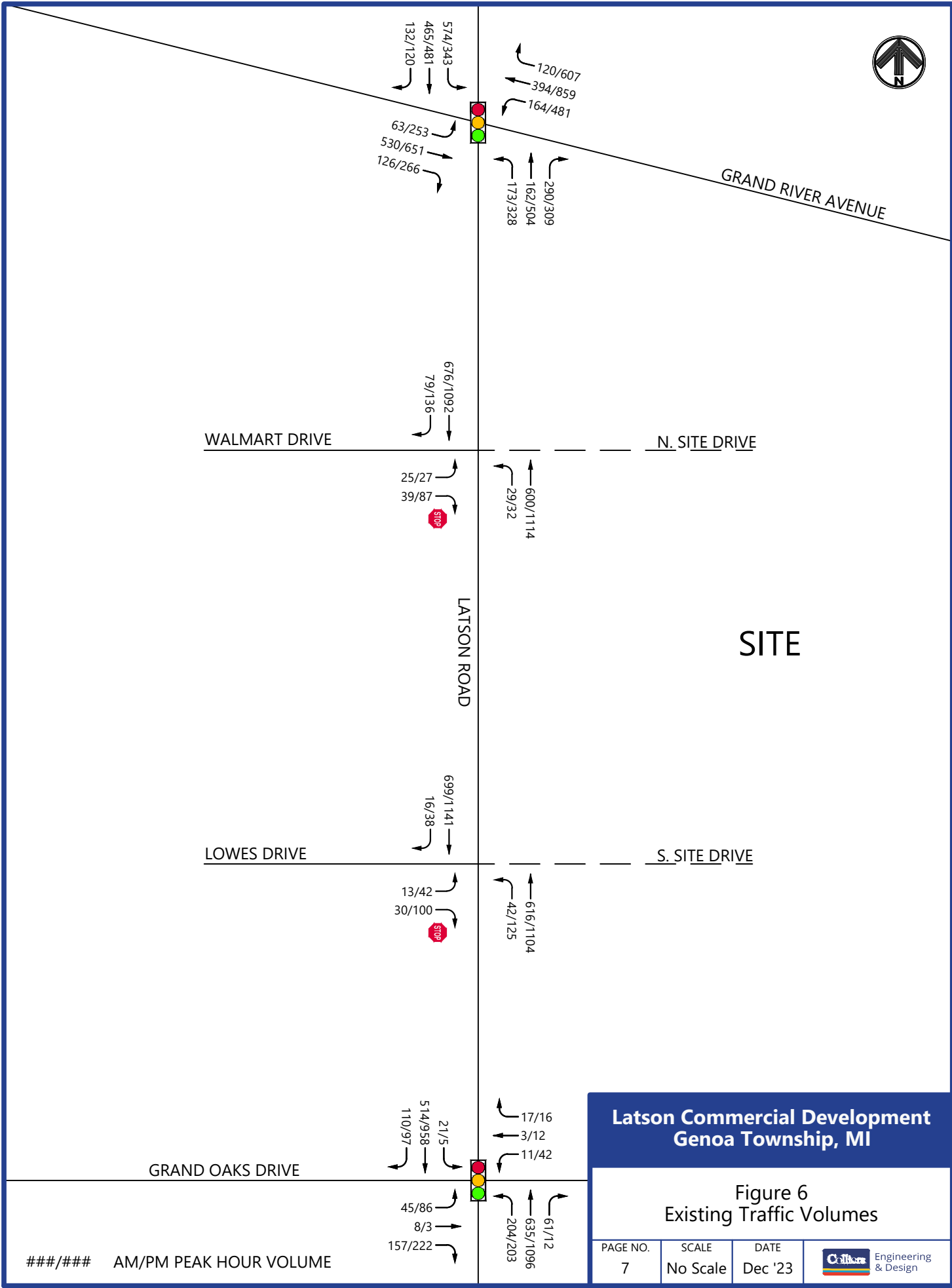
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**Latson Commercial Development  
Genoa Township, MI**

**Figure 6  
Existing Traffic Volumes**

###/### AM/PM PEAK HOUR VOLUME

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## 2023 Existing Conditions

### Analysis Methodologies

The performance of the study intersections was evaluated through a qualitative measure of operating conditions called Levels of Service (LOS). Six LOS are defined with letter designations from A to F with LOS A representing minimal delay, and LOS F indicating failing conditions. Typically, LOS D is considered acceptable in suburban/urban areas.

The LOS measurement for both signalized and unsignalized intersections is average control delay, which is quantified in terms of seconds of delay per vehicle. Control delay includes deceleration delay, stopped delay, queue move-up delay, and acceleration delay. The LOS criteria for unsignalized and signalized intersections taken from the HCM are included in Appendix B.

The LOS and delay calculations are based on the procedures and methodologies outlined in the Transportation Research Board's Highway Capacity Manual, 6th Edition (HCM6) which sets forth nationally accepted standards regarding traffic operations and capacity analysis. Traffic signal timings were modeled per traffic signal timing permits provided by LCRC.

Simulations of the study network were also observed using SimTraffic in order to identify potential issues related to vehicle queuing, traffic flow between intersections, and the overall study network. The existing conditions SimTraffic models were calibrated in accordance with the procedures outlined in the MDOT Electronic Traffic Control Device Guidelines.

### Existing Traffic Conditions

Existing peak hour vehicle delays and LOS were calculated at the study intersections based on the existing lane configurations and traffic control shown on **Figure 5**, the existing traffic volumes shown on **Figure 6**, and the methodologies presented in the HCM. The results of the analysis of existing conditions are presented in **Appendix B**, summarized in **Table 2** and described in further detail below.

The results of the existing conditions analysis indicate that all approaches and movements at the study intersections are currently operating acceptably at a LOS D or better with the exception of the following:

- The NB right-turn movement at the signalized intersection of Grand River Avenue & Latson Road currently operates at a LOS E during the AM peak hour. During the PM peak hour, the NB left-turn movement operates at a LOS E while the WB left, and right-turn movement and SB left-turn movement operate at a LOS F.
- The STOP controlled Lowes Drive approach which currently operates at a LOS E during the PM peak hour.

Observation of peak hour simulations indicates acceptable traffic operations during the AM peak hour and significant vehicle queues are not observed. During the PM peak hour, long vehicle queues are observed for the WB right-turn movement and NB and SB left-turn movements at the



intersection of Grand River Avenue & Latson Road which occupy available storage lengths. A long vehicle queue is also observed for the STOP controlled Lowes driveway approach which lasts throughout the majority of the PM peak hour.

**Table 2: Existing Conditions**

Intersection	Control	Approach	Movement	AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.8	D
			Thru	30.8	C	39.6	D
			Right	21.4	C	26.9	C
		WB	Left	49.4	D	64.6	E
			Thru	26.7	C	37.2	D
			Right	12.7	B	56.9	E
		NB	Left	44.3	D	73.0	E
			Thru	36.4	D	39.7	D
			Right	62.3	E	28.1	C
		SB	Left	41.7	D	108.2	F
			Thru	30.1	C	40.8	D
			Right	24.9	C	25.2	C
		<b>Overall</b>				<b>35.9</b>	<b>D</b>
Latson Road & Grand Oaks Drive / Ascension Medical Drive	Signal	EB	Left	30.8	C	27.4	C
			Thru/Right	37.9	D	33.3	C
		WB	Left	37.9	D	37.1	D
			Thru/Right	28.9	C	24.5	C
		NB	Left	8.4	A	15.2	B
			Thru/Right	6.0	A	10.3	B
		SB	Left	10.2	B	12.8	B
			Thru/Right	13.0	B	21.7	C
		<b>Overall</b>				<b>13.0</b>	<b>B</b>
Latson Road & Wal-Mart Drive	STOP (Minor)	EB	Left/Right	16.0	C	24.6	C
		NB	Left	10.1	B	12.2	B
			Thru	Free		Free	
SB	Thru/Right	Free		Free			
Latson Road & Lowes Drive	STOP (Minor)	EB	Left/Right	15.0	C	42.2	E
		NB	Left	10.0	B	13.5	B
			Thru	Free		Free	
		SB	Thru/Right	Free		Free	

## No-Build Conditions

### No-Build Traffic Volumes

Traffic impact studies typically include an evaluation of traffic operations in the future as they would be without the proposed development. This no-build condition serves to identify any mitigation that may be required, regardless of the project, and as a baseline for comparison of future buildout conditions. This scenario is comprised of existing traffic conditions, plus ambient traffic growth, plus traffic from approved developments in the study area that have yet to be constructed. At the time of this study the following developments were identified within the study area and immediate vicinity that have yet to be constructed or were currently under construction:

1. Versa Mixed-Use Development
2. Westbury Phase II Residential Development
3. SJMHS Hospital Expansion
4. Forest Ridge Residential Development
5. Pine Creek Residential Development

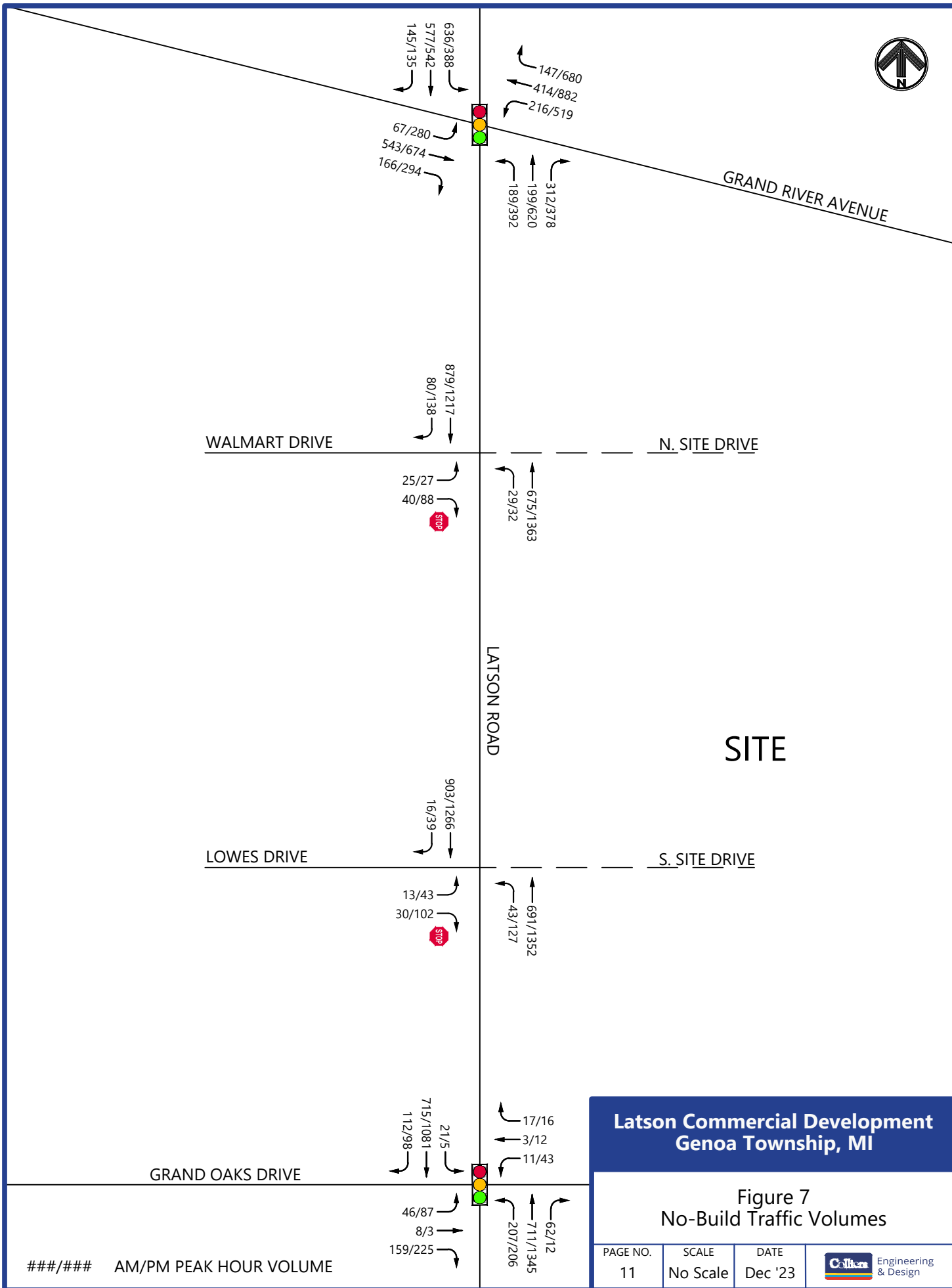
The vehicle trips that would be generated by the background developments were assigned to the study intersections based on the respective traffic study completed for each development. Where a traffic study was not completed for the development or the traffic study did not include the same intersections or time periods as this study, the number of vehicle trips was forecast based on data published by ITE in *Trip Generation, 11<sup>th</sup> Edition* and assigned to the study road network based on existing traffic patterns.

In addition to background developments, an ambient growth factor is applied to existing traffic volumes to account for future projects in the study area and population increases, as well as growth in regular traffic volumes due to development projects outside the study area. The recent construction of the I-96 & Latson Road interchange has resulted in significant changes in traffic patterns throughout the study area. As a result, historical traffic volumes do not provide an accurate representation of traffic growth in the area. Therefore, publicly available data from the Southeast Michigan Council of Governments (SEMCOG), including population and employment forecasts for Genoa Township were referenced.

The SEMCOG data indicates annual population and employment growths ranging from 0.35% to 1.64% between 2015 and 2045 as shown in **Table 3**. Therefore, an ambient background growth rate of 0.75% per year will be utilized for this study. The ambient growth rate and trips from the background developments were applied to the existing 2023 traffic volumes for a period of two years to forecast the no-build traffic volumes ***without the proposed development***. The resultant 2025 no-build traffic volumes are summarized on **Figure 7**.

**Table 3: Community Annual Growth Rate**

Community	Measure	Growth
Genoa Township	Employment	0.38%
	Population	1.54%
Howell	Employment	0.35%
	Population	0.57%
Brighton	Employment	0.47%
	Population	0.69%
Brighton Township	Employment	0.63%
	Population	1.64%
<b>Average</b>		<b>0.78%</b>



**Latson Commercial Development  
Genoa Township, MI**

**Figure 7  
No-Build Traffic Volumes**

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## No-Build Traffic Conditions

No-build peak hour vehicle delays and LOS were calculated at the study intersections based on the existing lane configurations and traffic control shown on **Figure 5**, the no-build traffic volumes shown on **Figure 7**, and the methodologies presented in the HCM. The results of the analysis of no-build conditions are presented in Appendix C, summarized in **Table 4**, and described in further detail below.

**Table 4: No-Build Traffic Conditions**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour			
				Existing		No-Build		Existing		No-Build	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.5	D	43.8	D	44.9	D
			Thru	30.8	C	33.0	C	39.6	D	42.5	D
			Right	21.4	C	23.2	C	26.9	C	28.7	C
		WB	Left	49.4	D	74.1	E	64.6	E	83.4	F
			Thru	26.7	C	28.3	C	37.2	D	42.2	D
			Right	12.7	B	13.2	B	56.9	E	104.3	F
		NB	Left	44.3	D	43.9	D	73.0	E	126.4	F
			Thru	36.4	D	37.5	D	39.7	D	47.6	D
			Right	62.3	E	71.9	E	28.1	C	31.7	C
		SB	Left	41.7	D	43.4	D	108.2	F	158.9	F
			Thru	30.1	C	31.5	C	40.8	D	44.4	D
			Right	24.9	C	24.6	C	25.2	C	24.8	C
		<b>Overall</b>				<b>35.9</b>	<b>D</b>	<b>39.4</b>	<b>D</b>	<b>48.7</b>	<b>D</b>
Latson Road & Grand Oaks Drive / Ascension Medical Drive	Signal	EB	Left	30.8	C	30.7	C	27.4	C	27.2	C
			Thru/Right	37.9	D	37.8	D	33.3	C	33.1	C
		WB	Left	37.9	D	37.9	D	37.1	D	37.1	D
			Thru/Right	28.9	C	28.8	C	24.5	C	24.3	C
		NB	Left	8.4	A	10.1	B	15.2	B	18.0	B
			Thru/Right	6.0	A	6.3	A	10.3	B	12.4	B
		SB	Left	10.2	B	10.4	B	12.8	B	16.2	B
			Thru/Right	13.0	B	14.9	B	21.7	C	24.8	C
<b>Overall</b>				<b>13.0</b>	<b>B</b>	<b>13.8</b>	<b>B</b>	<b>18.3</b>	<b>B</b>	<b>20.0</b>	<b>C</b>
Latson Road & Wal-Mart Drive	STOP (Minor)	EB	Left/Right	16.0	C	19.9	C	24.6	C	30.2	D
		NB	Left	10.1	B	11.4	B	12.2	B	13.1	B
			Thru	Free		Free		Free		Free	
SB	Thru/Right	Free		Free		Free		Free			
Latson Road & Lowes Drive	STOP (Minor)	EB	Left/Right	15.0	C	18.4	C	42.2	E	65.1	F
		NB	Left	10.0	B	11.3	B	13.5	B	15.0	B
			Thru	Free		Free		Free		Free	
		SB	Thru/Right	Free		Free		Free		Free	

The results of the no-build conditions analysis indicate that all approaches and movements would continue to operate similar to existing conditions during both peak hours with the exception of the signalized intersection of Grand River Avenue & Latson Road which would be reduced to an overall LOS E during the PM peak hour. Additionally, several approaches and movements would be reduced to a LOS E or F including the WB left-turn movement during the AM peak hour and WB left

and right-turn movements and NB left-turn movement during the PM peak hour. At all other study intersections, no-build conditions remain acceptable and/or similar to existing conditions.

Review of network simulations continue to indicate acceptable traffic operations during the AM peak hour and significant vehicle queues are not observed. During the PM peak hour, long vehicle queues and cycle failures occur with increased frequency at the intersection of Grand River Avenue & Latson Road, as compared to existing conditions. Specifically, a long vehicle queue is observed for the SB left-turn movement and WB right-turn movement which exceeds available storage length throughout the majority of the PM peak hour. It should be noted that these operations reflect modeled prohibition of all right turns on red at this intersection. The dynamic case signs allow for additional right turn demand processing and would result in shorter queues for actual field conditions.

### No-Build Improvements

In order to improve traffic operations in the no-build conditions, mitigation measures were investigated. At the intersection of Grand River Avenue & Latson Road, recent improvements were made as part of the I-96 & Latson Road interchange project to provide dual left-turn lanes and right turn overlap phasing on all approaches, as well as additional travel lanes along Latson Road. The intersection of Grand River Avenue & Latson Road is considered to be built out, and additional physical capacity improvements (i.e., additional lanes) at this intersection are constrained by available right-of-way. Therefore, further geometric improvements at the intersection to mitigate all movements to a LOS D or better are considered to be regional and beyond the scope and context of this study.

As a result, improvements at Grand River Avenue & Latson Road are limited to signal timing and traffic control modifications. Signal cycle length and timing changes were therefore evaluated. The results of this analysis indicate that optimized timings with a 90 second cycle length during both peak hours would result in improved traffic operations; however, several intersection approaches and movements would continue to operate at a LOS E or F during the peak hours (noting modeling constraints for dynamic right turn on red). The results of the no-build conditions analysis with the optimized signal timings are summarized in **Table 5**.

Although these improvements are needed to help mitigate no-build operations; these improvements are not included in any planned roadway improvements. Therefore, the build conditions analysis for this study evaluates traffic operations with the existing traffic signal timings and geometrics at the intersections.

**Table 5: No-Build Traffic Conditions with Improvements**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour				
				No-Build		No-Build IMP		No-Build		No-Build IMP		
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.5	D	44.9	D	48.4	D	
			Thru	33.0	C	32.8	C	42.5	D	47.1	D	
			Right	23.2	C	23.7	C	28.7	C	27.5	C	
		WB	Left	74.1	E	47.1	D	83.4	F	63.4	E	
			Thru	28.3	C	26.8	C	42.2	D	41.5	D	
			Right	13.2	B	13.2	B	104.3	F	78.4	F	
		NB	Left	43.9	D	47.2	D	126.4	F	64.3	E	
			Thru	37.5	D	37.5	D	47.6	D	65.8	E	
			Right	71.9	E	58.6	E	31.7	C	33.5	C	
		SB	Left	43.4	D	54.7	D	158.9	F	80.0	F	
			Thru	31.5	C	32.5	C	44.4	D	57.3	E	
			Right	24.6	C	25.3	C	24.8	C	26.8	C	
		<b>Overall</b>			<b>39.4</b>	<b>D</b>	<b>38.6</b>	<b>D</b>	<b>65.5</b>	<b>E</b>	<b>55.2</b>	<b>E</b>

## Build Conditions

The proposed development plan includes construction of a 2,950 SF coffee-shop with drive-through, 2,700, SF sit-down restaurant, 4,025 SF of general retail space, and automated car wash. Two different site access alternatives were evaluated for the development per the request of LCRC. Alternative 1 analyzes a single site driveway to Latson Road aligned with the existing Lowes Drive. Alternative 2 includes an additional right-in-right-out only driveway to Latson Road at the north end of the subject site.

## Site Trip Generation

The number of AM and PM peak hour vehicle trips that will be generated by the proposed development will be forecast based on the rates and equations published by ITE in *Trip Generation, 11<sup>th</sup> Edition*. The proposed development plans include a 2,950 SF coffee-shop with drive-through, 2,700 SF sit-down restaurant, 4,025 SF of general retail space, and automated car wash.

The proposed uses were matched to the ITE land use category that most closely matches their proposed operation. For this study, ITE *Land Use #822, Strip Retail Plaza* was utilized for the retail space, *Land Use #932, High-Turnover Sit-Down Restaurant*, was utilized for the proposed restaurant, *Land Use #937, Coffee-Shop with Drive-Through* was utilized for the coffee-shop, and *Land Use #948, Automated Car Wash* was utilized for the carwash. For Land Use #948, trip generation data is not available during the AM peak hour as most carwashes are closed during this time frame or generate small amounts of traffic; however, to provide a conservative approach, AM peak hour trips were forecast to be 25% of the PM peak hour trips for this study.

As is typical of most retail and restaurant uses, a portion of the site-generated trips are already present on the adjacent road network and are interrupted to visit the site. These trips are known as 'pass-by' trips, which create turning movements at the site driveways, but do not increase traffic volumes on the adjacent road network or off-site intersections. Similar to pass-by trips, a portion of



the site-generated trips are vehicles that are traveling on the adjacent roadway that alter their direction of travel to visit the site then return to their original route. These trips are known as “diverted-link” trips. For the purposes of this study, pass-by trips were assumed to follow existing traffic patterns along Latson Road. Diverted link trips were applied to turning movements patterns at the intersection of Grand River Avenue & Latson Road.

ITE publishes pass-by rates for various commercial land uses in the *Trip Generation Handbook*. For Land Use #822 and #932, 34% and 43% of trips are expected to be pass-by in nature. ITE does not publish pass-by data for Land Use #937 or #948. For Land Use #937, 50% of trips were assumed to be pass-by in nature consistent with other fast-food with drive-through uses. For Land Use #948, 35% of trips were assumed to be pass-by in nature based on data for drive-in banks and other retail uses. The diverted-link trips are assumed to represent a portion of the pass-by trips, not an additional reduction to overall site trip generation. These trips are already present at the intersection of Grand River Avenue & Latson Road but divert to visit the site. The number of pass-by and diverted-link vehicle trips was subtracted from the total number of site-generated trips to determine the number of new peak hour trips for the overall development. The resultant trip generation forecast for the proposed development is shown in **Table 6**.

**Table 6: Site Trip Generation**

Land Use	ITE Code	Amount	Units	ADT	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Strip Retail Plaza	822	4,025	SF	400	9	6	15	21	20	41
		Pass-By (34% PM)		136	0	0	0	7	7	14
		New Trips		264	9	6	15	14	13	27
High-Turnover (Sit-Down) Restaurant	932	2,700	SF	289	14	12	26	15	9	24
		Pass-By (43%)		124	5	5	10	5	5	10
		New Trips		165	9	7	16	10	4	14
Coffee Shop with Drive-Through	937	2,950	SF	1,574	129	124	253	58	57	115
		Pass-By (50%)		787	63	63	126	29	29	58
		New Trips		787	66	61	127	29	28	57
Automated Car Wash	948	1	Tunnel	0	10	10	20	39	39	78
		Pass-By (35%)		0	3	3	6	13	13	26
		New Trips		0	7	7	14	26	26	52
Total		<b>Total Trips</b>		<b>2,263</b>	<b>162</b>	<b>152</b>	<b>314</b>	<b>133</b>	<b>125</b>	<b>258</b>
		<b>Pass-By Trips</b>		<b>1,047</b>	<b>71</b>	<b>71</b>	<b>142</b>	<b>54</b>	<b>54</b>	<b>108</b>
		<b>New Trips</b>		<b>1,216</b>	<b>91</b>	<b>81</b>	<b>172</b>	<b>79</b>	<b>71</b>	<b>150</b>

### Trip Distribution

The vehicle trips that would be generated by the proposed development were assigned to the study road network based on existing peak hour traffic patterns, local population densities, and ITE methodologies. These methods indicate that pass-by trips enter and exit the development in their original direction of travel and new trips will return to their direction of origin. Peak hour traffic volumes on Grand River Avenue and Latson Road were reviewed together with local population densities to determine the origin and destinations of new site-generated traffic. Pass-by traffic was

assumed to follow existing traffic patterns along Latson Road and at the intersection of Grand River Avenue & Latson Road. The resultant site trip distribution is summarized in **Table 7**.

Site-generated trips were assigned to the site driveways based on these trip distribution percentages and the proposed site access plan for each alternative. For Alternative 1, all trips were assigned to enter and exit the site via the single site driveway. For Alternative 2, the north site driveway is expected to service both the carwash and retail uses while the south site driveway is expected to primarily service the retail / restaurant uses. Therefore, all retail / restaurant traffic was assumed to utilize the south site driveway while all car-wash traffic was assumed to utilize the north site driveway with the exception of restricted turning movements at the north site driveway. Traffic for these movements was assumed to utilize the south site driveway.

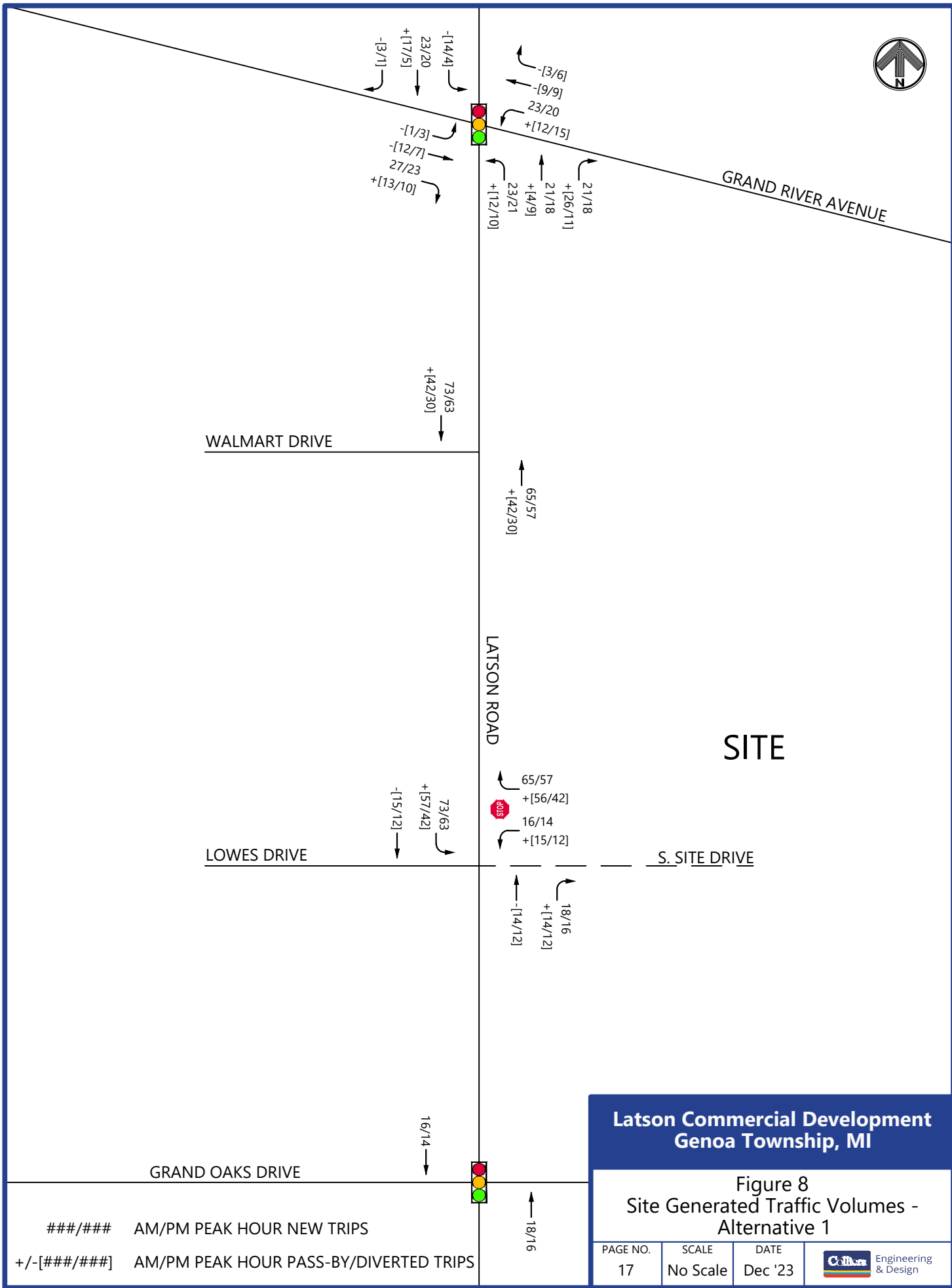
**Table 7: Site Trip Distribution**

NEW TRIPS			PASS-BY / DIVERTED TRIPS				
To/From	Via	AM/PM	From	To	Via	AM	PM
North	Latson Road	25%	South	North	Latson Road	19%	22%
South	Latson Road	20%	North	South	Latson Road	22%	22%
East	Grand River Avenue	25%	North	East	Grand River Avenue	19%	7%
West	Grand River Avenue	30%	North	West	Grand River / Latson	4%	2%
			West	North	Grand River / Latson	2%	12%
			West	East	Grand River / Latson	17%	17%
			East	North	Grand River / Latson	4%	5%
			East	West	Grand River / Latson	13%	13%
<b>Total</b>		<b>100%</b>	<b>Total</b>			<b>100%</b>	<b>100%</b>

The site-generated vehicle trips were assigned to the study network as shown on **Figure 8** and **Figure 9**. These trips were added to the 2025 no-build traffic volumes shown on **Figure 7** to calculate the future build traffic volumes shown on **Figure 10** and **Figure 11**.

### Build Conditions – Alternative 1


Future build peak hour vehicle delays and LOS with the proposed development were calculated based on existing lane configurations and traffic control shown on **Figure 5**, build traffic volumes shown on **Figure 10**, and HCM methodologies. SimTraffic simulations were also utilized to evaluate traffic flow and vehicle queues throughout the study network. The build conditions results for site access Alternative 1 are included in **Appendix D** and summarized in **Table 8**.



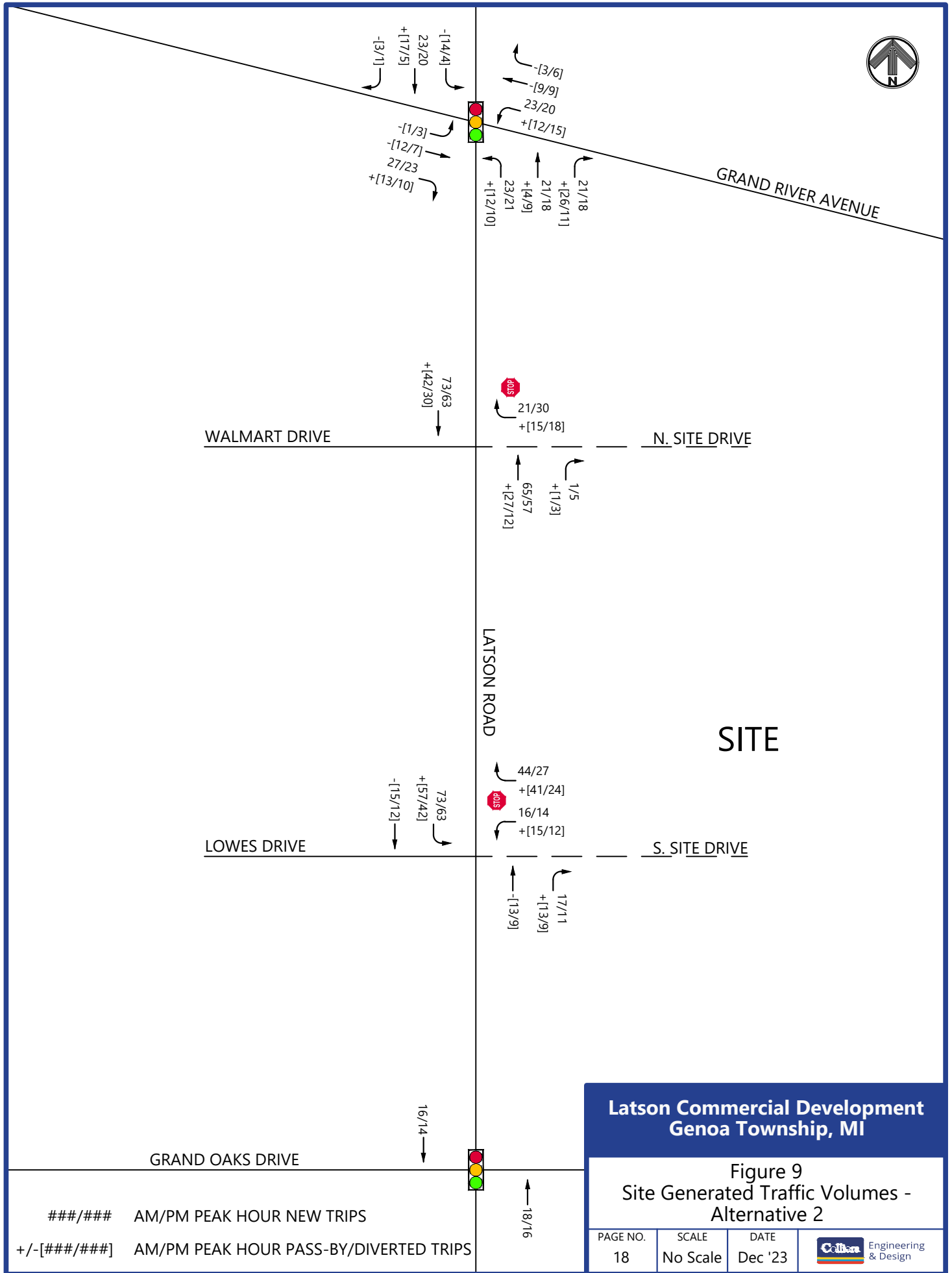
###/### AM/PM PEAK HOUR NEW TRIPS  
 +/-[###/###] AM/PM PEAK HOUR PASS-BY/DIVERTED TRIPS

**Latson Commercial Development  
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**Figure 8  
 Site Generated Traffic Volumes -  
 Alternative 1**

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###/### AM/PM PEAK HOUR NEW TRIPS  
 +/-[###/###] AM/PM PEAK HOUR PASS-BY/DIVERTED TRIPS

**Latson Commercial Development**  
**Genoa Township, MI**

**Figure 9**  
**Site Generated Traffic Volumes -**  
**Alternative 2**

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GRAND RIVER AVENUE

622/384  
617/567  
142/134

144/674  
405/873  
251/554

66/277  
531/667  
206/327

359/407  
224/647  
224/423

WALMART DRIVE

994/1310  
80/138

25/27  
40/88

782/1450  
29/32

LATSON ROAD

LOWES DRIVE

130/105  
888/1254  
16/39

121/99  
31/26

S. SITE DRIVE

13/43  
30/102

32/28  
677/1340  
43/127

GRAND OAKS DRIVE

21/5  
731/1095  
112/98

17/16  
3/12  
11/43

46/87  
8/3  
159/225

62/12  
729/1361  
207/206

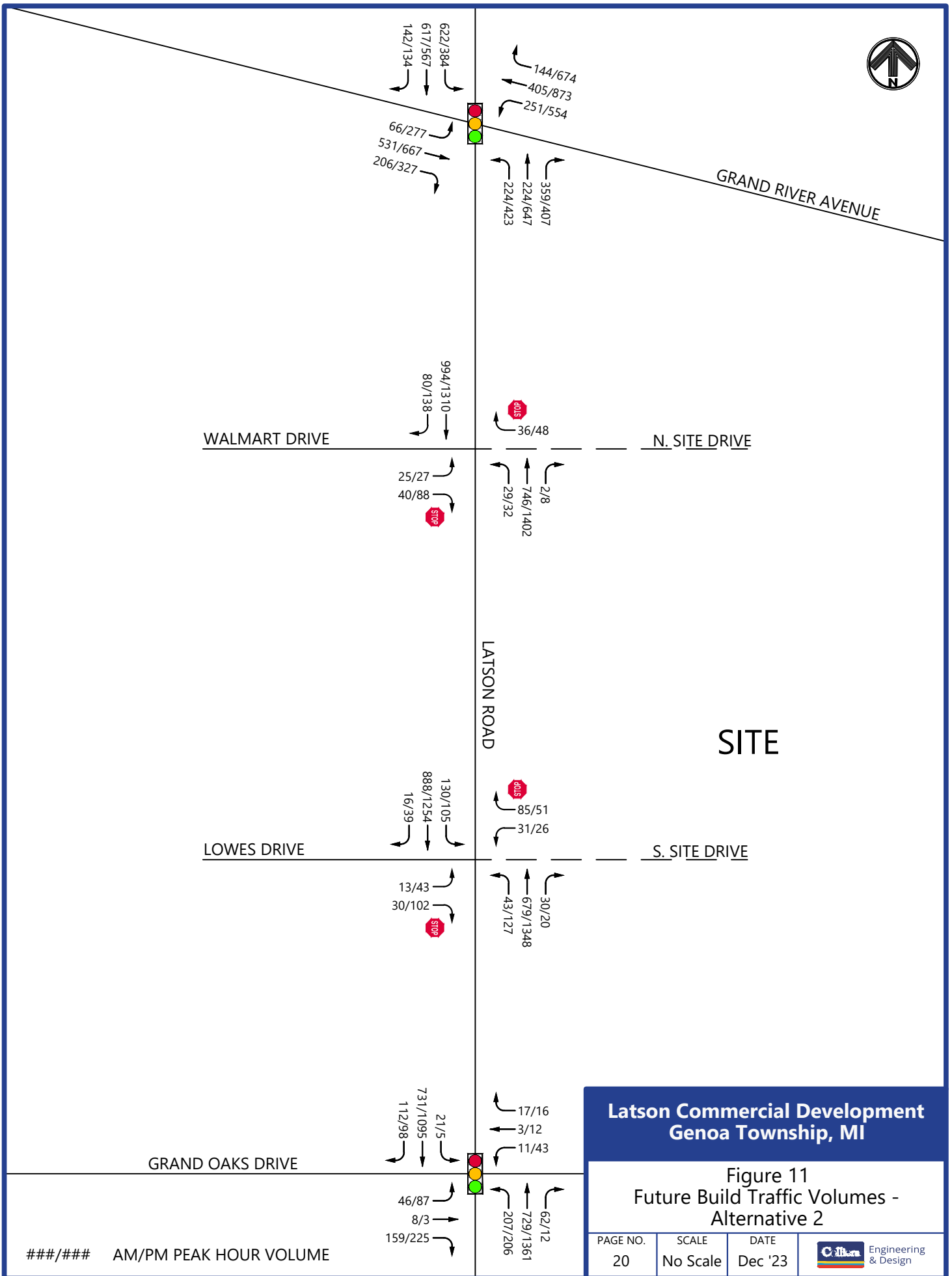
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**Latson Commercial Development  
Genoa Township, MI**

**Figure 10  
Future Build Traffic Volumes -  
Alternative 1**

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19	No Scale	Dec '23	

###/### AM/PM PEAK HOUR VOLUME



**Latson Commercial Development  
Genoa Township, MI**

**Figure 11  
Future Build Traffic Volumes -  
Alternative 2**

PAGE NO. 20	SCALE No Scale	DATE Dec '23	Engineering & Design
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**Table 8: Build Traffic Conditions - ALT 1**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour			
				No-Build		Build - ALT 1		No-Build		Build - ALT 1	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.5	D	44.9	D	44.8	D
			Thru	33.0	C	32.4	C	42.5	D	41.9	D
			Right	23.2	C	23.1	C	28.7	C	30.9	C
		WB	Left	74.1	E	114.2	F	83.4	F	105.0	F
			Thru	28.3	C	27.8	C	42.2	D	41.2	D
			Right	13.2	B	13.1	B	104.3	F	99.3	F
		NB	Left	43.9	D	43.1	D	126.4	F	159.3	F
			Thru	37.5	D	38.4	D	47.6	D	51.4	D
			Right	71.9	E	111.3	F	31.7	C	34.0	C
		SB	Left	43.4	D	42.9	D	158.9	F	153.5	F
			Thru	31.5	C	34.6	C	44.4	D	47.2	D
			Right	24.6	C	25.9	C	24.8	C	24.8	C
		<b>Overall</b>				<b>39.4</b>	<b>D</b>	<b>47.0</b>	<b>D</b>	<b>65.5</b>	<b>E</b>
Latson Road & Grand Oaks Drive / Ascension Medical Drive	Signal	EB	Left	30.7	C	30.7	C	27.2	C	27.2	C
			Thru/Right	37.8	D	37.8	D	33.1	C	33.1	C
		WB	Left	37.9	D	37.9	D	37.1	D	37.1	D
			Thru/Right	28.8	C	28.8	C	24.3	C	24.3	C
		NB	Left	10.1	B	10.3	B	18.0	B	18.4	B
			Thru/Right	6.3	A	6.4	A	12.4	B	12.6	B
		SB	Left	10.4	B	10.4	B	16.2	B	16.4	B
			Thru/Right	14.9	B	15.1	B	24.8	C	25.2	C
<b>Overall</b>				<b>13.8</b>	<b>B</b>	<b>13.8</b>	<b>B</b>	<b>20.0</b>	<b>C</b>	<b>20.2</b>	<b>C</b>
Latson Road & Wal-Mart Drive	STOP (Minor)	EB	Left/Right	19.9	C	23.1	C	30.2	D	35.3	E
		NB	Left	11.4	B	12.3	B	13.1	B	13.9	B
			Thru	Free		Free		Free		Free	
SB	Thru/Right	Free		Free		Free		Free			
Latson Road & Lowes Drive / Site Drive	STOP (Minor)	EB	Left	18.4	C	316.2	F	65.1	F	4,441.6	F
			Thru/Right			13.2	B			18.0	C
		WB	Left			296.3	F			2,842.9	F
			Thru/Right			13.2	B			18.4	C
		NB	Left	11.3	B	11.2	B	15.0	B	14.8	B
			Thru	Free		Free		Free		Free	
		SB	Left			10.8	B			14.8	B
			Thru/Right	Free		Free		Free		Free	

The results of the build conditions analysis indicate that the proposed development will not have a significant impact on the adjacent road network. All approaches and movements at the signalized intersections will continue to operate in a manner similar to no-build conditions and LOS for all movements will remain unchanged with the exception of the WB left-turn movement and NB right-turn movements at the intersection of Grand River Avenue & Latson Road which will be reduced from a LOS E to LOS F during the AM peak hour.

Most approaches will continue to operate acceptably at a LOS D or better during both peak hours. The signalized intersection of Grand River Avenue & Latson Road will continue to worsen with the

addition of site-generated traffic if those movements operating at a LOS E or F are not improved under no-build conditions.

At the proposed site driveway under site access Alternative 1, all approaches and movements will operate acceptably with the exception of the STOP controlled site driveway and Lowes Driveway left-turn movements which will operate at a LOS F during both peak hours. Review of peak hour simulations also indicate future build traffic operations which are similar to no-build conditions. Acceptable traffic operations are continued to be observed during the AM peak hour with no significant vehicle queues. Long vehicle queues and cycle failures are continued to be observed at the intersection of Grand River Avenue & Latson Road during the PM peak hour with queues for the NB, WB, and SB left-turn movements and WB right-turn movement exceeding available storage length. Additionally, brief periods of long vehicle queues are observed for the STOP controlled Lowes and site driveway approaches during the PM peak hour.

Vehicle queue lengths were also calculated and evaluated with respect to the proposed site driveways. On Latson Road, the NB approach queue from the signalized intersection of Grand River Avenue & Latson Road is critical to ingress and egress operation from the proposed site driveway. The queue length calculations based on SimTraffic simulations indicate queues from the intersection of Grand River Avenue & Latson Road will not block the site driveway during the AM peak hour; however, the NB left-turn queue will block the site driveway for approximately five minutes of the PM peak hour.

## Build Improvements

In order to improve traffic operations in the build conditions, the mitigation measures previously identified under no-build conditions were investigated at the intersection of Grand River Avenue & Latson Road. Additionally, a traffic signal warrant analysis was investigated at the proposed site driveway / Lowes Driveway intersection with Latson Road to improve site egress operations. The *Michigan Manual on Uniform Traffic Control Devices (MMUTCD)* documents the standards, support, and guidance to determine whether installation of a traffic control signal is justified at a particular location. For this analysis, Warrant 1 – Eight Hour Vehicular Volume and Warrant 2 – Four Hour Vehicular volume were evaluated. Warrant 1 and 2 are intended for application at locations where (Condition A) there is a large volume of intersecting traffic, or (Condition B) traffic volumes on a major street are so heavy that traffic on a minor approach suffers excessive delay or conflict in entering the major street.

The MMTUCD provides an option to analyze reduced volume (70%) thresholds in cases where the speed on the major street exceeds 40 mph. As the speed limit on Latson Road is 50 mph, the 70% threshold volumes were utilized in the analysis. The future traffic forecast for this study includes traffic volumes for only two hours (AM and PM peak hours). In order to evaluate the 8-hour traffic signal warrant, hourly variations for trip generation of each of the proposed uses and existing Lowes / Wal-Mart uses published by ITE were referenced. These variation rates were applied to the PM peak hour forecasts to determine future site traffic volumes for 24-hours. Existing traffic volumes along Latson Road were determined from 24-hour count data collected in October, 2021.

For this analysis, the existing Wal-Mart Drive intersection to the north was assumed to be restricted to a right-in-right-out only driveway with all left-turns reassigned to the Lowes driveway. Currently, a pork chop island is constructed within the driveway suggesting that turns were intended to be prohibited; however, there is no existing signage to actually prohibit turns from occurring. Additionally, the MMUTCD states that right-turn traffic should not be included in the minor street volume if the movement enters the major street with minimal conflicts. If a signal were to be installed at the intersection, separate lanes for left and right-turns should be provided on both the Lowes and site driveway approaches. Therefore, a 45% reduction to right-turn volumes on these approaches was utilized in accordance with the MDOT signal warrants spreadsheet.

The traffic signal warrant analysis results show that a signal is warranted at the intersection of Latson Road & Lowes Drive / Site Drive, as Warrant 1A would be met for eleven (11) hours of the day. Therefore, an actuated-coordinated traffic signal could be installed at the intersection with vehicle detection provided for the minor road approaches and movements. Additionally, permissive-protected left-turn phase is recommended for the NB and SB left-turn movements at the intersection. The relevant signal warrant analysis spreadsheets are included in **Appendix D**.

With the installation of a traffic signal at the intersection, all traffic signals along Latson Road from Grand River Avenue through the I-96 interchange should run on a 90 second cycle length to provide progression along Latson Road between the closely spaced intersections. The results of the build conditions analysis with these improvements are summarized in **Table 9** below and indicate improved operations at the intersection of Grand River Avenue & Latson Road; however, several approaches and movements will continue to operate at a LOS E or F during the peak hours. As previously discussed, this intersection is considered to be built out, and additional physical capacity improvements (i.e., additional lanes) are constrained by available right-of-way. Therefore, further geometric improvements at the intersection to mitigate all movements to a LOS D or better are considered to be regional and beyond the scope and context of this study.

At the intersection of Latson Road & Lowes Drive / site driveway, the installation of a traffic signal would result in all approaches and movements operating at a LOS D or better during both peak hours. Review of network simulations also indicates acceptable traffic operations at all study intersections with the exception of the Grand River Avenue & Latson Road intersection where long vehicle queues are continued to be observed for the WB approach during portions of the PM peak hour. However, simulations indicate that traffic is able to progress through the traffic signals along Latson Road with no queue spillback between the closely spaced intersections.



**Table 9: Build Traffic Conditions with Improvements – ALT 1**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour					
				Build - ALT 1		Build IMP		Build - ALT 1		Build IMP			
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		
Latson Road & Grand River Avenue (I-96 BL)	Signal	EB	Left	43.5	D	43.5	D	44.8	D	48.3	D		
			Thru	32.4	C	33.9	C	41.9	D	52.6	D		
			Right	23.1	C	24.9	C	30.9	C	30.9	C		
		WB	Left	114.2	F	49.8	D	105.0	F	79.3	E		
			Thru	27.8	C	26.6	C	41.2	D	44.8	D		
			Right	13.1	B	13.1	B	99.3	F	85.0	F		
		NB	Left	43.1	D	51.1	D	159.3	F	81.9	F		
			Thru	38.4	D	42.5	D	51.4	D	63.5	E		
			Right	111.3	F	77.2	E	34.0	C	35.7	D		
		SB	Left	42.9	D	51.6	D	153.5	F	77.1	E		
			Thru	34.6	C	35.2	D	47.2	D	53.8	D		
			Right	25.9	C	26.2	C	24.8	C	25.9	C		
		<b>Overall</b>				<b>47.0</b>	<b>D</b>	<b>41.5</b>	<b>D</b>	<b>69.4</b>	<b>E</b>	<b>59.1</b>	<b>E</b>
Latson Road & Grand Oaks Drive / Ascension Medical Drive	Signal	EB	Left	30.7	C	34.8	C	27.2	C	32.4	C		
			Thru/Right	37.8	D	50.1	D	33.1	C	46.4	D		
		WB	Left	37.9	D	42.9	D	37.1	D	44.9	D		
			Thru/Right	28.8	C	32.6	C	24.3	C	28.9	C		
		NB	Left	10.3	B	7.1	A	18.4	B	9.3	A		
			Thru/Right	6.4	A	6.2	A	12.6	B	11.1	B		
		SB	Left	10.4	B	0.3	A	16.4	B	0.9	A		
			Thru/Right	15.1	B	1.6	A	25.2	C	4.0	A		
		<b>Overall</b>				<b>13.8</b>	<b>B</b>	<b>9.3</b>	<b>A</b>	<b>20.2</b>	<b>C</b>	<b>12.6</b>	<b>B</b>
		Latson Road & Lowes Drive / Site Drive	Signal	EB	Left	316.2	F	42.5	D	4,441.6	F	52.2	D
Thru/Right	13.2				B	34.9	C	18.0	C	51.0	D		
WB	Left			296.3	F	36.6	D	2,842.9	F	44.0	D		
	Thru/Right			13.2	B	39.5	D	18.4	C	46.6	D		
NB	Left			11.2	B	6.0	A	14.8	B	5.3	A		
	Thru			Free		1.0	A	Free		2.1	A		
SB	Left			10.8	B	6.1	A	14.8	B	5.1	A		
	Thru/Right			Free		1.5	A	Free		2.0	A		
<b>Overall</b>						<b>5.7</b>	<b>A</b>			<b>6.9</b>	<b>A</b>		

### Build Conditions – Alternative 2

Future build peak hour vehicle delays and LOS with the proposed development were calculated based on existing lane configurations and traffic control shown on **Figure 5**, build traffic volumes shown on **Figure 11**, and HCM methodologies. SimTraffic simulations were also utilized to evaluate traffic flow and vehicle queues throughout the study network. As traffic volumes would remain the same at the off-site intersections under both site access alternatives, this section only summarizes results at the proposed site driveways along Latson Road. The build conditions results for site access Alternative 2 are included in **Appendix E** and summarized in **Table 10**.

The results of the build conditions analysis for site access Alternative 2 indicate that the STOP controlled left-turn movements from the Lowes Driveway and S. site driveway would continue to

operate at a LOS F during the peak hours; however, the proposed right-in-right-out only driveway would help to reduce vehicular delays and queues. Additionally, although the results of Alternative 1 demonstrate acceptable traffic operations with the installation of a traffic signal at the Lowes Driveway / S. site driveway intersection with Latson road, another closely spaced traffic signal along Latson Road may result in increased crashes along the corridor. The addition of a right-in-right-out only driveway would have minimal impact to traffic operations and safety along the corridor if designed and signed properly and would provide a remedial measure prior to installing a new traffic signal along the corridor. Therefore, site access Alternative 2 is recommended for the development.

**Table 10: Build Traffic Conditions – ALT 2**

Intersection	Control	Approach	Movement	AM Peak Hour				PM Peak Hour			
				Build - ALT 1		Build - ALT 2		Build - ALT 1		Build - ALT 2	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<b>Latson Road &amp; Wal-Mart Drive / RIRO Site Drive</b>	STOP (Minor)	EB	Left/Right	23.1	C	27.9	D	35.3	E	48.1	E
		WB	Right			13.4	B			19.6	C
		NB	Left	12.3	B	12.3	B	13.9	B	13.9	B
			Thru	Free		Free		Free		Free	
SB	Thru/Right	Free		Free		Free		Free			
<b>Latson Road &amp; Lowes Drive / Site Drive</b>	STOP (Minor)	EB	Left	316.2	F	265.3	F	4,441.6	F	3,752.1	F
			Thru/Right	13.2	B	13.2	B	18.0	C	18.0	C
		WB	Left	296.3	F	296.3	F	2,842.9	F	2,842.9	F
			Thru/Right	13.2	B	12.6	B	18.4	C	16.3	C
		NB	Left	11.2	B	11.2	B	14.8	B	14.8	B
			Thru	Free		Free		Free		Free	
		SB	Left	10.8	B	10.8	B	14.8	B	14.8	B
			Thru/Right	Free		Free		Free		Free	

## Conclusions

The Conclusions related to this Traffic Impact Study and relative analyses are as follows:

1. Existing weekday AM (7:00 to 9:00) and PM (4:00 to 6:00) peak hour turning movement counts were collected by CED at the study intersections. At the signalized intersections of Latson Road with Grand River Avenue and Grand Oaks Drive, counts were collected on Wednesday, November 13<sup>th</sup>, 2019. At the unsignalized Lowes and Wal-Mart driveways with Latson Road, counts were collected on Thursday, August 10<sup>th</sup>, 2023.
2. All study intersection approaches and movements currently operate acceptably at a LOS D or better during both peak hours with the exception of the following:
  - a. The NB right-turn movement at the signalized intersection of Grand River Avenue & Latson Road currently operates at a LOS E during the AM peak hour. During the PM peak hour, the NB left-turn movement operates at a LOS E while the WB left, and right-turn movement and SB left-turn movement operate at a LOS F.
  - b. The STOP controlled Lowes Drive approach which currently operates at a LOS E during the PM peak hour.

3. Ambient traffic growth of 0.75% was applied to establish 2025 no-build traffic volumes without the proposed development. Several background developments were also identified in the study area and included in this study.
4. No-build conditions analyses indicate that several movements at the intersection of Grand River Avenue & Latson Road will experience degraded operations.
5. Future build conditions analyses indicate that most study intersection approaches and movements will continue to operate acceptably; however, there are several movements with undesirable or failing conditions at the intersection of Grand River Avenue & Latson Road that are expected to worsen in the future if those movements operating at a LOS E or F are not improved under no-build conditions.
6. Under site access Alternative 1, a traffic signal is warranted at the intersection of Latson Road & Lowes Drive / Site Drive and would operate acceptably during the peak hours.
7. Under site access Alternative 2, the addition of a right-in-right-out only driveway would help to alleviate vehicular delays at the intersection of Latson Road & Lowes Drive / Site Drive and would provide a remedial measure prior to installing another traffic signal along Latson Road. Therefore, site access Alternative 2 is recommended.
8. With the improvements outlined below, all study network intersections and site driveways will operate acceptably, or in a manner similar or improved compared to no-build conditions during the peak hours.

Based on the results of this study, the following should be considered to provide acceptable traffic operations with the proposed development project:

1. Optimize signal timings at the intersection of Grand River Avenue & Latson Road.
2. Construct two driveways to Latson Road with the S. site driveway aligned with the existing Lowes driveway and the N. site driveway restricted to right-in-right-out only.





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*Civil/Site • Traffic/Transportation • Governmental • Survey/Geospatial  
Infrastructure • Geotechnical/Environmental • Telecommunications • Utilities/Energy*



**PROPERTY DESCRIPTION:**

PROPERTY DESCRIPTION PER KEM-TEC PROJECT  
 #21-03542 DATE 11-24-21 PARCEL  
 #4711-09-100-004

LAND SITUATED IN THE TOWNSHIP OF GENOA, COUNTY OF LIVINGSTON IN THE STATE OF MICHIGAN AND IS DESCRIBED AS FOLLOWS:

A PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 9, TOWN 2 NORTH, RANGE 5 EAST, MICHIGAN, DESCRIBED AS: BEGINNING 6.32 FEET SOUTH OF THE NORTHWEST CORNER OF THE NORTHWEST 1/4, THENCE EAST 223.00 FEET, THENCE NORTH 97.67 FEET, THENCE WEST 223.00 FEET, THENCE SOUTH 97.67 FEET TO THE POINT OF BEGINNING.

PROPERTY DESCRIPTION PER METRO CONSULTING ASSOCIATES PROJECT #1037-17-8480 DATED 01-19-18 PARCEL #4711-04-300-017

Commencing at the Southwest Corner of Section 9, Town 2 North, Range 5 East, Genoa Township, Livingston County, Michigan, said corner being NO 1°46'11" W 19.43 feet from a point referenced in Quit Claim Deed dated January 29, 1957, recorded April 4, 1961 in Liber 391, Page 382, Livingston County Records; thence N0°07'25" E 125.00 feet along the North line of said Section 9 and the South line of said Section 4, as established and approved by the Livingston County Reclamation Peer Group, dated June 6, 2002 and recorded in LSC# 171.0m, Livingston County Records to the POINT OF BEGINNING; thence S 59°36'15" E 150.45 feet along the arc of a 10,060.00 foot radius non-tangent circular curve to the left, having a central angle of 100°54'27" having a chord which bears N00°15'46" W 159.36 feet along the East line of MDOT Right-of-Way as recorded in Instrument # 2011R-023812, Livingston County Records; thence N69°33'52" E 150.45 feet along the South line of Parcel 3 as described in a Warranty Deed recorded June 6, 2016, in Instrument # 2016R-019204 and the North line of the Consumers Power Company land per Warranty Deed recorded in 539, Page 13, Livingston County Records; thence S 01°19'25" E 125.00 feet along said Consumers Power Company land and parallel with the West line of said Section 4; thence the following four (4) courses along the North, East and South line of a Quit-Claim Deed to Consumers Power Company, recorded in Liber 391, Page 382, Livingston County Records: (1) N69°33'52" E 12.94 feet (recorded as 13.00 feet), (2) S 01°14'18" E 30.63 feet to the South line of said Section 4, (3) S 01°46'21" E 557.91 feet and (4) S 68°33'38" E 177.83 feet along the North line of the South 97.67 feet as stated in Warranty Deed recorded in Liber 232, Page 199, Livingston County Records; thence NO 1°46'11" W 61.11 feet along the West line of said Section 9 and within the Right-of-Way of Latson Road (Variable width); thence S 02°52'35" E 33.10 feet along the South line of MDOT Right-of-Way as recorded in Instrument # 2011R-023812; thence the following two (2) courses along said Right-of-Way: (1) NO 1°07'25" E 333.02 feet and (2) 163.72 feet along the arc of a 10,060.00 foot radius circular curve to the left, with a central angle of 00°55'57", having a chord which bears N00°59'26" E 163.71 feet to the POINT OF BEGINNING. Containing 2.09 acres of land, more or less. Being part of the SW 1/4 of the SW 1/4 of Section 4 and part of the NW 1/4 of Section 5, Town 2 North, Range 5 East, Genoa Township, Livingston County, Michigan. Subject to the right of the Public over the West 33.00 feet thereof, as occupied by Latson Road (Variable Width), being subject to any other Easement and restrictions of record, if any.

**RESULTANT PARCEL**

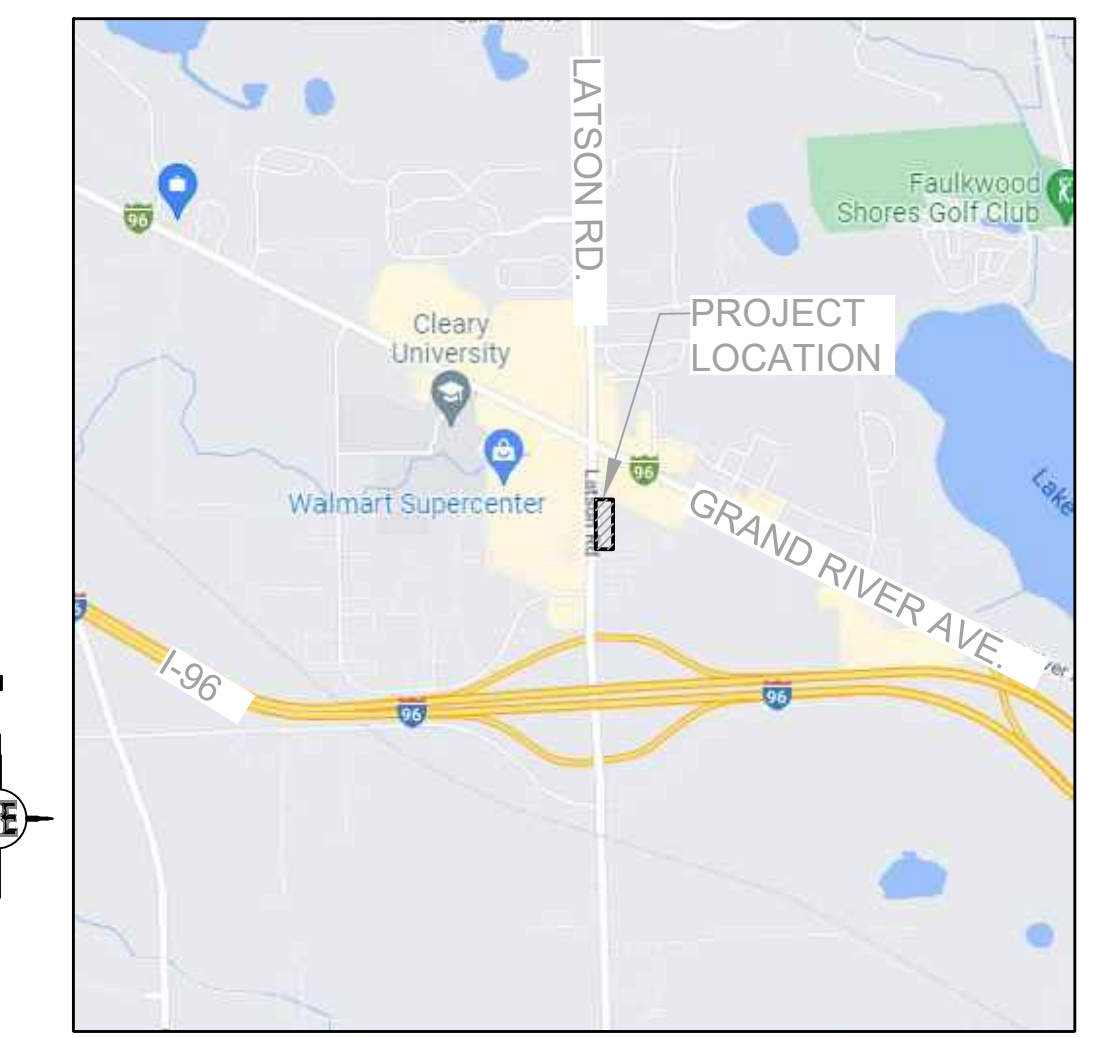
**PROPOSED PARCEL 2 (SOUTH):**  
 Part of the Northwest 1/4 of Section 9, T2N-R5E, Genoa Township, Livingston County, Michigan, more particularly described as follows: Commencing at the Northwest Corner of Section 9, also being the Southwest 1/4 of Section 4, said corner being North 01 degree 46 minutes 11 seconds West, 19.43 feet from a point referenced in Quit Claim Deed, dated January 29, 1957, recorded April 4, 1961 in Liber 391, Page 382, Livingston County Records; thence along the North line of Section 9 and the South line of Section 4, N 87°18'40" E, 56.81 feet; thence along the East line of MDOT Right-of-Way for Latson Road, as recorded in Instrument #2011R-023812, Livingston County Records, the following two (2) courses: 1) Southerly along an arc left, having a length of 163.71 feet, a radius of 10,091.50 feet, a central angle of 00°55'46", and a long chord which bears S 00°39'23" W, 163.71 feet; thence S 01°07'25" W, 68.33 feet, to the POINT OF BEGINNING of the Parcel to be described; thence N 88°33'38" E, 177.83 feet; thence S 01°46'21" E, 297.42 feet; thence S 01°46'11" E, 97.67 feet; thence S 88°08'19" W, 223.00 feet; thence along the West line of said Section 9 and within the Right-of-Way of Latson Road (Variable Width Right of Way), N 01°46'11" W, 158.78 feet; thence along the South line of MDOT Right-of-Way for Latson Road, as recorded in Instrument #2011R-023812, Livingston County Records, S 88°52'35" E, 33.10 feet; thence along the East line of MDOT Right-of-Way for Latson Road, as recorded in Instrument #2011R-023812, Livingston County Records, the following two (2) courses: 1) N 01°07'25" E, 239.66 feet, to the POINT OF BEGINNING, containing 1.81 acres, more or less, and subject to the rights of the public over the existing Latson Road. Also subject to any other easements or restrictions of record.

Bearings are based on Michigan State Plane Coordinate System, South Zone and legal description per Chicago Title Insurance Company, File No.: 21040145-C, Policy No.: 7430600-224063016, dated 6-4-21.

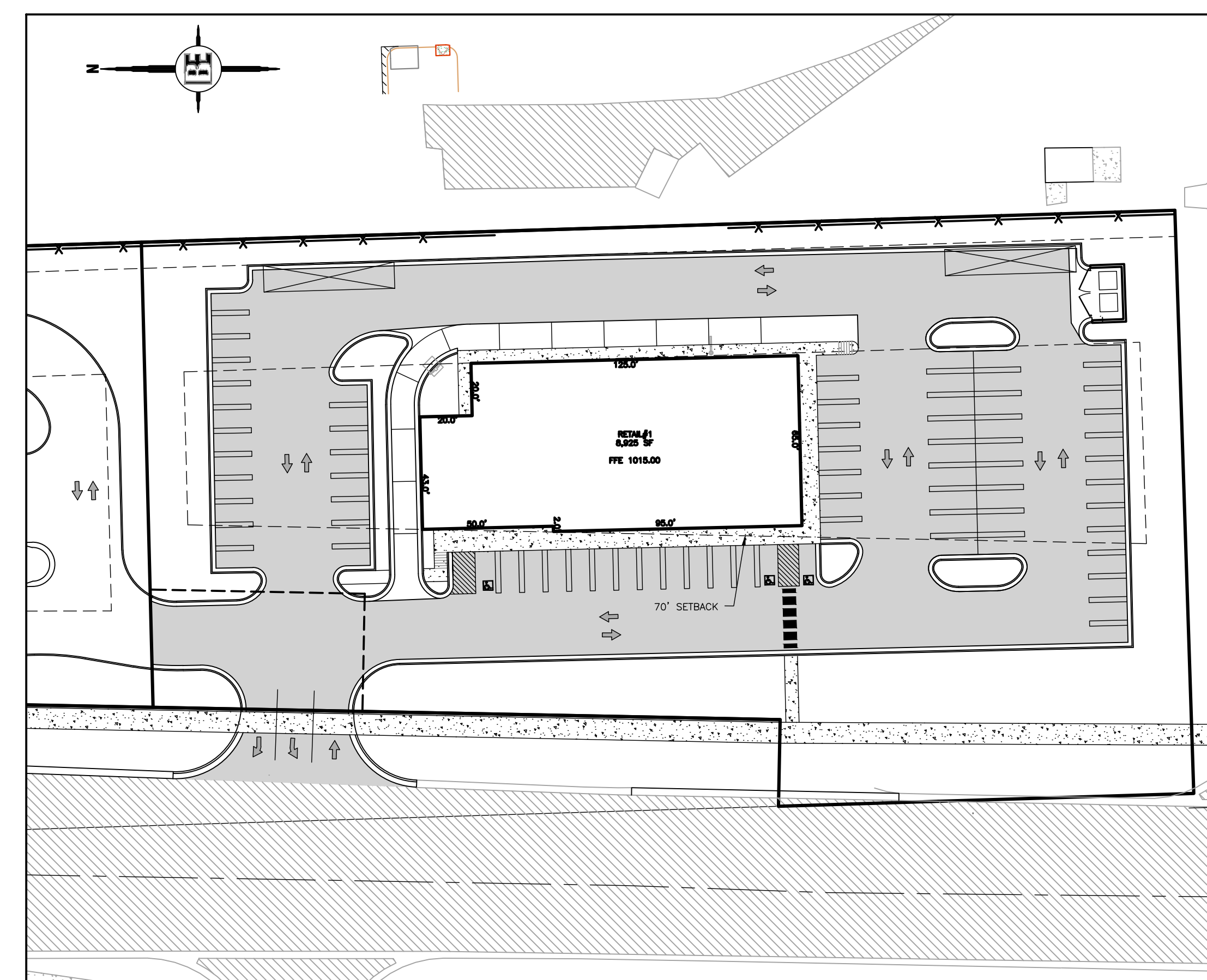
**SITE PLAN FOR**

**SOUTH LATSON COMMERCIAL DEVELOPMENT**

**PART OF NW QUARTER, SECTION 4 & 9  
 GENOA CHARTER TOWNSHIP, LIVINGSTON COUNTY, MI**



**LOCATION MAP**  
 NO SCALE



**OVERALL SITE MAP**  
 NO SCALE

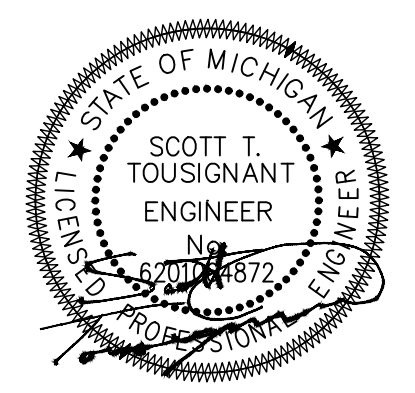
SHEET INDEX	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES & LEGEND
3	EXISTING CONDITIONS, DEMO & NATURAL FEATURES PLAN
4	OVERALL SITE PLAN
5	SITE PLAN
6	GRADING & DRAINAGE PLAN
7	SOIL EROSION & SEDIMENTATION CONTROL PLAN
8	UTILITY PLAN
9	LANDSCAPE PLAN
10	CONSTRUCTION DETAILS
11	BASIN DETAILS
12	UNDERGROUND DETENTION DETAILS
13-16	MHOG DETAILS
PLANS BY OTHERS	
1	PHOTOMETRIC PLAN
A.100	FLOOR PLAN
A.200	BUILDING ELEVATION
A.300	BUILDING RENDERING

PERMITS & APPROVALS		
AGENCY	DATE SUBMITTED	DATE APPROVED
• TOWNSHIP ENGINEERING APPROVAL	-	-
• LCRC	-	-
• LCDC SESC	-	-
• EGLE - ACT 399	-	-

**LIGHTING PREPARED BY:**  
 GASSER BUSH ASSOCIATES  
 30984 INDUSTRIAL RD  
 LIVONIA, MI 48150  
 QUOTES@GASSERBUSH.COM  
 PHONE: 734-266-6705

**OWNER:**  
 1015 LATSON ROAD LLC  
 29592 BECK RD  
 WIXOM, MI 48393  
**CONTACT: KEVIN BAHNAM**  
 PHONE: 248.767.5337  
 EMAIL: KBAHNAM@USA2GOQUICKSTORES.COM

**PREPARED BY:**  
**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670  
**CONTACT: SCOTT TOUSIGNANT, P.E.**  
 EMAIL: SCOTT@BOSSENG.COM



**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.

FOR SITE PLAN APPROVAL ONLY!  
 NOT FOR CONSTRUCTION

NO	BY	CK	REVISION	DATE	JOB NO:
3	ST	ST	LAYOUT MODIFICATIONS	01-16-24	21-519
2	ST	ST	PER P.C. MEETING	12-11-23	
1	ST	ST	PER TOWNSHIP COMMENTS	10-25-23	
ISSUE DATE: 10/04/23					<b>1</b>



## GENERAL NOTES

- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED TOWNSHIP, COUNTY, AND STATE OF MICHIGAN PERMITS.
- A GRADING PERMIT FOR SOIL EROSION-SEDIMENTATION CONTROL SHALL BE OBTAINED FROM THE GOVERNING AGENCY PRIOR TO THE START OF CONSTRUCTION.
- IF DUST PROBLEM OCCURS DURING CONSTRUCTION, CONTROL WILL BE PROVIDED BY AN APPLICATION OF WATER, EITHER BY SPRINKLER OR TANK TRUCK.
- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS AND SPECIFICATIONS.
- PAVED SURFACES, WALKWAYS, SIGNS, LIGHTING AND OTHER STRUCTURES SHALL BE MAINTAINED IN A SAFE, ATTRACTIVE CONDITION AS ORIGINALLY DESIGNED AND CONSTRUCTED.
- 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.
- 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.
- THE CONTRACTOR SHALL CONTACT ALL OWNERS OF EASEMENTS, UTILITIES AND RIGHT-OF-WAY, PUBLIC OR PRIVATE, PRIOR TO THE START OF CONSTRUCTION.
- 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.
- THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE UPON COMPLETION OF THE PROJECT.
- 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.
- THE CONTRACTOR SHALL KEEP THE AREA OUTSIDE THE "CONSTRUCTION LIMITS" BROOM CLEAN AT ALL TIMES.
- THE CONTRACTOR SHALL CALL MISS DIG A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
- 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.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
- 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.
- DURING THE CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL NOT PERFORM WORK BY PRIVATE AGREEMENT WITH PROPERTY OWNERS ADJACENT TO THE PROJECT.
- 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.
- NO TREES ARE TO BE REMOVED UNTIL MARKED IN THE FIELD BY THE ENGINEER.
- 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.
- 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.
- 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.
- ANY EXISTING APPURTENANCES SUCH AS MANHOLES, GATE VALVES, ETC. SHALL BE ADJUSTED TO THE PROPOSED GRADE AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- PRIOR TO THE START OF CONSTRUCTION, PROTECTION FENCING SHALL BE ERRECTED AROUND THE TREE DRIPLINE OF ANY TREES INDICATED TO BE SAVED WITHIN THE LIMITS OF DISTURBANCE.
- 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.
- SOIL BORING LOGS ARE REPRESENTATIVE OF SPECIFIC POINTS ON THE PROJECT SITE, AND IF PROVIDED TO THE CONTRACTOR ARE FOR INFORMATIONAL PURPOSES ONLY.
- 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

- 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.
- 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.
- AT THE CLOSE OF EACH DAY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING ALL CONSTRUCTION OPERATIONS, MATERIALS, DEBRIS, ETC ARE CONTAINED ON-SITE.
- AT THE CLOSE OF EACH WORKING DAY, ALL DRAINAGE STRUCTURES SHALL BE FREE OF DIRT AND DEBRIS AT THE FLOW LINE.
- 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.
- 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.
- 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.
- AFTER REMOVAL OF TOPSOIL, THE SUBGRADE SHALL BE COMPACTED TO 95% OF ITS UNIT WEIGHT.
- 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.
- 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.
- 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

- ALL PLANT MATERIAL SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF THE GOVERNING MUNICIPALITY. ALL STOCK SHALL BE NURSERY GROWN, CONFORMING TO ANSI 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, & DEFECTS SUCH AS KNOTS, SUN-SCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT. ALL PLANT MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT.
- 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.
- ALL PLANT BED MATERIALS SHALL BE EXCAVATED OF ALL BUILDING MATERIALS, OTHER EXTRANEIOUS OBJECTS, AND POOR SOILS TO A MINIMUM DEPTH OF 12-INCHES AND BACKFILLED TO GRADE WITH SPECIFIED PLANTING MIX (SEE BELOW).
- 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.
- 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.
- 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.
- 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.
- ALL PLANTS AND PLANT BEDS SHALL BE THOROUGHLY WATERED UPON COMPLETION OF PLANTING AND STAKING OPERATIONS.
- THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR A PERIOD OF 1 YEAR 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.
- 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.
- 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.

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 - ADLPHI, 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.

ALL AREAS OF THE SITE SCHEDULED FOR SEEDING OR SODDING SHALL FIRST RECEIVE A 4-INCH LAYER OF CLEAN, FRIABLE TOPSOIL. THE SOIL SHALL BE DISCED AND SHALL BE GRADED IN CONFORMANCE WITH THE GRADING PLAN.

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.

## GENERAL UTILITY NOTES

- BEDDING SHALL EXTEND A MINIMUM OF 4" BELOW THE PIPE, UNLESS OTHERWISE NOTED ON THE PLANS. BEDDING SHALL BE OF UNIFORM GRADATION MDOOT 6AA STONE OR MDOOT CLASS II GRANULAR MATERIAL FOR SANITARY AND STORM PIPE AND MDOOT CLASS II GRANULAR MATERIAL ONLY FOR WATERMAIN.
- WHERE UNSTABLE GROUND CONDITIONS ARE ENCOUNTERED, STONE BEDDING SHALL BE USED AS DIRECTED BY THE ENGINEER.
- BACKFILL SHALL BE OF A SUITABLE MATERIAL AND SHALL BE FREE OF ANY ORGANIC MATERIALS AND ROCKS.
- BACKFILL ABOVE THE PIPE SHALL BE OF GRANULAR MATERIAL MDOOT CLASS II TO A POINT 12" ABOVE THE TOP OF THE PIPE. WHERE THE TRENCH IS NOT WITHIN THE INFLUENCE OF THE ROAD, SUITABLE SITE MATERIAL MAY BE COMPACTED AND UTILIZED FROM A POINT 12" ABOVE THE PIPE TO GRADE. WHERE THE TRENCH IS WITHIN A 1:1 INFLUENCE OF THE ROAD, GRANULAR MATERIAL, MDOOT CLASS II OR III, IS TO BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 12" IN THICKNESS. COMPACTION SHALL BE 95% AS DETERMINED BY AASHTO 199.
- 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

- 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.
- STORM PIPE MATERIALS SHALL BE AS FOLLOWS:
  - RCP(REINFORCED CONCRETE PIPE); SHALL MEET THE REQUIREMENTS OF ASTM C76 WITH MODIFIED GROOVED TONGUE AND RUBBER GASKETS MEETING THE REQUIREMENTS OF ASTM C443. RCP TO BE EITHER CLASS IV OR V AS CALLED OUT ON THE PLANS.
  - HDPE(HIGH DENSITY POLYETHYLENE); SHALL MEET THE REQUIREMENTS OF ASTM F2648.
  - PP(POLYPROPYLENE); SHALL MEET THE REQUIREMENTS OF ASTM F2881.
  - PVC(POLYVINYL CHLORIDE); SHALL MEET THE REQUIREMENTS OF ASTM D3034.
- STORM PIPE JOINTS SHALL MEET THE REQUIREMENTS OF ASTM D3212. HDPE AND PP PIPE GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F477.
- ALL STORM PIPE TO HAVE WATERTIGHT PREMIUM JOINTS, UNLESS OTHERWISE NOTED ON THE PLANS.
- 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.
- ALL FLARED END SECTIONS 15" AND LARGER SHALL BE FURNISHED WITH AN ANIMAL GRADE.
- 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.
- ALL CATCH BASINS WITHIN THE ROADWAY SHALL INCLUDE INSTALLATION OF 6" DIAMETER PERFORATED PIPE SUBDRAIN.
- STORM DRAINAGE STRUCTURE COVERS SHALL BE OF THE FOLLOWING (OR APPROVED EQUAL):
 

TYPE	LOCATION	FRAME	COVER/INLET
'MH'	ALL	1040	SANITARY-SOLID SELF-SEALING STORM-VENTED
'CB'	TYPE A CURB	7000-T1-M	FLAT GRATE WITH VERT. OPEN BACK
'CB'	TYPE B CURB	7065-T1-M	FLAT GRATE WITH ROLL BACK
'CB'	PAVEMENT/SHOULDER	1020-M1	FLAT GRATE
'CB'	OPEN AREA	1020-01	BEEHIVE GRATE 4" HIGH
'CB'	GUTTER	S100	CONCAVE INLET

## GENERAL SANITARY NOTES

- ALL SANITARY PIPE LENGTHS ARE SHOWN FROM C/L OF STRUCTURE TO C/L OF STRUCTURE.
- SANITARY PIPE MATERIALS SHALL BE AS FOLLOWS:
  - PVC SDR-26 (SANITARY MAIN)
  - PVC SDR-23.5 (SANITARY LEADS)
  - HDPE DR-11 (SANITARY FORCEMAIN)
- ALL PVC SDR SANITARY SEWER PIPE SHALL MEET THE REQUIREMENTS OF ASTM D3034 AND D2241. PVC SCHED 40 PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785. GASKET JOINTS FOR SANITARY PIPE SHALL MEET THE REQUIREMENTS OF ASTM D3139 AND D3212.
- 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.
- 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 C990.
- MANHOLES SHALL BE CONSTRUCTED WITH FLOW CHANNEL WALLS THAT ARE FORMER, AT A MINIMUM, TO THE SPRINGLINE OF THE PIPE.
- ALL MANHOLES SHALL HAVE AN APPROVED FLEXIBLE, WATERTIGHT SEALS WHERE PIPES PASS THROUGH MANHOLE WALLS.
- WHEREVER AN EXISTING MANHOLE IS TO BE TAPPED, THE STRUCTURE SHALL BE CORED AND A KOR-N-SEAL BOOT UTILIZED FOR THE PIPE CONNECTION.
- ALL MANHOLES SHALL BE PROVIDED WITH WATERTIGHT COVERS. COVERS TO BE EUJO 1040 TYPE 'A' SOLID COVER.
- A MAXIMUM OF 12" OF GRADE ADJUSTMENT RINGS SHALL BE USED TO ADJUST THE FRAME ELEVATION. BUTYL ROPE SHALL BE USED BETWEEN EACH ADJUSTMENT RING.
- SANITARY SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 1.0%.
- CLEANOUTS SHALL BE INSTALLED EVERY 100', AT ALL BENDS AND STUBS.
- PUBLIC SANITARY SEWER SHALL BE CENTERED WITHIN A 20 FOOT WIDE SANITARY SEWER EASEMENT.

## GENERAL WATERMAIN NOTES

- WATERMAIN PIPE MATERIALS SHALL BE AS FOLLOWS:
  - D.I.P. CL52 (WATERMAIN)
  - TYPE 'K' COPPER (WATER LATERAL - MAIN TO CURB STOP)
  - HDPE DR-9 (WATER LATERAL - CURB STOP TO STUB)
- WATERMAIN FITTINGS SHALL BE OF DUCTILE IRON WITH CEMENT MORTAR LINING AND MECHANICAL JOINTS CONFORMING TO AWWA C110.
- WATERMANS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. BAC-T 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.
- ALLOWABLE LEAKAGE OR HYDROSTATIC PRESSURE TESTING SHALL BE IN ACCORDANCE WITH AWWA C600 AND C605.
- MAXIMUM DEFLECTION AT PIPE JOINTS SHALL BE IN ACCORDANCE WITH PIPE MANUFACTURERS CURRENT RECOMMENDATIONS AND AWWA SPECIFICATIONS.
- A FULL STOCK OF PIPE SHALL BE LAID CENTERED AT A PIPE CROSSING IN ORDER TO MAINTAIN THE MAXIMUM SEPARATION OF WATERMAIN JOINT TO THE CROSSING PIPE.
- WATERMAIN SHALL BE INSTALLED WITH A MINIMUM OF 5.5' OF COVER FROM FINISHED GRADE TO TOP OF PIPE AND NO MORE THAN 8' OF COVER, UNLESS SPECIAL CONDITIONS WARRANT.
- WATERMAIN VALVES SHALL BE IRON BODY RESILIENT WEDGE GATE VALVES, NON-RISING STEMS, COUNTERCLOCKWISE OPEN, AWWA C509.
- FIRE HYDRANTS SHALL BE INSTALLED WITH AN AUXILIARY VALVE WITH CAST IRON VALVE BOX. THE HYDRANT PUMPER HOSE CONNECTION SHALL FACE THE ROADWAY.
- THE BREAKAWAY FLANGE AND ALL BELOW GRADE FITTINGS SHALL HAVE STAINLESS STEEL NUTS AND BOLTS.
- PUBLIC WATERMAIN SHALL BE CENTERED WITHIN A 25 FOOT WIDE WATERMAIN EASEMENT.

## LINES & HATCHES LEGEND

PROPOSED (PR)	EXISTING (EX)	CONTOUR
900	900	SPOT ELEVATION
1000	1000	SANITARY SEWER
1200	1200	SANITARY LEAD
1400	1400	FORCE MAIN
1600	1600	PRESSURE SEWER
1800	1800	STORM SEWER
2000	2000	WATER MAIN
2200	2200	WATER LEAD
2400	2400	FIBER OPTIC
2600	2600	OVERHEAD WIRE
2800	2800	CABLE
3000	3000	ELECTRIC
3200	3200	GAS
3400	3400	TELEPHONE
3600	3600	FENCE
3800	3800	SILT FENCE
4000	4000	WETLAND BOUNDARY
4200	4200	LIMITS OF GRADING/CLEARING
4400	4400	LIMITS OF DRAINAGE
4600	4600	MODIFIED CURB

	CONCRETE
	HIGH STRENGTH CONCRETE
	ASPHALT
	HIGH STRENGTH ASPHALT
	WETLAND
	SANITARY SEWER LABEL
	STORM SEWER LABEL
	WATER MAIN LABEL
	SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)

## LIGHTING LEGEND

PROPOSED (PR)	EXISTING (EX)

## LANDSCAPE LEGEND

	EXISTING CONIFER TREE		EXISTING DECIDUOUS TREE
	PROPOSED CONIFER TREE		PROPOSED DECIDUOUS TREE
	PROPOSED TREE PROTECTION		PROPOSED ORNAMENTAL TREE
	PROPOSED SOD		PROPOSED DECIDUOUS SHRUBS
	PROPOSED SEED		PROPOSED GRASSES & PERENNIALS
	PROPOSED MULCH		PROPOSED LANDSCAPE BOULDER

## SYMBOL LEGEND

	STORM DRAINAGE FLOW
	GUY WIRE
	POWER POLE
	TRANSFORMER PAD
	ELECTRICAL RISER
	U.G. ELECTRIC MARKER
	ELECTRICAL METER
	AIR CONDITIONING UNIT
	TELEPHONE RISER
	U.G. TELEPHONE MARKER
	GAS RISER
	GAS METER
	U.G. GAS MARKER
	CABLE TV RISER
	U.G. CABLE TV MARKER
	MAILBOX
	WELL
	WATER MANHOLE
	GATE VALVE (EXISTING)
	GATE VALVE (PROPOSED)
	HYDRANT (EXISTING)
	HYDRANT (PROPOSED)
	CATCH BASIN (EXISTING)
	YARD CATCH BASIN (EXISTING)
	CATCH BASIN (PROPOSED)
	STORM MANHOLE (EXISTING)
	STORM MANHOLE (PROPOSED)
	END SECTION (EXISTING)
	END SECTION (PROPOSED)
	SANITARY MANHOLE (EXISTING)
	SANITARY MANHOLE (PROPOSED)
	PUMP CHAMBER
	TRAFFIC SIGN
	SIGN (EXISTING)
	SIGN (PROPOSED)
	SOIL BORING
	STEEL ROD SET
	STEEL ROD OR PIPE FOUND
	WOOD LATH SET
	HUB SET
	MONUMENT FOUND
	SECTION CORNER
	GAS PUMP
	ANTENNA
	SATELLITE DISH
	NEWSPAPER BOX
	PARKING METER
	PHONE BOOTH
	HANDICAP SYMBOL
	BENCHMARK
	LIGHT POLE

## 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	ROAD
FES	FLARED END SECTION
CMP	CORRUGATED METAL PIPE
CPP	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
TR	TO BE REMOVED
L	LIBER
P	PAGE
L.C.R.	LIVINGSTON COUNTY RECORDS



SANITARY SEWER INVENTORY:		STORM SEWER INVENTORY:		STORM SEWER INVENTORY:	
RM=1009.24 INV. N=1002.04 (8") INV. S=1002.14 (8")	LT28 RIM=1009.05 M INV. S=1003.27 R (15")	LT21 RIM=1011.78 M INV. S=1001.10 R (24") INV. N=1001.10 R (24")	LT22 RIM=1010.55 M INV. S=1001.55 R (24") INV. N=1001.65 R (18") INV. E=1006.78 R (12")	LT19 RIM=1012.86 M INV. S=1000.70 R (24") INV. E=1008.00 R (12")	LT19A RIM=1013.18 R INV. S=1000.70 R (24") INV. E=1008.00 R (12")
RM=1011.15 INV. N=1004.05 (8") INV. S=1004.15 (8")	LT24 RIM=1009.36 M INV. S=1002.76 R (18") INV. N=1002.85 R (15") INV. E=1006.00 R (12")	LT21A RIM=1011.61 M INV. S=1001.90 R (12") INV. N=1001.90 R (12")	LT22A RIM=1010.48 M INV. S=1001.85 R (12") INV. N=1007.10 R (12") INV. E=1007.20 R (12")	LT19B RIM=1012.62 M INV. S=1001.94 R (12") INV. W=1009.00 R (12")	LT19B RIM=1013.17 M INV. S=1000.00 R (30") INV. N=1000.50 R (24") INV. E=1008.50 R (12")
RM=1012.06 INV. N=1005.11 (8") INV. S=1005.16 (8")	LT24A RIM=1009.12 M INV. S=1009.51 R (12") INV. W=1006.50 (12")	LT20 RIM=1012.23 M INV. S=1002.25 R (24") INV. N=1003.30 R (24") INV. E=1007.00 R (12")	LT22B RIM=1010.40 M INV. S=1007.30 R (12") INV. N=1007.40 R (12")	LT19C RIM=1013.07 M INV. S=1001.30 R (12") INV. W=1009.50 R (12")	
RM=1013.91 INV. N=1006.81 (8") INV. S=1006.91 (8") INV. E=1008.91 (8")	LT24B RIM=1009.64 M INV. S=1007.00 R (12") INV. N=1008.00 R (12")	LT20A RIM=1011.93 M INV. S=1002.25 R (24") INV. N=1003.30 R (24") INV. E=1007.00 R (12")			

**GENERAL SURVEY NOTES:**

- BEARINGS WERE ESTABLISHED FROM METRO CONSULTING ASSOCIATES, JOB NO. SG-19193, DATED 01/19/2018.
- SUBSURFACE UTILITIES NOT LOCATED FOR THIS SURVEY MAY EXIST. IT IS THE RESPONSIBILITY OF THE OWNER OF THE RESPECTIVE UTILITY TO ACCURATELY LOCATE SUCH UTILITIES.
- EASEMENTS OR RESTRICTIONS OF RECORD NOT DEPICTED ON THIS DRAWING MAY EXIST.
- ELEVATIONS WERE ESTABLISHED WITH GPS USING OPUS GPS POST-PROCESSING. (NAVD83 DATUM)
- CONTOURS ARE SHOWN AT 1 FOOT INTERVALS.
- THE LOCATIONS OF STORM SEWER, SANITARY SEWER & WATERMAIN, AS SHOWN ON THIS DRAWING ARE APPROXIMATE. THE LOCATIONS ARE BASED ON PHYSICAL FIELD LOCATIONS OF STRUCTURES ALONG WITH DRAWINGS SUPPLIED BY MDOT AND MHOC.
- ALL WORK SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY, THE COUNTY, AND THE STATE OF MICHIGAN.
- ALLOW THREE WORKING DAYS BEFORE YOU DIG, CALL MISS DIG TOLL FREE 1-800-482-7171.
- THERE WAS SNOW ON THE GROUND AT THE TIME OF FIELDWORK FOR THIS SURVEY.

**SOIL NOTES:**

THE PROJECT SITE IS COMPRISED OF THE FOLLOWING SOIL TYPE ACCORDING TO THE USDA NATURAL RESOURCES CONSERVATION SERVICE:  
 Cvaob -- CONOVER LOAM, 0 TO 4 % SLOPES  
 MoB -- MIAMI LOAM, 2 TO 6 % SLOPES  
 Wh -- WASHTENAW SILT LOAM

**SITE BENCHMARKS (NAVD83):**

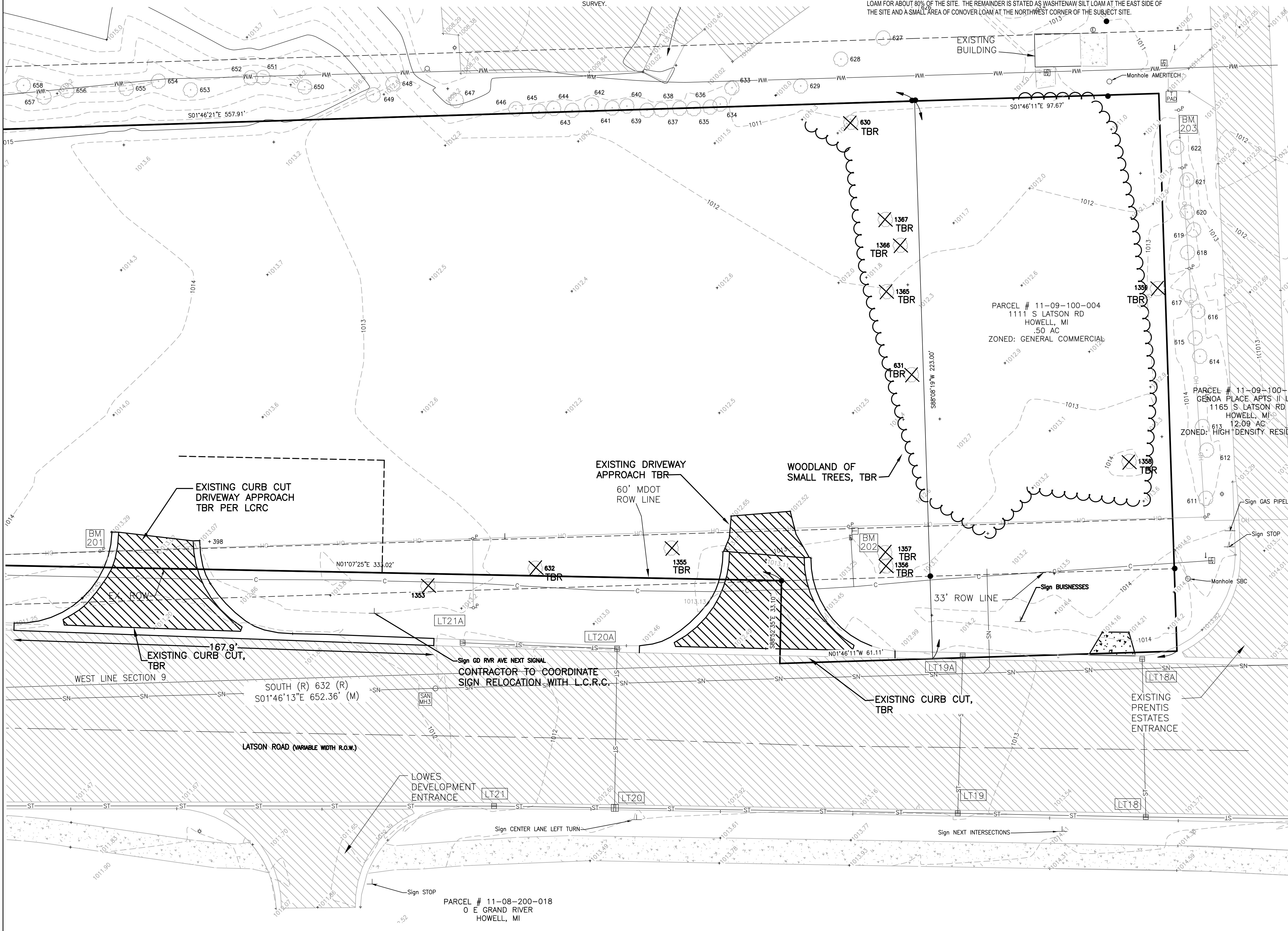
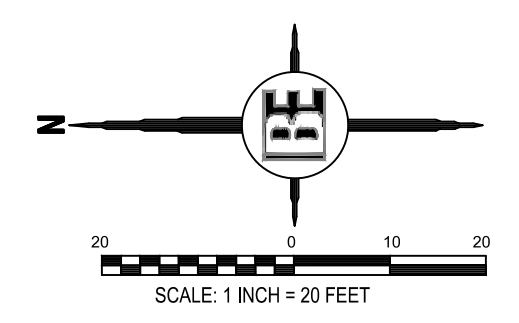
- BM #200 = NAIL/TAG S/S POWER POLE ELEV.=1013.34
- BM #201 = NAIL/TAG NE/S POWER POLE ELEV.=1014.28
- BM #202 = NAIL/TAG NE/S POWER POLE ELEV.=1013.57
- BM #203 = NORTH EAST CORNER TRANS-PAD ELEV.=1011.58

**NATURAL FEATURES NARRATIVE:**

NATURAL FEATURES WERE IDENTIFIED DURING AN ON-SITE VISIT TO THE PROPERTY ON SEPTEMBER 28, 2023. SITE IS VACANT AND PRIMARILY CAN BE DESCRIBED AS UNMANICURED TALL GRASS. THE SOUTHERN PORTION OF THE SITE CONTAINS SOME TREES AS INDICATED BY THE PLAN BELOW AND TREE LIST ON THIS SHEET.

ENTIRE SITE IS RELATIVELY FLAT, WITH A LOWER ELEVATION AT LATSON ROAD. SITE SLOPES WESTERLY TO LATSON ROAD AT SLOPES OF 2-4%. SOILS ARE ALSO UNIFORM PER USDA NRCS SOILS DATA CONSISTING OF MIAMI LOAM FOR ABOUT 80% OF THE SITE. THE REMAINDER IS STATED AS WASHTENAW SILT LOAM AT THE EAST SIDE OF THE SITE AND A SMALL AREA OF CONOVER LOAM AT THE NORTHWEST CORNER OF THE SUBJECT SITE.

SEE SHEET 2 FOR GENERAL NOTES AND LEGEND



Tag #	Botanical Name	Common Name	Size	Condition
1357	Quercus rubra	Northern Red Oak	18"	good
1358	Pinus strobus	Red Pine	21"	good
1359	Quercus rubra	Northern Red Oak	18"	good
1360	Pinus strobus	Red Pine	18"	good
611	Pinus resinosa	Red Pine	14.5"	good
612	Pinus resinosa	Red Pine	17"	fair
613	Pinus resinosa	Red Pine	14.5"	poor
614	Pinus resinosa	Red Pine	10"	poor
615	Pinus resinosa	Red Pine	12"	poor
616	Pinus resinosa	Red Pine	9"	poor
617	Pinus resinosa	Red Pine	12"	poor
1361	Acer rubrum	Red Maple	8"	good
618	Pinus resinosa	Red Pine	13.5"	poor
619	Pinus resinosa	Red Pine	7"	poor
620	Pinus resinosa	Red Pine	14"	poor
621	Pinus resinosa	Red Pine	15"	poor
622	Pinus resinosa	Red Pine	13"	poor
623	Picea abies	Norway Spruce	14"	good
624	Picea abies	Norway Spruce	14"	good
625	Picea abies	Norway Spruce	17"	good
626	Picea abies	Norway Spruce	25"	good
627	Pinus resinosa	Red Pine	15"	fair
628	Pinus resinosa	Red Pine	11"	fair
629	Pinus resinosa	Red Pine	13"	good
630	Populus deltoides	Common Cottonwood	6"	good
1362	Pinus strobus	Red Pine	11"	poor
1363	Quercus bicolor	Swamp White Oak	13"	poor
1364	Pinus strobus	Red Pine	13"	poor
1365	Pinus strobus	Red Pine	11"	poor
1366	Pinus strobus	Red Pine	11"	poor
1367	Pinus strobus	Red Pine	11"	poor
1368	Pinus strobus	Red Pine	11"	poor
1369	Pinus strobus	Red Pine	11"	poor
1370	Pinus strobus	Red Pine	11"	poor
1371	Pinus strobus	Red Pine	11"	poor
1372	Pinus strobus	Red Pine	11"	poor
1373	Pinus strobus	Red Pine	11"	poor
1374	Pinus strobus	Red Pine	11"	poor
1375	Pinus strobus	Red Pine	11"	poor
1376	Pinus strobus	Red Pine	11"	poor
1377	Pinus strobus	Red Pine	11"	poor
1378	Pinus strobus	Red Pine	11"	poor
1379	Pinus strobus	Red Pine	11"	poor
1380	Pinus strobus	Red Pine	11"	poor
1381	Pinus strobus	Red Pine	11"	poor
1382	Pinus strobus	Red Pine	11"	poor
1383	Pinus strobus	Red Pine	11"	poor
1384	Pinus strobus	Red Pine	11"	poor
1385	Pinus strobus	Red Pine	11"	poor
1386	Pinus strobus	Red Pine	11"	poor
1387	Pinus strobus	Red Pine	11"	poor
1388	Pinus strobus	Red Pine	11"	poor
1389	Pinus strobus	Red Pine	11"	poor
1390	Pinus strobus	Red Pine	11"	poor
1391	Pinus strobus	Red Pine	11"	poor
1392	Pinus strobus	Red Pine	11"	poor
1393	Pinus strobus	Red Pine	11"	poor
1394	Pinus strobus	Red Pine	11"	poor
1395	Pinus strobus	Red Pine	11"	poor
1396	Pinus strobus	Red Pine	11"	poor
1397	Pinus strobus	Red Pine	11"	poor
1398	Pinus strobus	Red Pine	11"	poor
1399	Pinus strobus	Red Pine	11"	poor
1400	Pinus strobus	Red Pine	11"	poor



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**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

PROJECT: SOUTH LATSON COMMERCIAL DEVELOPMENT  
 PREPARED FOR: 1015 LATSON ROAD LLC  
 29932 BECK ROAD  
 WOODON, MI 48393  
 248.773.9992

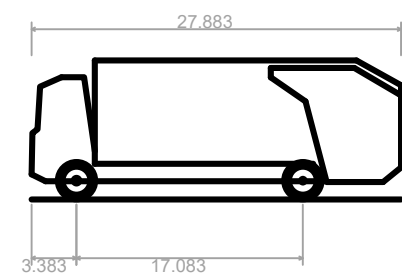
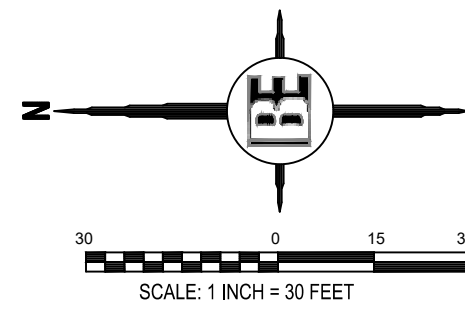
TITLE: EXISTING CONDITIONS, DEMO & NATURAL FEATURES PLAN

DESIGNED BY:	ST
DRAWN BY:	ST
CHECKED BY:	
SCALE:	1" = 20'
JOB NO:	21-519
DATE:	10/04/2023
SHEET NO.	3

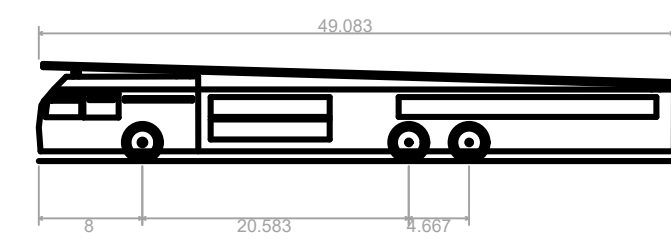
REVISIONS:

NO	BY	DATE	REVISION
1	ST	10-25-23	PER TOWNSHIP COMMENTS
2	ST	12-11-23	PER P.C. MEETING
3	ST	1-16-24	LAYOUT MODIFICATIONS

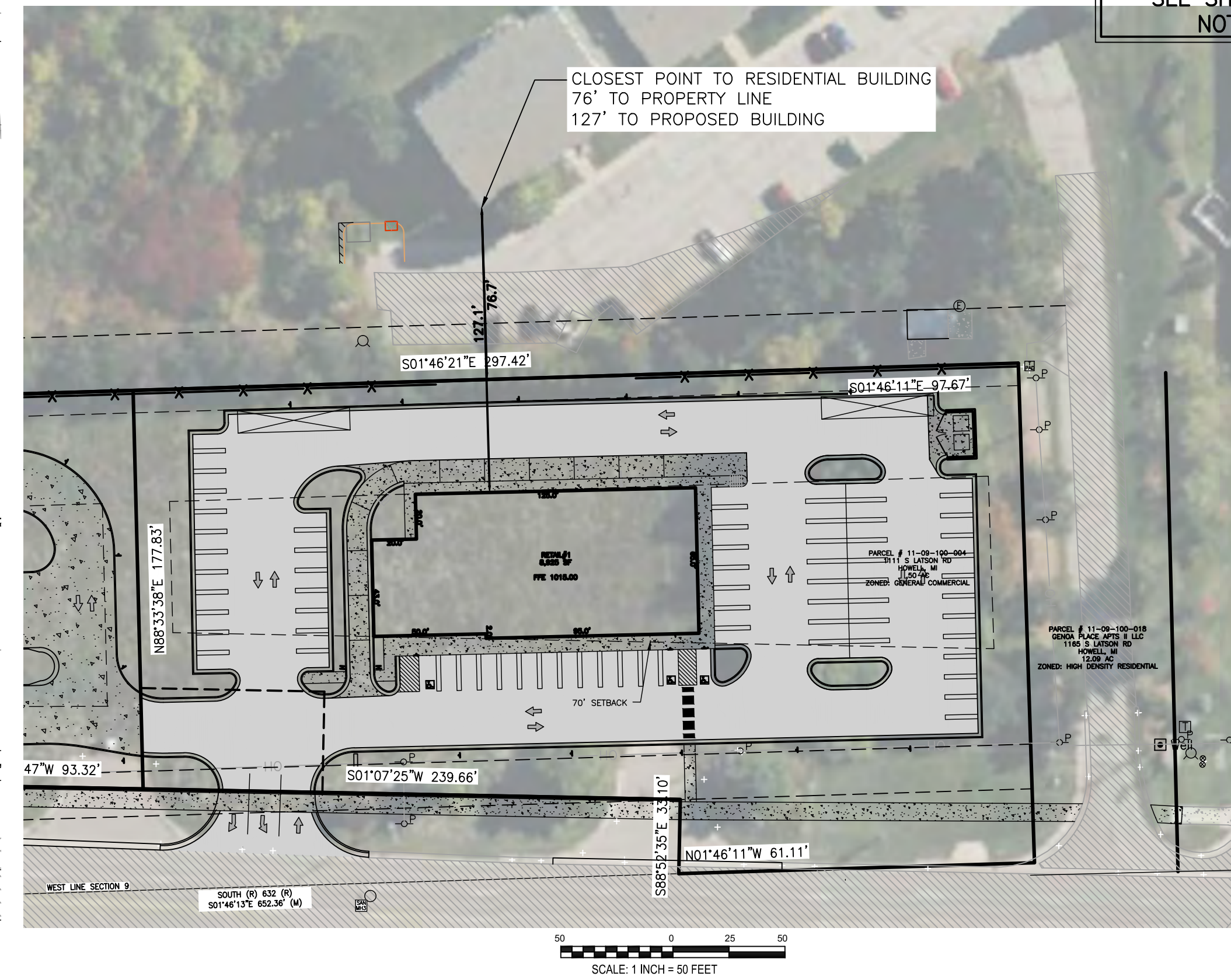
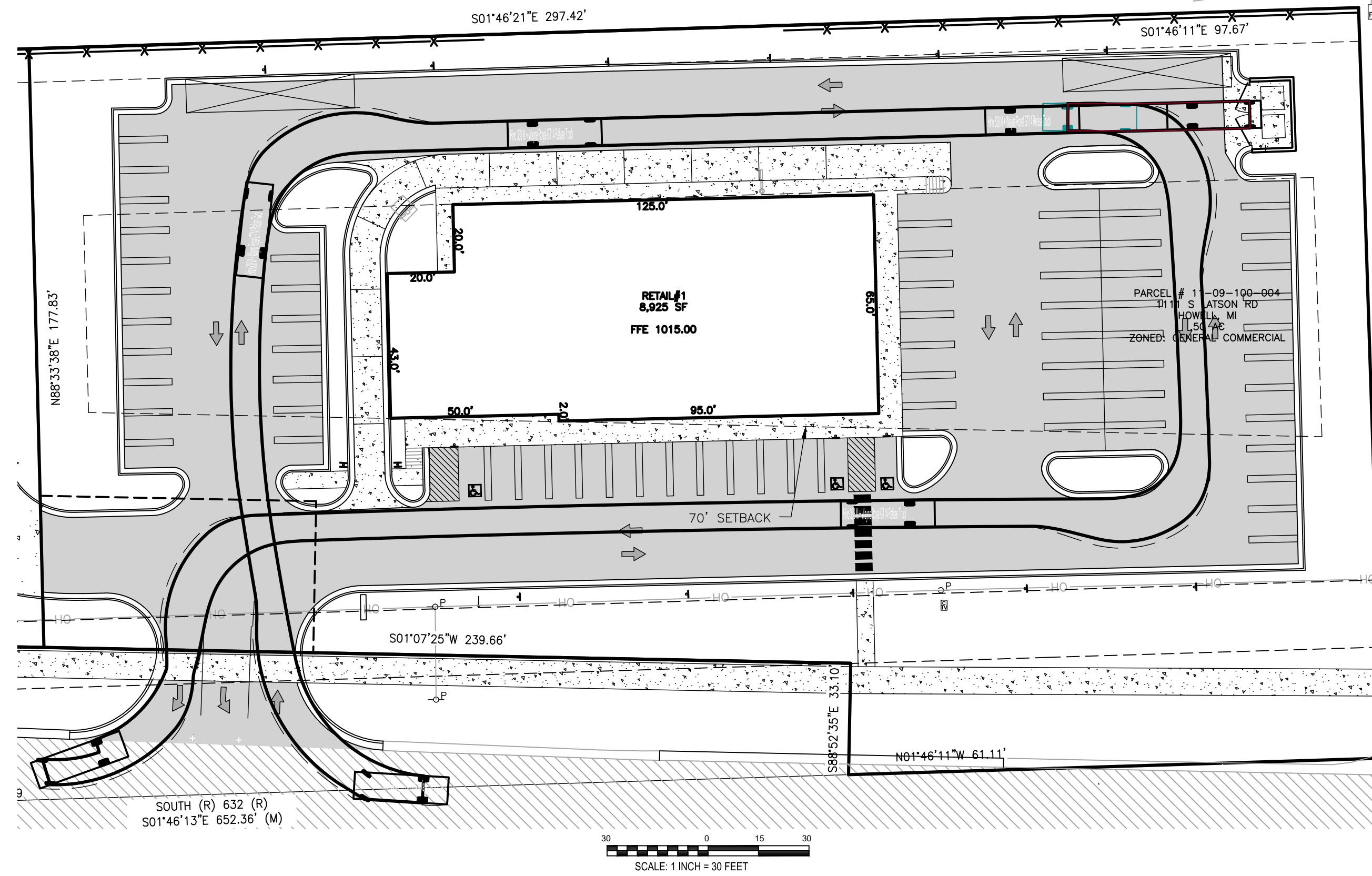




Hino 338 M + Wayne Royal GT14 Refuse Truck  
 Overall Length 27.883ft  
 Overall Width 8.042ft  
 Overall Body Height 10.488ft  
 Min Body Ground Clearance 1.318ft  
 Track Width 8.042ft  
 Lock-to-lock time 6.00s  
 Curb to Curb Turning Radius 27.400ft



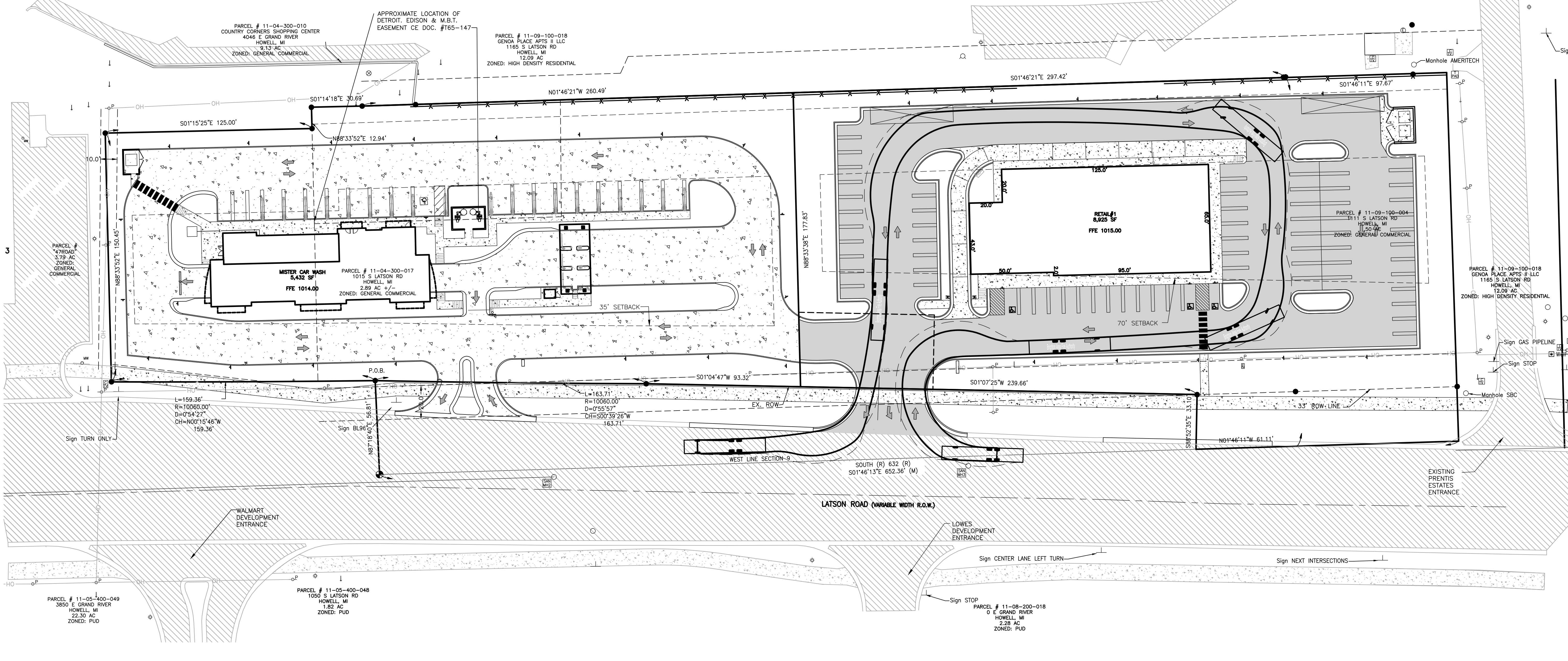
Brighton Area Fire Authority  
 Overall Length 49.083ft  
 Overall Width 8.167ft  
 Overall Body Height 7.500ft  
 Min Body Ground Clearance 0.750ft  
 Track Width 8.167ft  
 Lock-to-lock time 5.00s  
 Max Steering Angle (Virtual) 45.00°



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

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BE BOSS Engineering  
 1-800-487-7171  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI 48843



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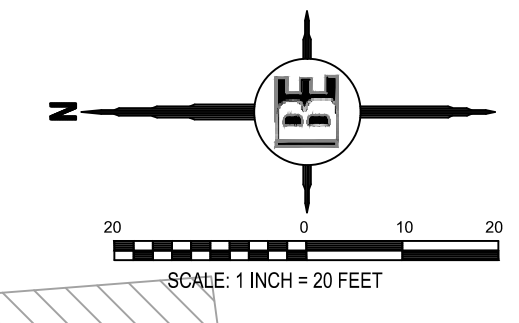
PROJECT	SOUTH LATSON COMMERCIAL DEVELOPMENT		
PREPARED FOR	1015 LATSON ROAD LLC		
TITLE	OVERALL SITE PLAN		
DESIGNED BY:	ST	DATE	10-25-23
DRAWN BY:	ST	DATE	10-25-23
CHECKED BY:		DATE	10-25-23
SCALE:	VARIES		
JOB NO:	21-519		
DATE:	10/04/2023		
SHEET NO.	4		







SCREEN FENCE SAMPLE IMAGE  
MANUFACTURER: FENCETAC  
PRODUCT: SANDSTONE VINYL



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

**SITE DATA**  
 PARCEL # 4711-04-300-017 & 4711-09-100-004  
 1015 S. LATSON RD & 1111 S LATSON RD  
 HOWELL, MI  
 GENOA TOWNSHIP  
 3.40 AC  
 ZONING: GENERAL COMMERCIAL DISTRICT (GCD)  
 CURRENT USE: VACANT

**GENERAL COMMERCIAL DISTRICT**  
 - MIN. LOT AREA: 1 ACRE  
 - MIN. LOT WIDTH: 150 FT

<b>BUILDING SETBACK:</b>	<b>PROVIDED</b>
FRONT: 70 FT	70.0 FT
SIDE: 15 FT	105.6 FT
REAR: 50 FT	50.5 FT

<b>PARKING SETBACK:</b>	<b>PROVIDED</b>
FRONT: 20 FT	23.5 FT
SIDE: 10 FT	24.0 FT
REAR: 10 FT	10.0 FT

<b>-MAX LOT COVERAGE:</b>	<b>PROVIDED</b>
PARCEL AREA:	78,946 SFT (1.81 AC)
BUILDING: 35%	8,925 SFT (11.3%)
IMPERVIOUS: 75%	58,586 SFT (74.2%)

**-MAX BUILDING HEIGHT: 35 FT (2 STORIES) 20 FT**

**\* TOTAL PROPOSED GROSS SQUARE FOOTAGE:**

-COFFEE SHOP W/ DRIVE-THROUGH	2,400 GSF
-GENERAL RETAIL	4,025 GSF
-SIT DOWN RESTAURANT (NO LIQUOR LICENSE)	2,500 GSF
<b>TOTAL</b>	<b>8,925 GSF</b>

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**PARKING CALCULATIONS:**

-FAST FOOD DRIVE THRU: 1 SPACE PER 70 SQFT GROSS LEASABLE FLOOR AREA (85% OF GROSS FLOOR AREA)  
 2400 \* 85% = 2040 / 70 = 30 SPACES & 10 STACKING SPACES

-SIT DOWN RESTAURANT WITHOUT LIQUOR LICENSE = 1 SPACE/100 SFT GFA  
 2,500 SFT / 100 SFT = 25 SPACES

-RETAIL = 1 SPACE /250 SFT GFA  
 4,025 SFT / 250 SFT = 17 SPACES

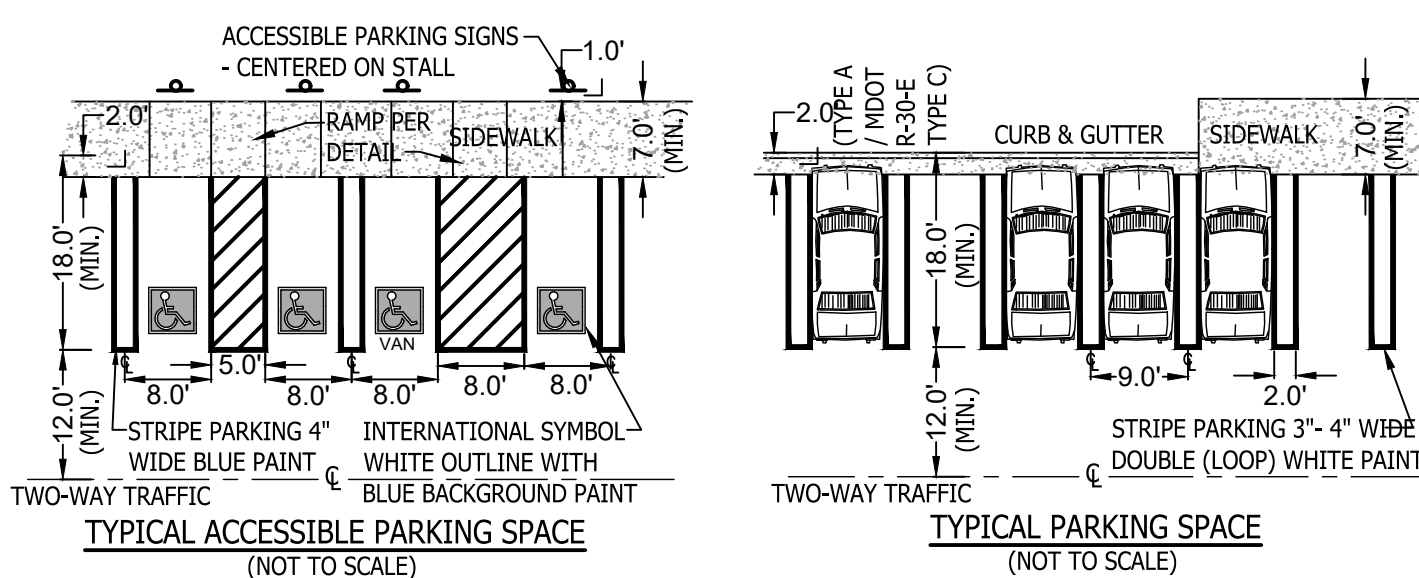
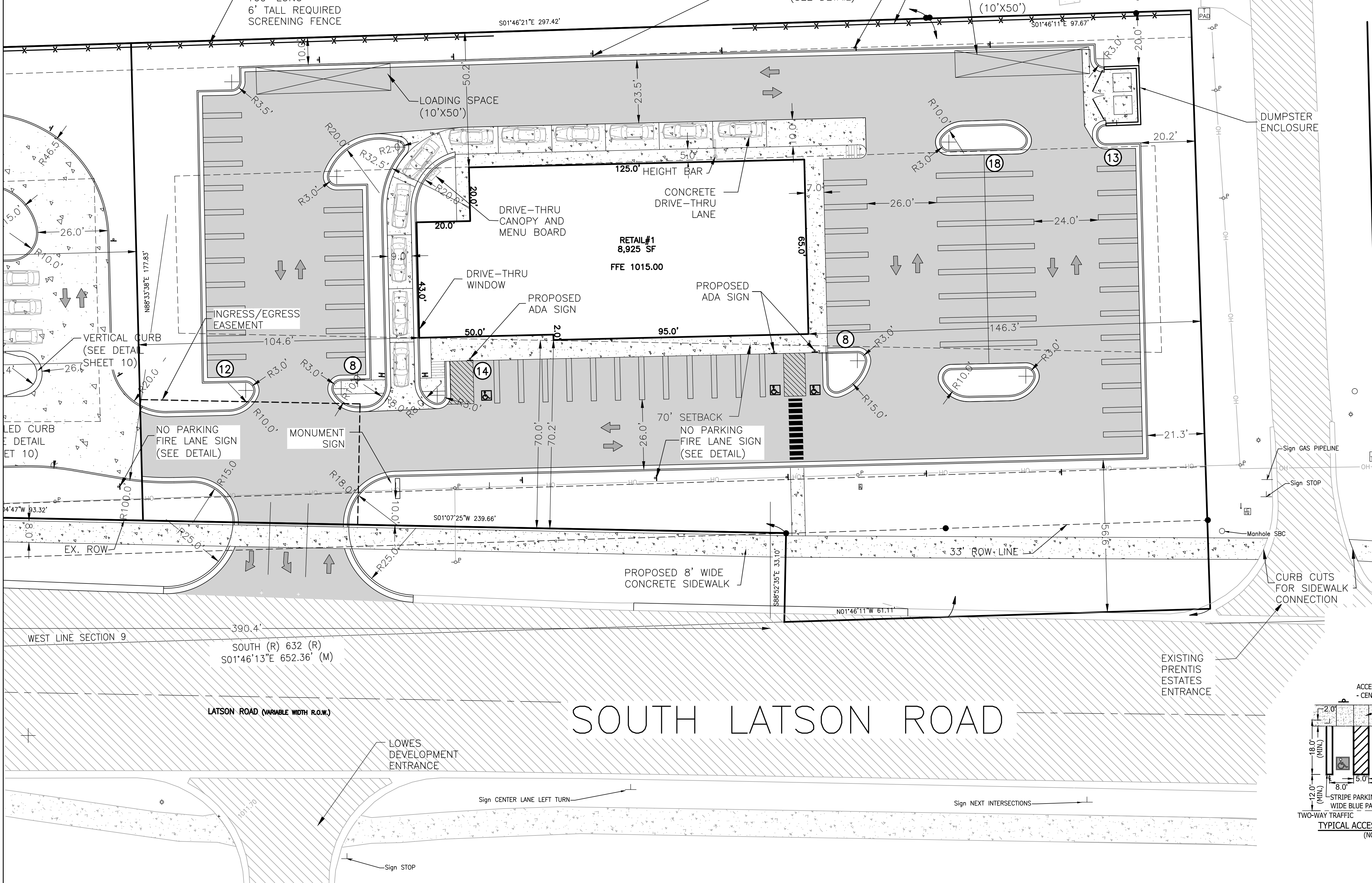
**REQUIRED: 36 + 21 + 16 = 72 SPACES  
 PROVIDED: 73 SPACES**

**LOADING/UNLOADING SPACES: 10' x 50'**  
 REQUIRED: 5,001 GFA TO 20,000 GFA REQUIRES 2 SPACES  
 PROVIDED: 2 LOADING/UNLOADING SPACES

**PLANNING COMMISSION WAIVERS REQUESTED:**  
 A REDUCTION IN LANDSCAPE BUFFER ON THE WEST AND EAST SIDE OF PROPERTY DUE TO SHALLOW DEPTH OF EXISTING PARCEL. A SCREEN FENCE AND ADEQUATE LANDSCAPING ARE STILL PROPOSED TO MEET THE ORDINANCE TO THE MAXIMUM EXTENT POSSIBLE.

**VARIANCES REQUIRED:**  
 1) DRIVE-THRU SEPARATION TO ANOTHER DRIVE-THRU

- GENERAL NOTES**
- ALL OUTDOOR LIGHTS SHALL BE SHIELDED TO REDUCE GLARE AND SHALL BE ARRANGED TO NOT INTERFERE WITH THE VISION OF PERSONS ON ADJACENT ROADWAYS OR ADJACENT PROPERTY.
  - ALL SIGNS SHALL MEET LOCAL MUNICIPALITY ORDINANCE REQUIREMENTS.
  - THE BUILDING ADDRESS SHALL BE A MINIMUM 6" HIGH LETTERS OF CONTRASTING COLORS AND BE CLEARLY VISIBLE FROM THE STREET. THE LOCATION AND SIZE SHALL BE VERIFIED PRIOR TO INSTALLATION.
  - A KEY BOX/KNOX BOX SHALL BE LOCATED NEAR THE FRONT ENTRY AT EACH TENANT SPACE (FINAL LOCATION TO BE DETERMINED BETWEEN THE OWNER & FIRE MARSHALL).
  - ONE SIDE OF THE STREET SHALL BE MARKED AS A FIRE LANE AND SHALL HAVE APPROPRIATE SIGNAGE.
  - ACCESS ROADS TO THE SITE SHALL BE PROVIDED AND MAINTAINED DURING CONSTRUCTION.
  - ACCESS ROADS SHALL BE CONSTRUCTED TO BE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHING AT LEAST 84,000 LBS.
  - A MINIMUM VERTICAL CLEARANCE OF 13.5 FEET SHALL BE MAINTAINED THROUGHOUT THE SITE. THIS INCLUDES ENCROACHMENTS FROM LARGE TREE CANOPIES, LIGHTING, ETC.
  - DURING THE CONSTRUCTION PROCESS, THE BUILDING WILL BE EVALUATED FOR EMERGENCY RESPONDER RADIO SIGNAL STRENGTH. IF COVERAGE IS FOUND TO BE QUESTIONABLE OR INADEQUATE, AN APPROVED CONTRACTOR SHALL BE HIRED TO PERFORM A GRID TEST OF THE FACILITY. IF THE SIGNAL STRENGTH COVERAGE IS FOUND TO BE NON-COMPLIANT, AN APPROVED EMERGENCY RESPONDER RADIO COVERAGE SIGNAL SHALL BE PROVIDED IN THE BUILDING.
  - SITE LIGHTING SHALL BE PLACED ON TIMERS TO BE OFF DURING NON-USE HOURS TO THE EXTENT POSSIBLE WHILE MAINTAINING SITE SAFETY. SITE LIGHTING SHALL BE PROGRAMMED TO TURN OFF AT NIGHT WHEN ACTIVITIES ARE NO LONGER OCCURRING ON THE PROPERTY.
  - DELIVERIES SHALL BE ARRANGED FOR OFF PEAK HOURS TO AVOID POTENTIAL VEHICULAR CONFLICTS.



FOR SITE PLAN APPROVAL ONLY!  
 NOT FOR CONSTRUCTION

**SOUTH LATSON COMMERCIAL DEVELOPMENT**

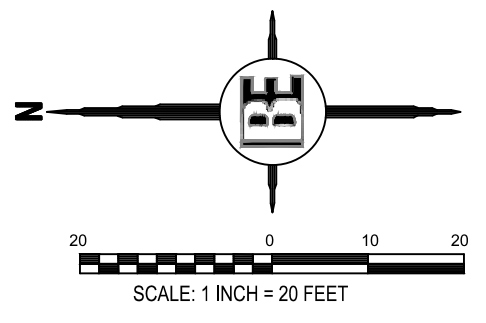
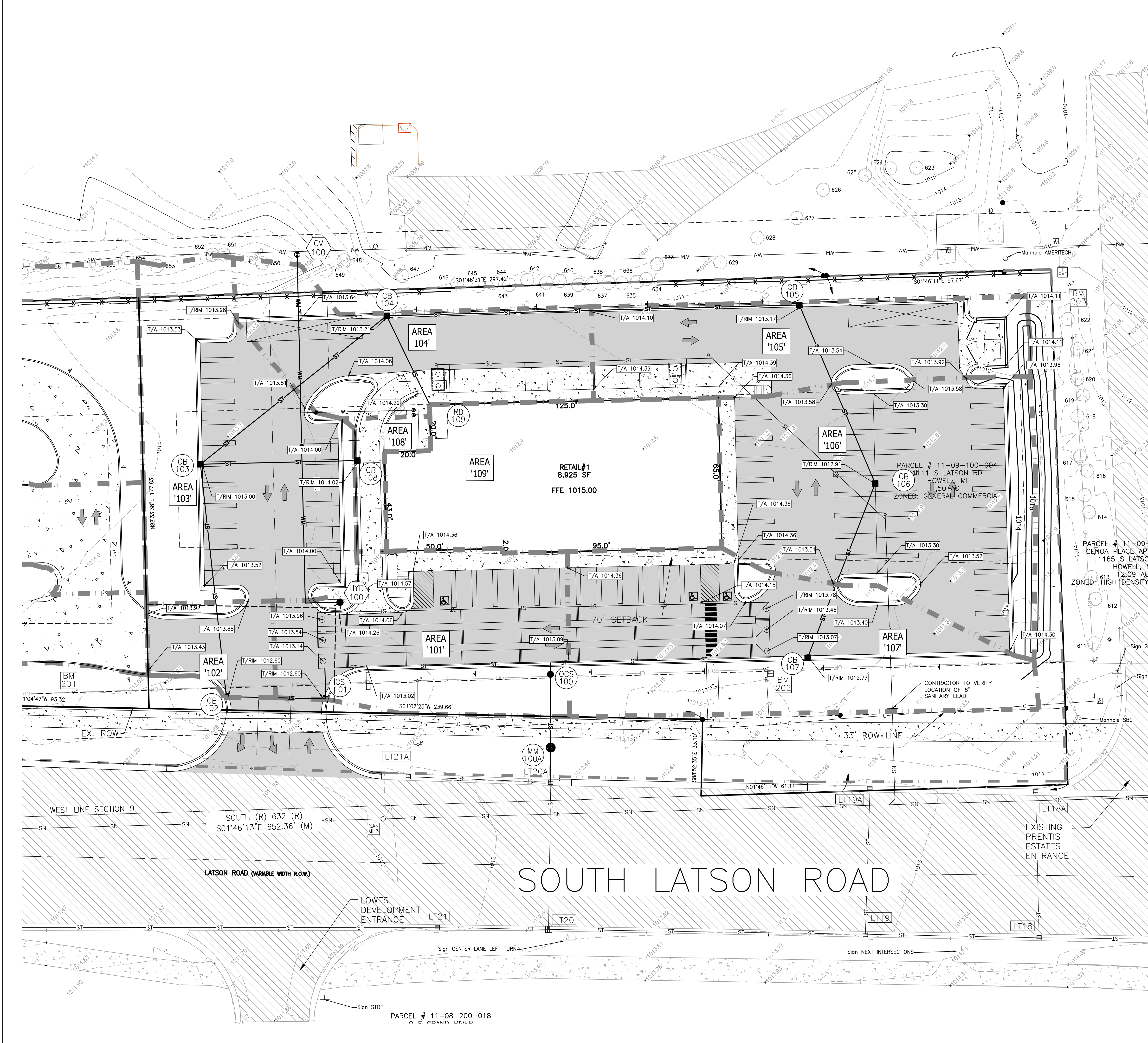
PROJECT: SOUTH LATSON COMMERCIAL DEVELOPMENT  
 PREPARED FOR: 1015 LATSON ROAD LLC  
 29932 BECK ROAD  
 WOODS, MI 48393  
 248.773.9592

TITLE: SITE PLAN

NO.	DATE	REVISION PER	BY
3	1-16-24	LAYOUT MODIFICATIONS	ST
2	12-11-23	PER P.C. MEETING	ST
1	10-25-23	PER TOWNSHIP COMMENTS	ST
0	10-25-23	REVISION PER	ST

DESIGNED BY: ST  
 DRAWN BY: ST  
 CHECKED BY: ST  
 SCALE: 1" = 20'  
 JOB NO: 21-519  
 DATE: 10/04/2023  
 SHEET NO. 5





SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

DRAINAGE AREA TABLE				
DRAINAGE AREA	TOTAL AREA (AC)	IMP. AREA (AC)	C VALUE	A <sup>2</sup> C
100	-	-	-	-
101	0.18	0.14	0.72	0.13
102	0.05	0.04	0.84	0.04
103	0.25	0.14	0.60	0.15
104	0.15	0.12	0.77	0.12
105	0.16	0.15	0.85	0.14
106	0.29	0.26	0.82	0.24
107	0.26	0.15	0.60	0.16
108	0.02	0.02	0.75	0.02
109	0.20	0.20	0.90	0.18
TOTALS	1.58	1.23	0.74	1.17

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BEBOSS ENGINEERING  
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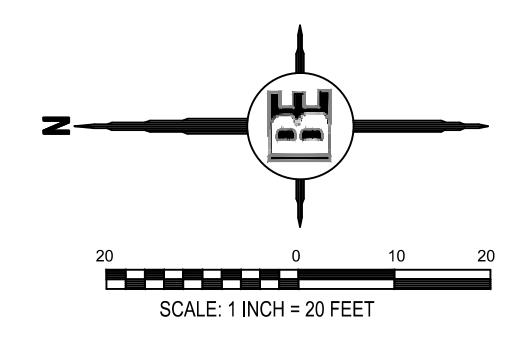
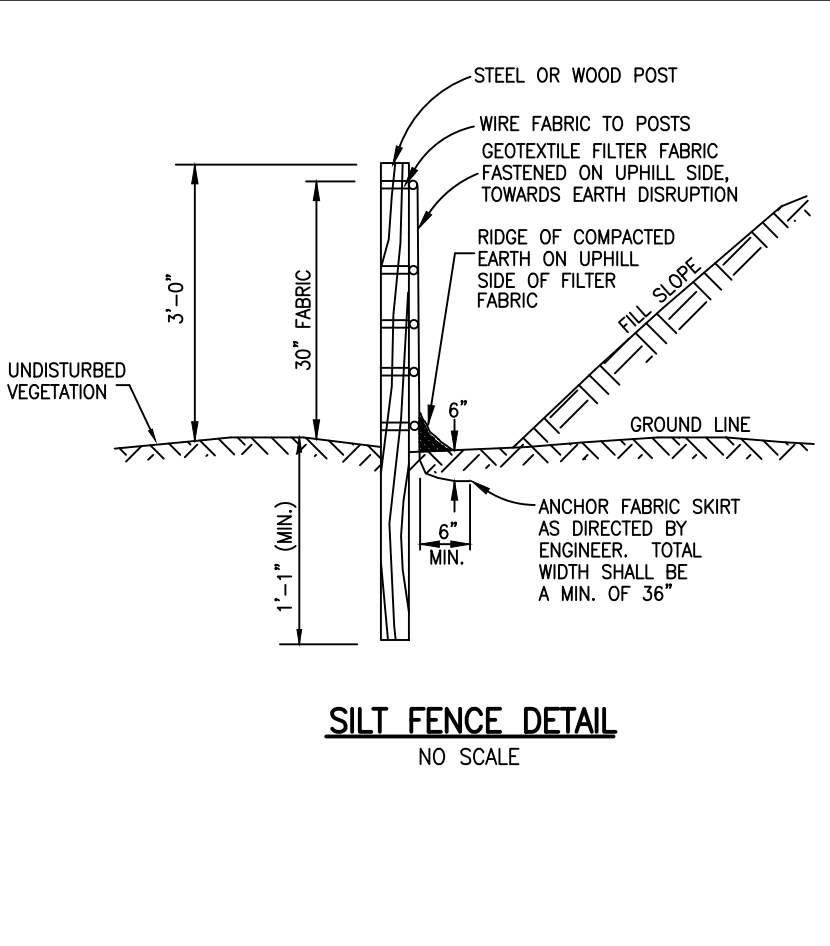
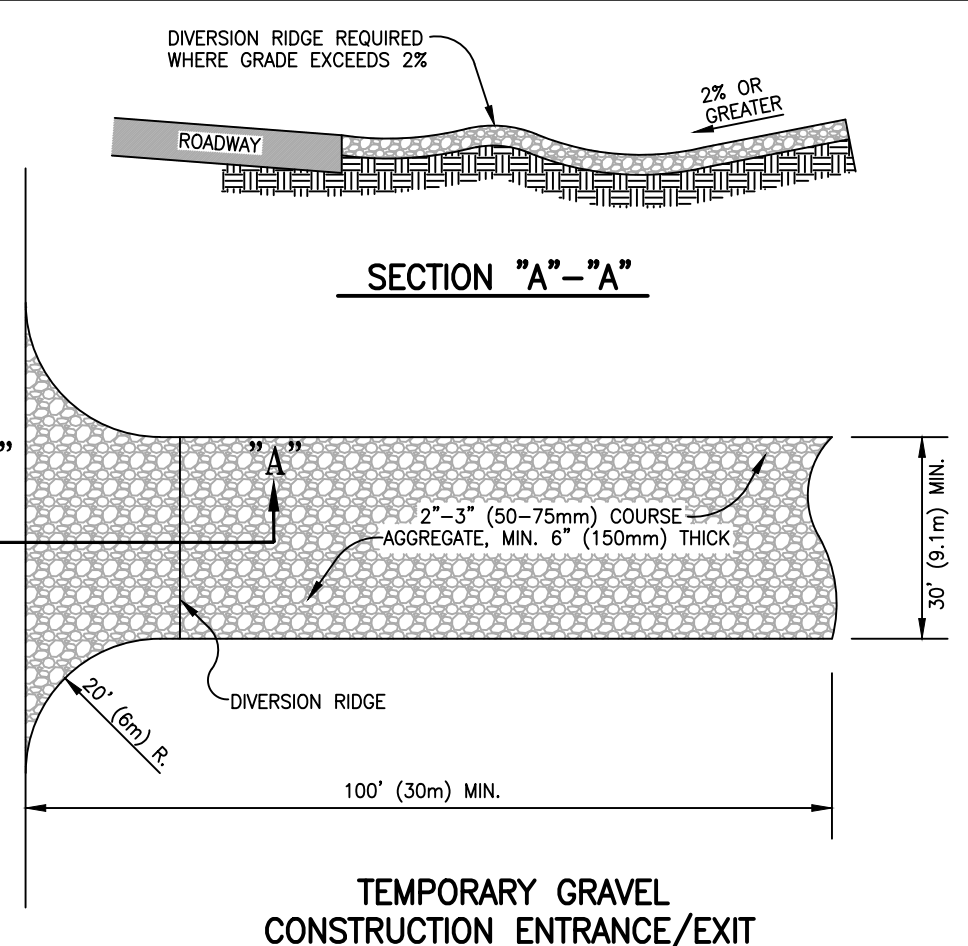
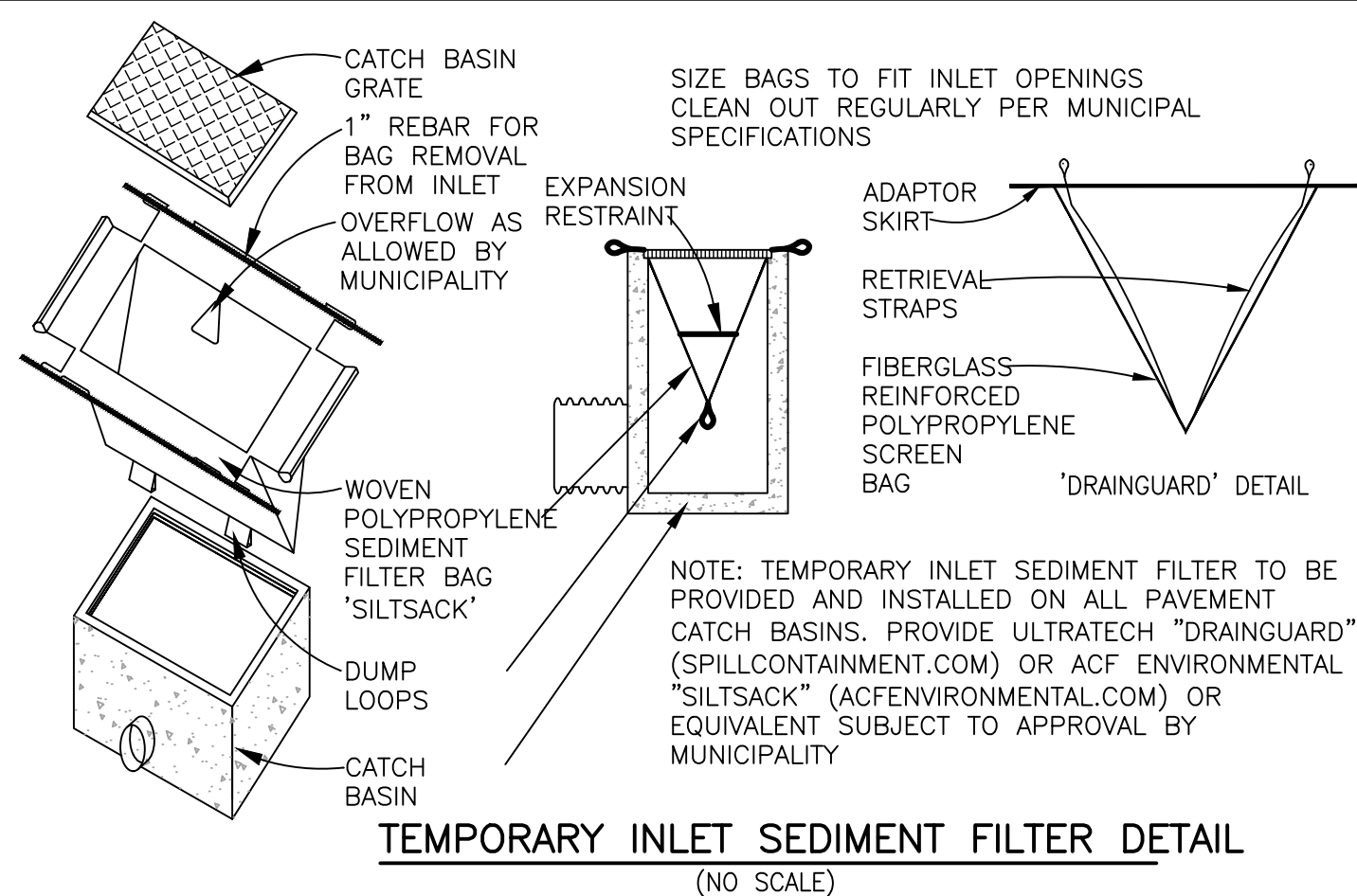
PROJECT: SOUTH LATSON COMMERCIAL DEVELOPMENT  
 PREPARED FOR: 1015 LATSON ROAD LLC  
 29932 BECK ROAD  
 WOODHURST, MI 48393  
 248.773.9992

TITLE: GRADING & DRAINAGE PLAN

NO.	DATE	BY	REVISION
3	1-16-24	ST	LAYOUT MODIFICATIONS
2	12-11-23	ST	PER P.C. MEETING
1	10-25-23	ST	PER TOWNSHIP COMMENTS
NO	DATE	BY	REVISION

DESIGNED BY: ST  
 DRAWN BY: DH  
 CHECKED BY:  
 SCALE: 1" = 20'  
 JOB NO: 21-519  
 DATE: 10/04/2023  
 SHEET NO. 6





SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

SOIL EROSION CONTROL MEASURES	
1	STRIPPING & STOCKPILING TOPSOIL TOPSOIL MAY BE STOCKPILED ABOVE SUBSOIL AREAS TO ACT AS A DIVERSION STOCKPILE SHOULD BE TEMPORARILY SEEDED
6	SEEDING WITH MULCH AND/OR MATTING FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINING WITH LOW VELOCITY EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL, SOD
14	AGGREGATE COVER STABILIZES SOIL SURFACE, THIS MINIMIZES EROSION RAINFALL VELOCITY IMPROVES SOIL STRUCTURE MAY BE USED AS PART OF PERMANENT BASE PROTECTION OF PAVED AREAS
15	PAVING PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RAINFALL VELOCITY
16	CURB & GUTTER KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING PAVED SURFACE COLLECTS AND CONVEYS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY
35	STORM SEWER SYSTEM REMOVES COLLECTED RUNOFF FROM SITE, PARTICULARLY FROM PAVED AREAS CAN ACCEPT LARGE CONCENTRATIONS OF RUNOFF CONVEYS RUNOFF TO MUNICIPAL SEWER SYSTEM OR STABILIZED OUTFALL LOCATION USE CATCH BASINS TO COLLECT SEDIMENT
36	CATCH BASIN, DRAIN INLET COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF
40	INLET SEDIMENT FILTER EASY TO SHAPE COLLECTS SEDIMENT MAY BE CLEANED AND EXPANDED AS NEEDED
51	RETAINING WALL REDUCES GRADIENT WHERE SLOPES ARE EXTREMELY STEEP PERMITS RETENTION OF EXISTING VEGETATION, KEEPING SOIL STABLE IN CRITICAL AREAS MINIMIZES MAINTENANCE
54	SILT FENCE USES GEOTEXTILE FABRIC AND POSTS OR POLES. EASY TO CONSTRUCT AND LOCATE AS NECESSARY. (SEE RETAIL SHEET)

T= TEMPORARY, P= PERMANENT  
TOTAL DISTURBED AREA= 1.81 AC.

**SURFACE WATER & COUNTY DRAINS**  
**WETLAND** - APPROXIMATELY 200 FT SOUTHEAST BEHIND PLATINUM CONTRACTING  
**LAKES** - APPROXIMATELY 4000 FT NORTHEAST TO LAKE CHEMUNG  
**STREAMS** - APPROXIMATELY 1000 FT NORTHWEST TO LIVINGSTON COMMONS SHOPPING CENTER  
**BASINS** - APPROXIMATELY 900 FT NORTHWEST TO SLEEPCHER MATRESS STORE  
**DRAINS** - APPROXIMATELY 650 FT NORTHWEST TO LATSON ROAD DRAIN  
**PONDS** - APPROXIMATELY 200 FT EAST BEHIND PLATINUM CONTRACTING

**CONSTRUCTION SEQUENCE**  
 THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT EROSION IS MINIMIZED AND THAT COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES IS MAINTAINED THROUGHOUT EXECUTION OF THIS PROJECT.

1 DAY	1. INSTALL SILT FENCE AS SHOWN ON PLANS.
30 DAYS	2. ROUGH GRADE AND INSTALL STORM DRAINAGE.
1 DAY	3. INSTALL INLET PROTECTION ON LATSON ROAD INLETS.
180 DAY	4. START BLDG. CONSTRUCTION
30 DAYS	5. INSTALL PAVEMENT
10 DAYS	6. FINE GRADE AROUND BUILDING, SPREAD TOPSOIL, SEED OR SOD AS APPLICABLE.
1 DAY	7. REMOVE ALL EROSION CONTROL STRUCTURES.
1 DAY	8. REMOVE ACCUMULATED SILT FROM ALL EXISTING DRAINAGE.

**CONTROLS & MEASURES POST CONSTRUCTION SEQUENCE**

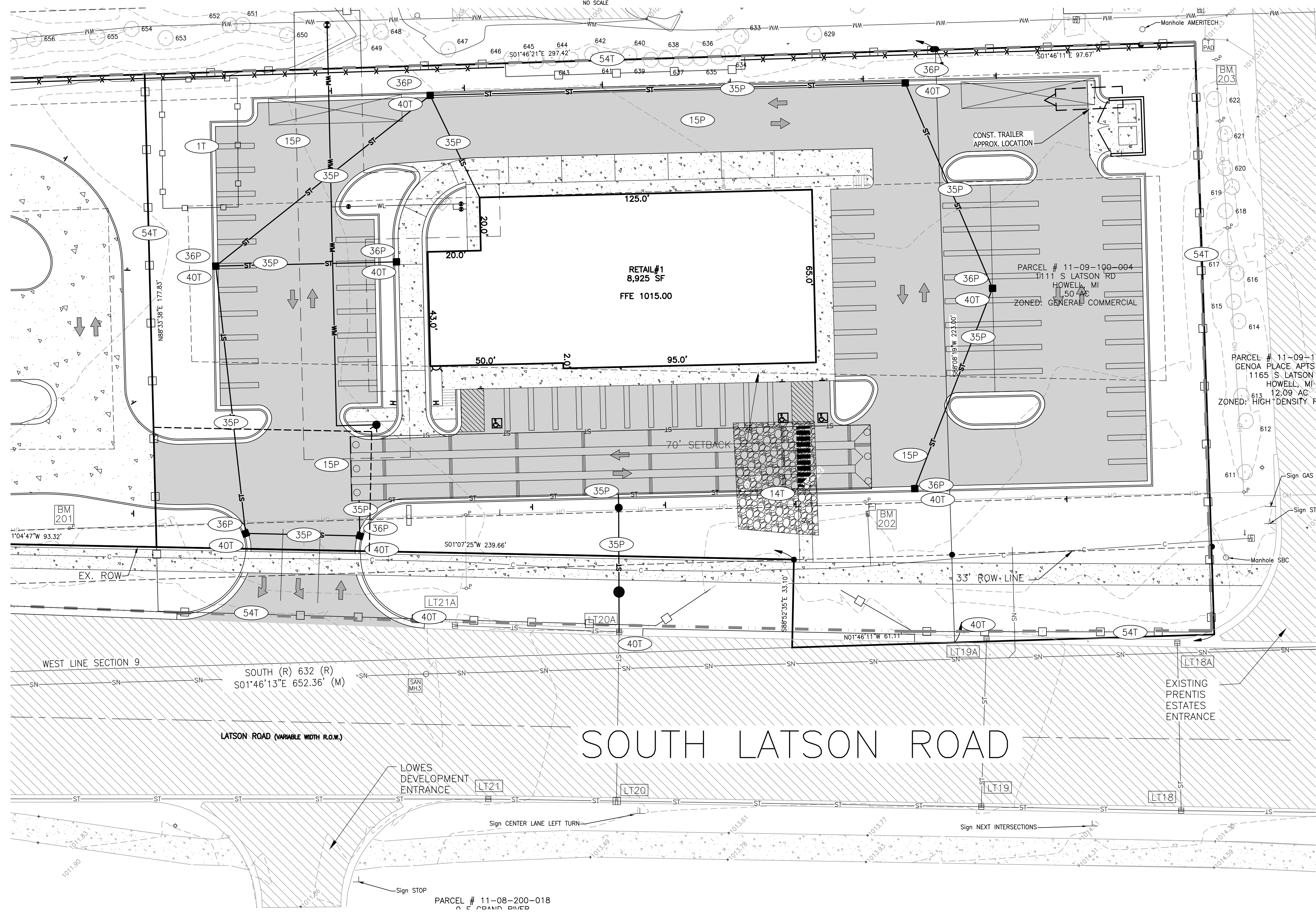
ACTIVITY	WEEKLY	MONTHLY	AS REQUIRED
MAINTAIN LANDSCAPING, REPLACE MULCH	X	X	X
CLEAN INLETS		X	X
COLLECT LITTER	X		X
SWEEP PARKING LOT		X	X

**CONTROLS & MEASURES NARRATIVE**

ACTIVITY	DESCRIPTION
MAINTAIN LANDSCAPING, REPLACE MULCH	COLLECT GRASS, TREE, AND SHRUB CLIPPINGS, DISPOSE IN APPROVED CONTAINER, REPLACE DEAD SOD, 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

**PROPOSED CONST. SCHEDULE FOR THE YEAR 2024**

ACTIVITY	MAY	JUNE	JULY	AUG	SEPT	OCT
DEMOL & CLEAR						
MASS GRADING						
UNDERGROUND UTILITY						
FINAL GRADING						
SEED & MULCH						



**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

**SOUTH LATSON COMMERCIAL DEVELOPMENT**  
 PREPARED FOR: 1015 LATSON ROAD LLC  
 29592 BECK ROAD  
 WOODRIDGE, MI 48093  
 248.773.7992

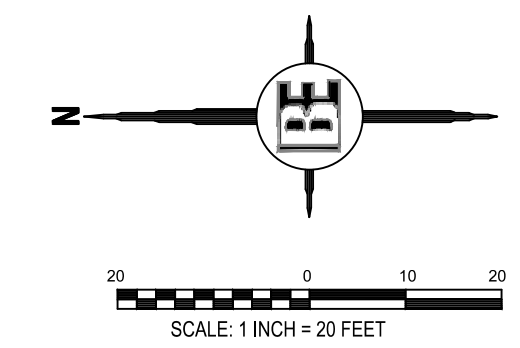
**SOIL EROSION & SEDIMENTATION CONTROL PLAN**

NO	DATE	REVISION PER
1	1-16-24	LAYOUT MODIFICATIONS
2	12-11-23	PER P.C. MEETING
3	10-25-23	PER TOWNSHIP COMMENTS
4		
5		
6		
7		
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17		
18		
19		
20		

DESIGNED BY: ST  
 DRAWN BY: JS  
 CHECKED BY:  
 SCALE: 1" = 20'  
 JOB NO: 21-519  
 DATE: 10/04/2023  
 SHEET NO. 7



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 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.

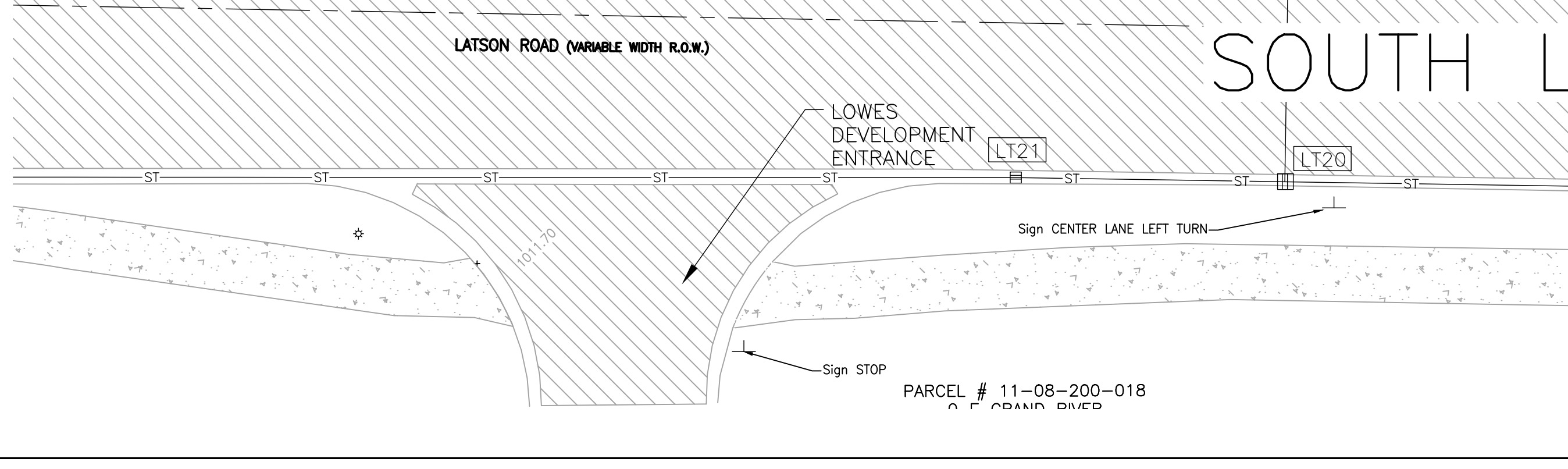
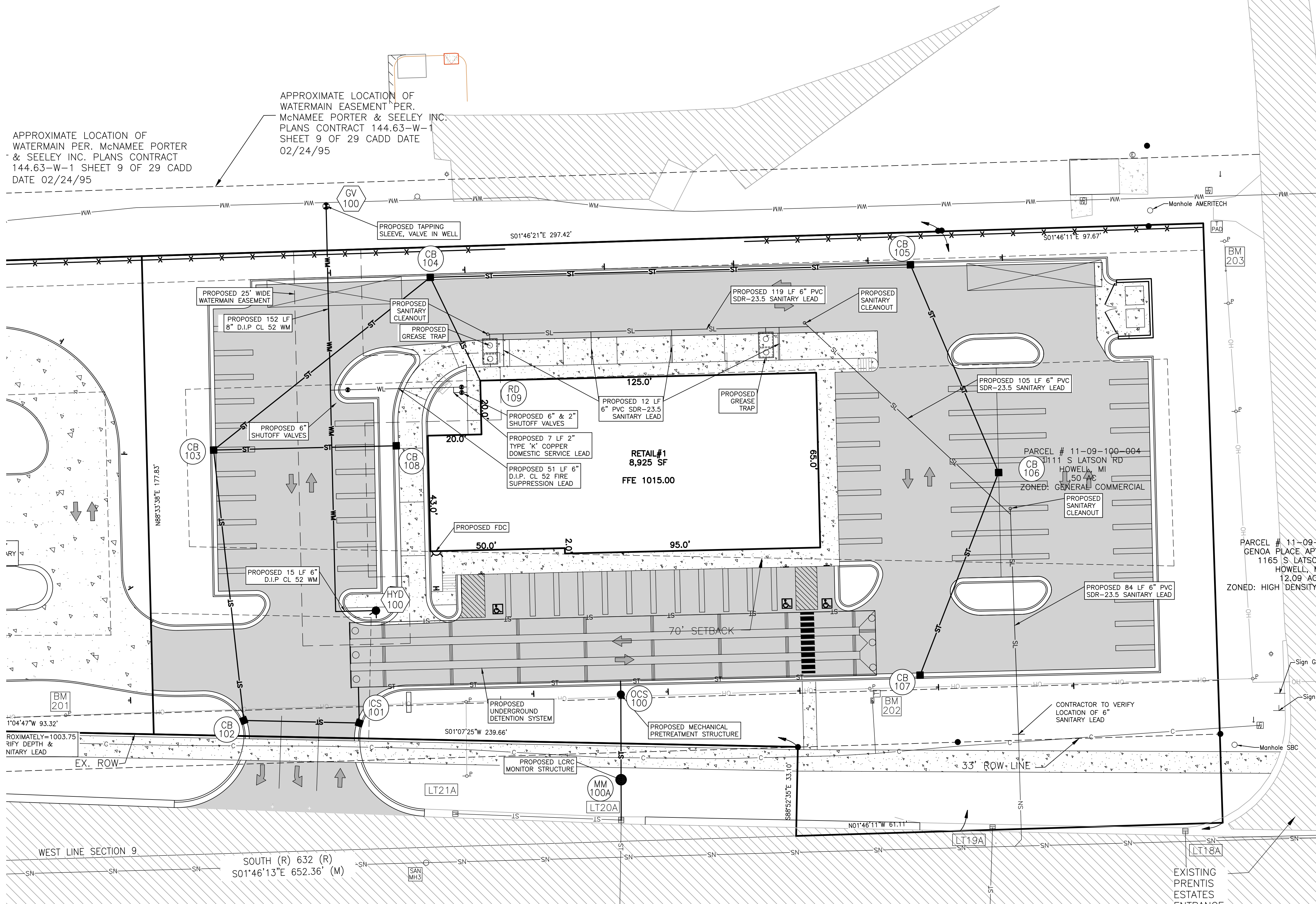
**BEBOSS**  
Engineering  
Engineers Surveyors Planners Landscape Architects  
3121 E. GRAND RIVER AVE.  
HOWELL, MI. 48843  
517.546.4836 FAX 517.548.1670

PROJECT: SOUTH LATSON COMMERCIAL DEVELOPMENT  
PREPARED FOR: 1015 LATSON ROAD LLC  
29932 BECK ROAD  
WOODRIDGE, MI 48393  
248.773.9992

TITLE: UTILITY PLAN

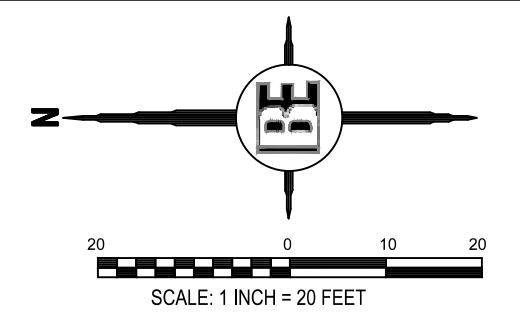
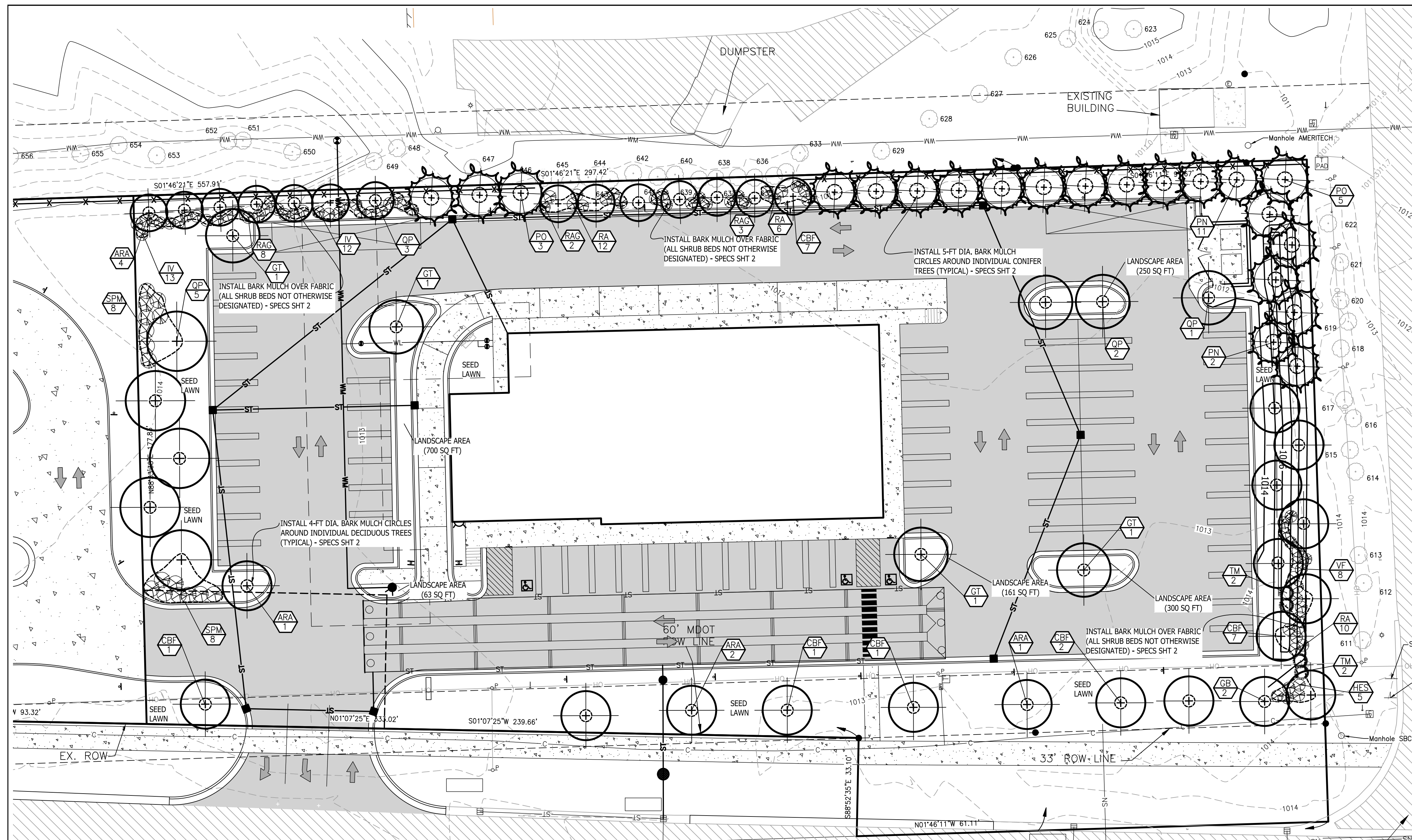
NO.	DATE	REVISION PER	BY
1	10-25-23	TOWNSHIP COMMENTS	ST
2	12-11-23	PER P.C. MEETING	DH
3	01-16-24	PERLAIRPORT/CACTHEDATA UPDATE	ST

DESIGNED BY: ST  
DRAWN BY: DH  
CHECKED BY:  
SCALE: 1" = 20'  
JOB NO: 21-519  
DATE: 10/04/2023  
SHEET NO. 8



FROM	TO	DRAIN AREA	ACRES	RUNOFF COEFF	EQUIV. AREA A * C	INTEN-SITY I	TIME OF CONC. Tc	ADDL. RUNOFF Q	RUNOFF (CFS) Q	PIPE LENGTH (LF)	PIPE DIA. (IN)	VELOCITY FLOWING FULL (FPS)	HYDRAULIC GRADIENT SLOPE %	ACTUAL SLOPE USED	MANNING COEFFICIENT	MANNING FLOW CAPACITY	MANNINGS 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
107	106	107	0.26	0.60	0.16	4.38	15.00		0.68	81	12	1.99	0.19%	0.32%	0.013	2.02	2.57	0.52	1010.45	1010.28	1012.77	1012.91	1009.65	1009.39
106	105	106	0.29	0.82	0.24	4.32	15.52		1.71	84	12	2.83	0.39%	0.32%	0.013	2.02	2.57	0.54	1010.28	1009.95	1012.91	1013.17	1009.39	1009.12
105	104	105	0.16	0.85	0.14	4.26	16.07		2.30	179	15	2.46	0.22%	0.24%	0.013	3.17	2.59	1.15	1009.95	1009.56	1013.17	1013.21	1008.92	1008.49
104	103	104	0.15	0.77	0.12	4.14	17.22	0.81	3.59	103	18	2.77	0.22%	0.24%	0.013	5.16	2.92	0.59	1009.56	1009.34	1013.21	1013.00	1008.29	1008.05
103	102	103	0.25	0.60	0.15	4.09	17.81	0.08	4.29	101	18	3.21	0.29%	0.24%	0.013	5.16	2.92	0.58	1009.34	1009.05	1013.00	1012.60	1008.05	1007.80
102	101	102	0.05	0.84	0.04	4.03	18.39		4.44	43	18	3.21	0.29%	0.24%	0.013	5.16	2.92	0.25	1009.05	1008.92	1012.60	1012.60	1007.80	1007.70
101	BASIN	101	0.18	0.72	0.13	4.01	18.63		4.97	13	18	3.80	0.41%	0.24%	0.013	5.16	2.92	0.07	1008.92	1008.87	1012.60	1013.33	1007.70	1007.67
108	103	108	0.02	0.75	0.02	4.38	15.00		0.08	68	12	1.20	0.07%	0.32%	0.013	2.02	2.57	0.44	1010.50	1010.45	1014.02	1013.00	1008.66	1008.45
109	104	109	0.20	0.90	0.18	4.38	15.00		0.81	43	8	3.21	0.86%	1.00%	0.013	1.21	3.47	0.21	1010.32	1009.95	1015.00	1013.21	1009.39	1008.96
BASIN OCS 100		ALL	1.58	0.74	1.173674	5.64	18.63		6.61	5	12	3.34	0.54%	0.32%	0.013	2.02	2.57	0.03	1009.08	1009.05	1012.81	1014.00	1008.17	1008.15
OCS 100 MM 100A		OCS 100	-	-	-	-	18.66		6.61	32	12	3.34	0.54%	0.32%	0.013	2.02	2.57	0.21	1009.05	1008.88	1014.00	1013.00	1008.15	1008.05
MM 100A		EX	MM 100A	-	-	-	18.87		6.61	15	12	3.34	0.54%	0.32%	1.013	2.02	2.57	0.10	1008.88	1008.80	1013.00	-	1008.05	1008.00





SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

**LANDSCAPE CALCULATIONS GCD ZONING:**

**REQUIRED:**

GREENBELT - PUBLIC R.O.W. : 1 CANOPY TREE / 40 LFT FRONTAGE, MIN 20 FT WIDTH

BUFFER - SOUTH  
 ADJ. TO MULTI-FAMILY - TYPE B: MIN. 20-FT WIDTH, 6-FT HGT CONTINUOUS WALL OR 3-FT HGT BERM + 1 CANOPY TREE + 1 CONIFER TREE + 4 SHRUBS / 30 LFT

BUFFER - NORTH  
 ADJ. TO COMMERCIAL - TYPE C: 1 CANOPY OR CONIFER TREE OR 4 SHRUBS / 20 LFT MIN. 10 FT WIDTH

BUFFER - EAST  
 ADJ. TO MULTI-FAMILY - TYPE B: 6-FT HGT CONTINUOUS WALL + 1 CANOPY TREE + 1 CONIFER TREE + 4 SHRUBS / 30 LFT

PARKING AREA (>10 SPACES): 1 CANOPY TREE & 100 SF OF LANDSCAPE AREA / 10 SPACES. 1/3 OF TREES MUST BE ON THE INTERIOR OF THE PARKING AREA - UNDERGROUND SYSTEM

DETENTION / RETENTION BASIN: N/A

**PROVIDED:**

GREENBELT - PUBLIC R.O.W. : 396.79 LFT FRONTAGE / 40 = 10 CANOPY TREES PROVIDED

BUFFER - SOUTH PROP. LINE:  
 ADJ. TO MULTI-FAMILY - TYPE B: 190.00 / 30 = 7 CANOPY + 7 CONIFER TREES + 26 SHRUBS WITH BERM AND 20-FT WIDTH

BUFFER - NORTH PROP. LINE  
 ADJ. TO COMMERCIAL - TYPE C: 177.83 / 20 = 9 TREES OR 36 SHRUBS OR COMBINATION 5 TREES + 16 SHRUBS PROVIDED

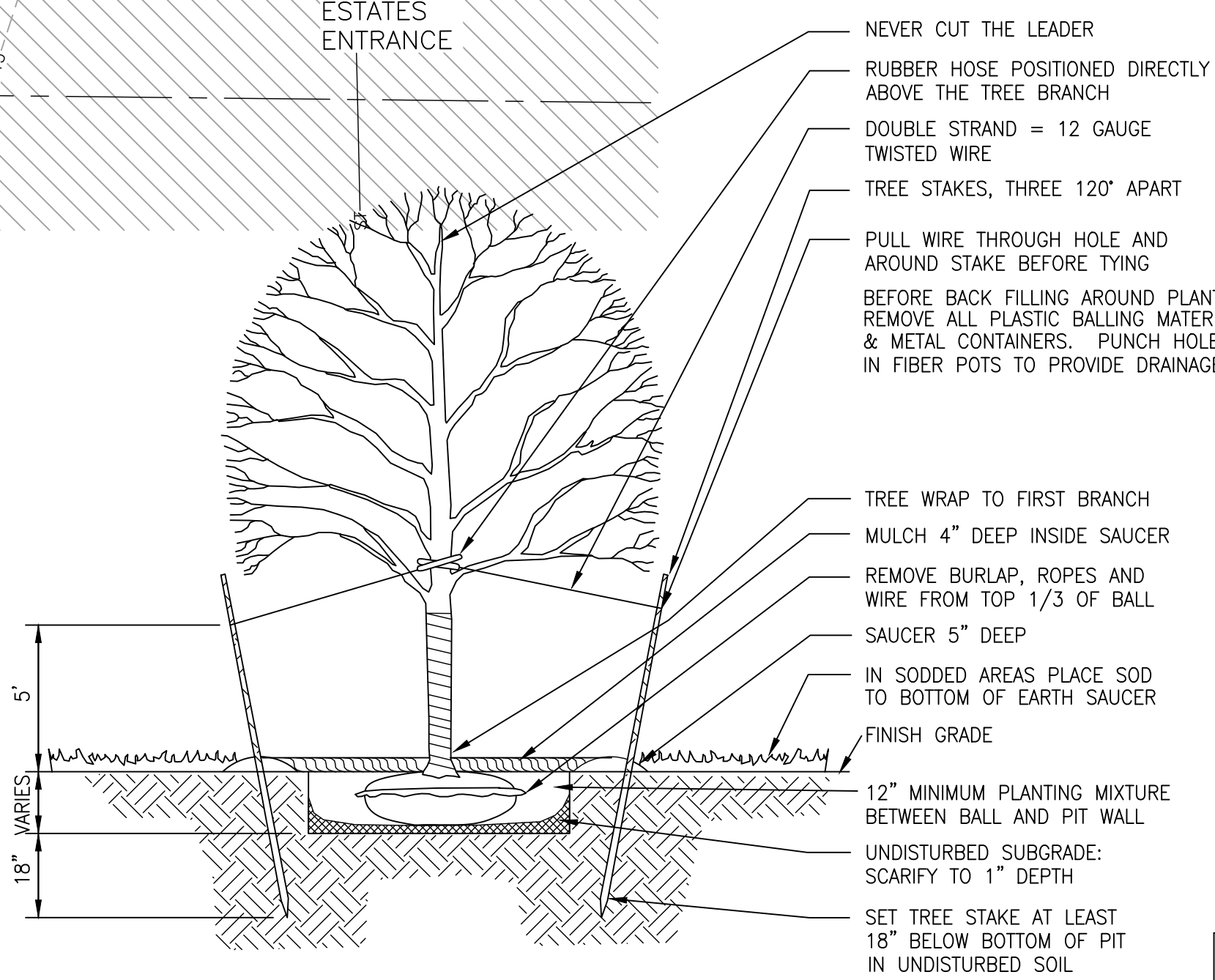
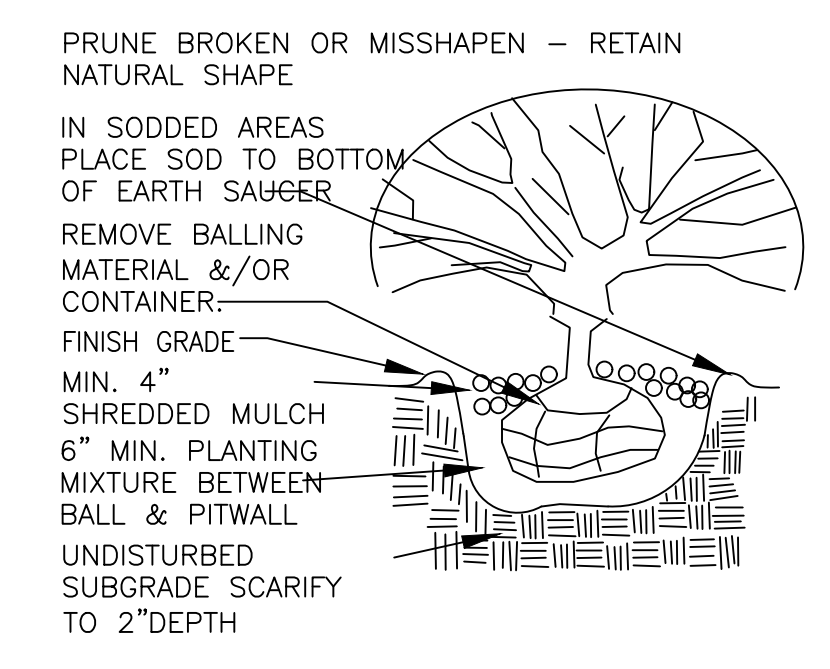
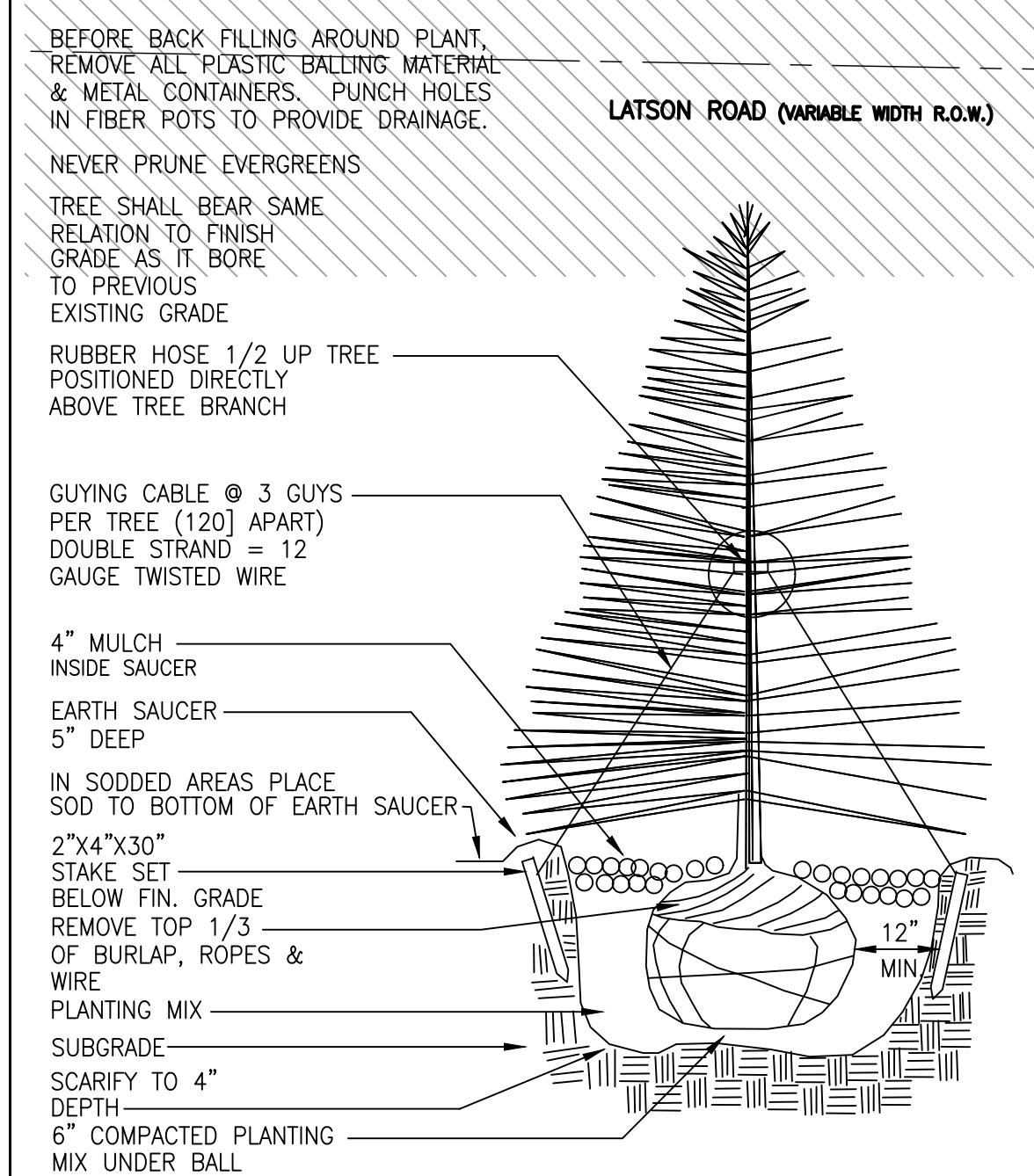
BUFFER - EAST  
 ADJ. TO MULTI-FAMILY - TYPE B: 395.70 / 30 = 14 CANOPY + 14 CONIFER TREES + 56 SHRUBS + 290-FT WALL ;  
 PROPOSED SHORTER LENGTH WALL DUE TO EX. CONDITIONS:  
 APPROX. 90 LFT OF EX. MATURE CONIFER SCREENING VEGETATION AT THE PROPERTY LINE RESTRICTS NEW WALL INSTALLATION

PARKING AREA (>10 SPACES): 73 (SPACES PROVIDED) / 10 = 8 TREES + 800 SQFT OF LANDSCAPE AREA  
 8 TREES & 1400+ SQFT OF LANDSCAPE AREA PROVIDED

**PLANT LIST**

KEY	QUAN	BOTANICAL NAME	COMMON NAME	SIZE	REMARK
<b>DECIDUOUS TREES</b>					
ARA	8	Acer rubrum 'Jfs KW 78'	Armstrong Gold Red Maple	2-1/2" cal.	B-B
CBF	19	Cornus betulus 'Frans Fontaine'	Frans Fontaine European Hornbeam	2-1/2" cal.	B-B
GB	2	Ginkgo biloba 'Princeton Sentry'	Princeton Sentry Columnar Ginkgo	2-1/2" cal.	B-B
GT	4	Gleditsia triacanthos var inermis 'Skycole'	Skyline Honeylocust	2-1/2" cal.	B-B
QP	11	Quercus plaustris	Northern Pin Oak	2-1/2" cal.	B-B
<b>CONIFER TREES</b>					
PN	13	Pinus nigra 'Oregon Green'	Oregon Green Austrian Pine	6-ft hgt.	B-B
PO	8	Picea amorika	Serbian Spruce	6-ft hgt.	B-B
<b>CONIFER SHRUBS</b>					
TM	4	Taxus x media 'Densiformis'	Densiformis Spreading Yew	30" ht./#5	Cont.
<b>DECIDUOUS SHRUBS</b>					
HES	5	Hydrangea macrophylla 'Bailmer'	Endless Summer Hydrangea	36" ht./#5	Cont.
IV	25	Itea virginica 'Sprich'	Little Henry Virginia Sweetpire	25" ht./#3	Cont.
RA	28	Ribes Alpinum 'Greenmound'	Greenmound Currant	18" ht./#3	Cont.
RAG	13	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac	24" ht./#3	Cont.
SPM	16	Syringa patula 'Miss Kim'	Miss Kim Lilac	24" ht./#3	Cont.
VF	8	Viburnum farreri nanum	Dwarf Fragrant Viburnum	18" ht./#3	Cont.

**SUPPLEMENTAL LANDSCAPE NOTES**  
 1. ANY SUBSTITUTIONS OF PLANT MATERIAL FROM THE APPROVED SITE PLAN WILL BE APPROVED BY THE TOWNSHIP PRIOR TO INSTALLATION.



FOR SITE PLAN APPROVAL ONLY!  
 NOT FOR CONSTRUCTION

**BEBOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

**SOUTH LATSON COMMERCIAL DEVELOPMENT**

PROJECT: 1015 LATSON ROAD LLC  
 29932 BECK ROAD  
 WOODHULL, MI 48893  
 248.773.9992

PREPARED FOR: 1015 LATSON ROAD LLC

TITLE: LANDSCAPE PLAN

3	ST	LAYOUT MODIFICATIONS	1-16-24
2	PC	PER. P.C. MEETING	12-11-23
1	ST	PER TOWNSHIP COMMENTS	10-25-23
NO	BY	REVISION PER	DATE

DESIGNED BY: PC  
 DRAWN BY: PC  
 CHECKED BY:  
 SCALE: 1" = 20'-0"  
 JOB NO: 21-519  
 DATE: 10/03/2023  
 SHEET NO. 9

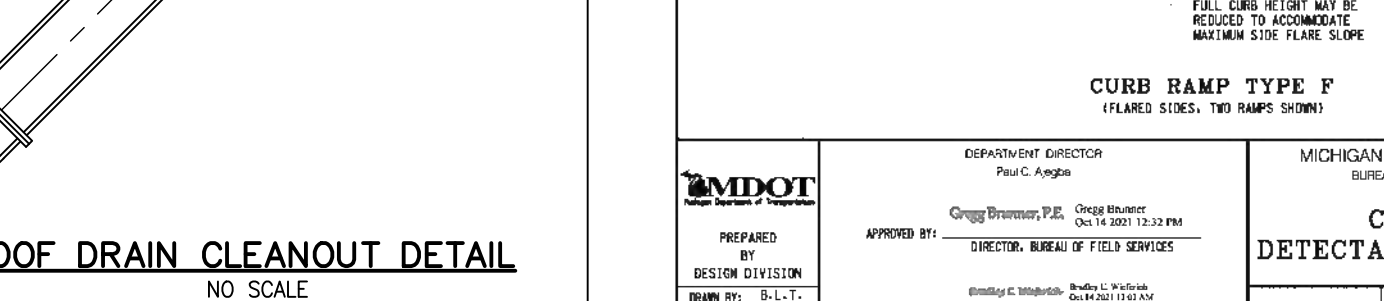
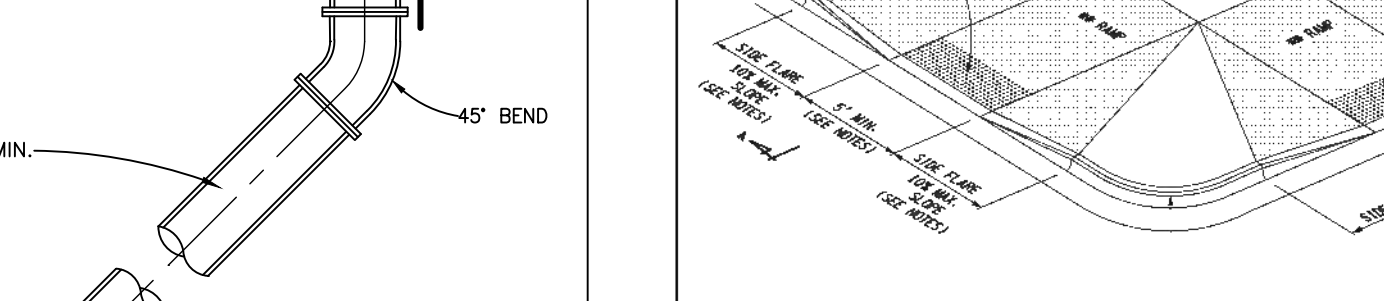
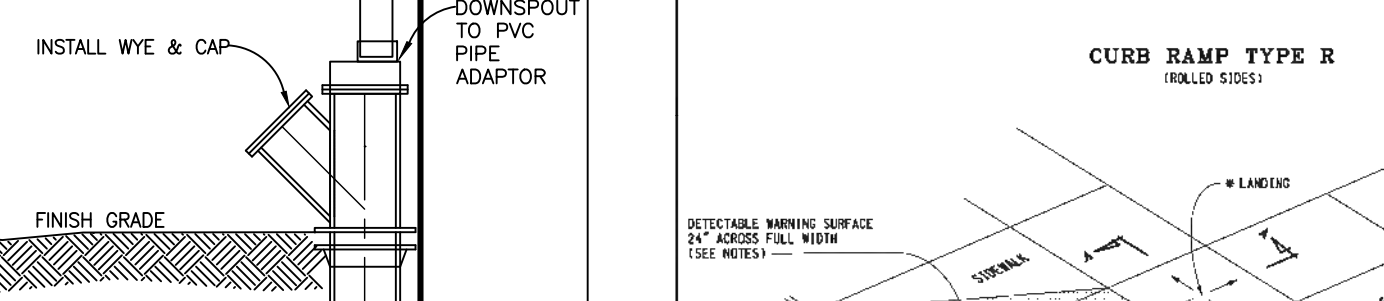
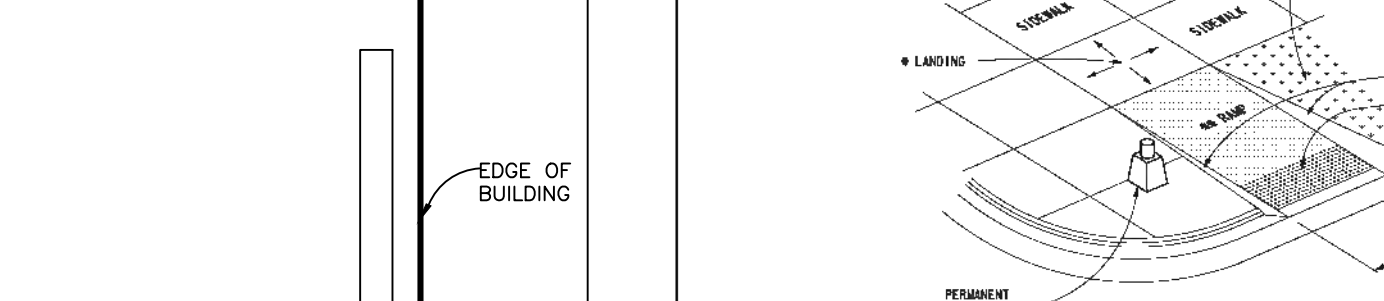
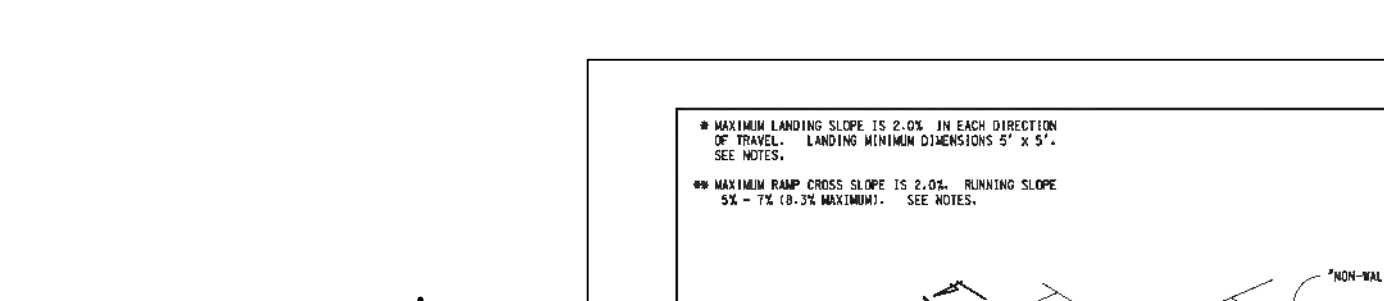
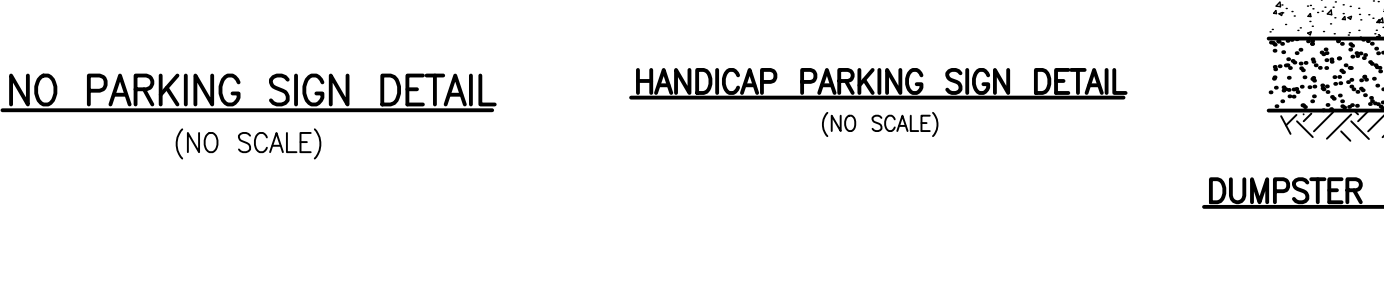
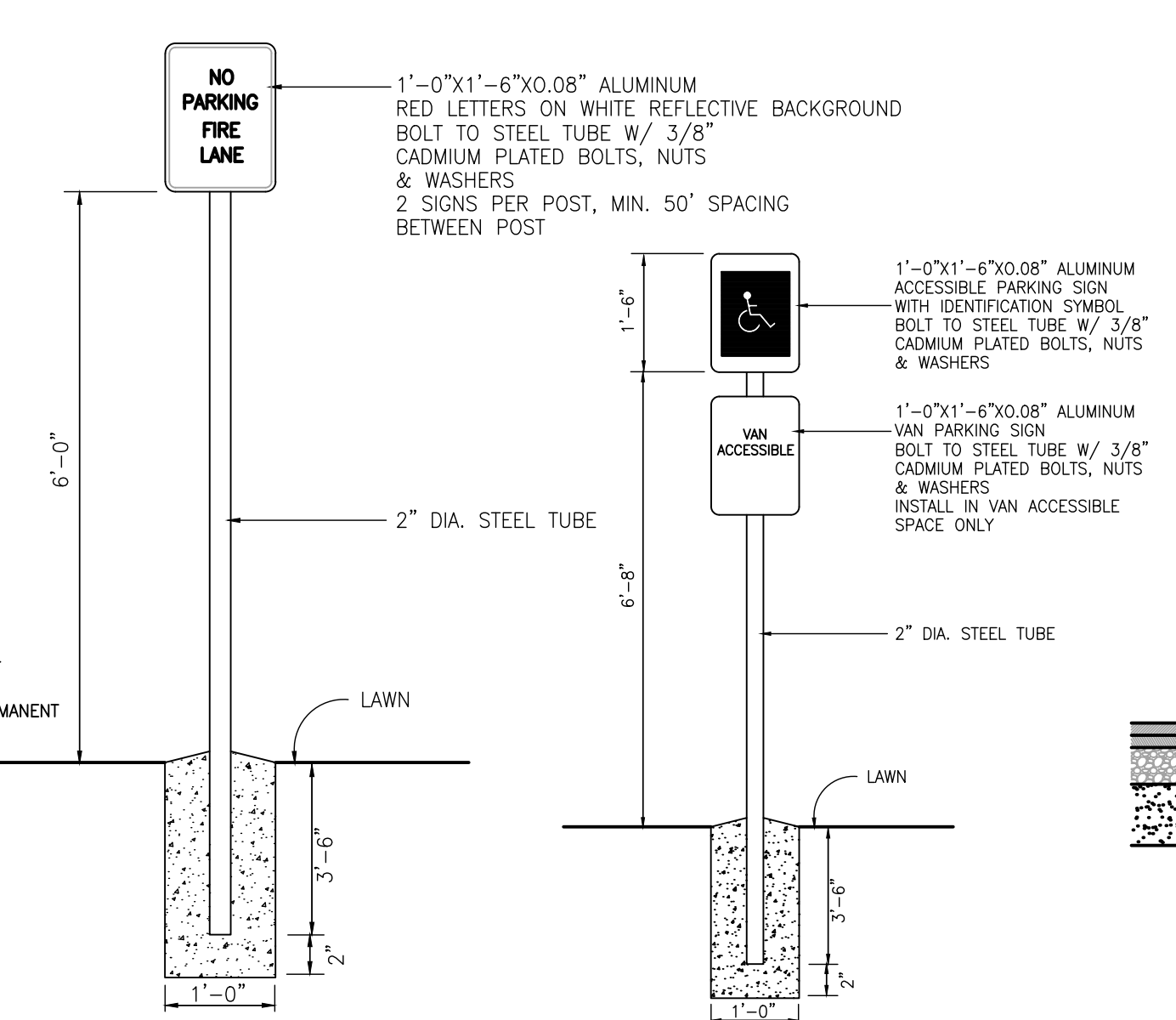
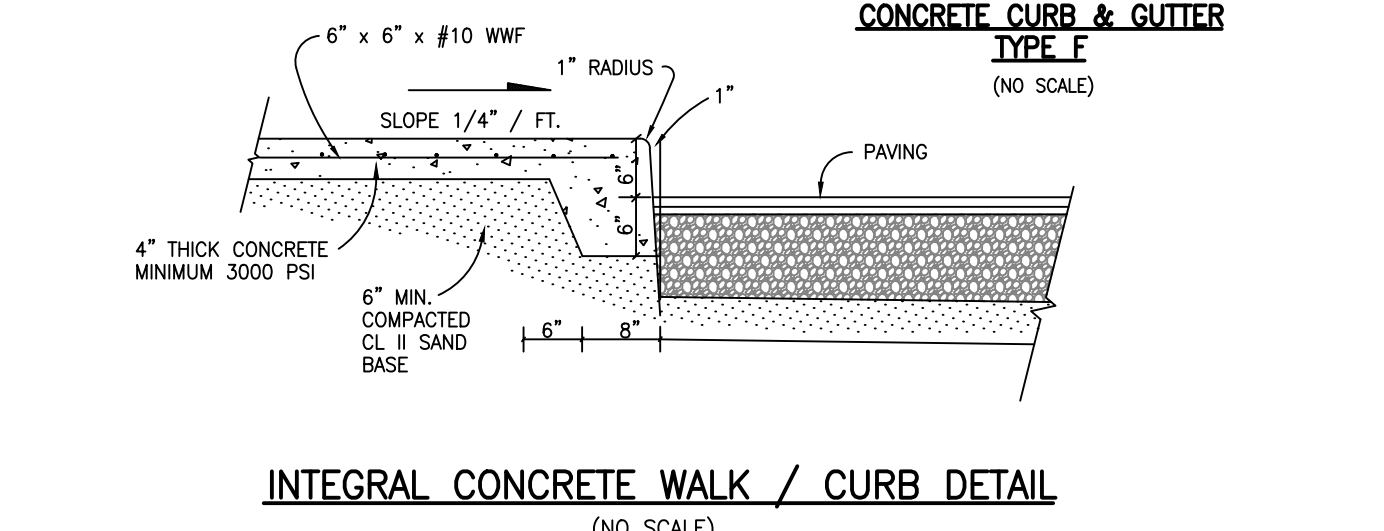
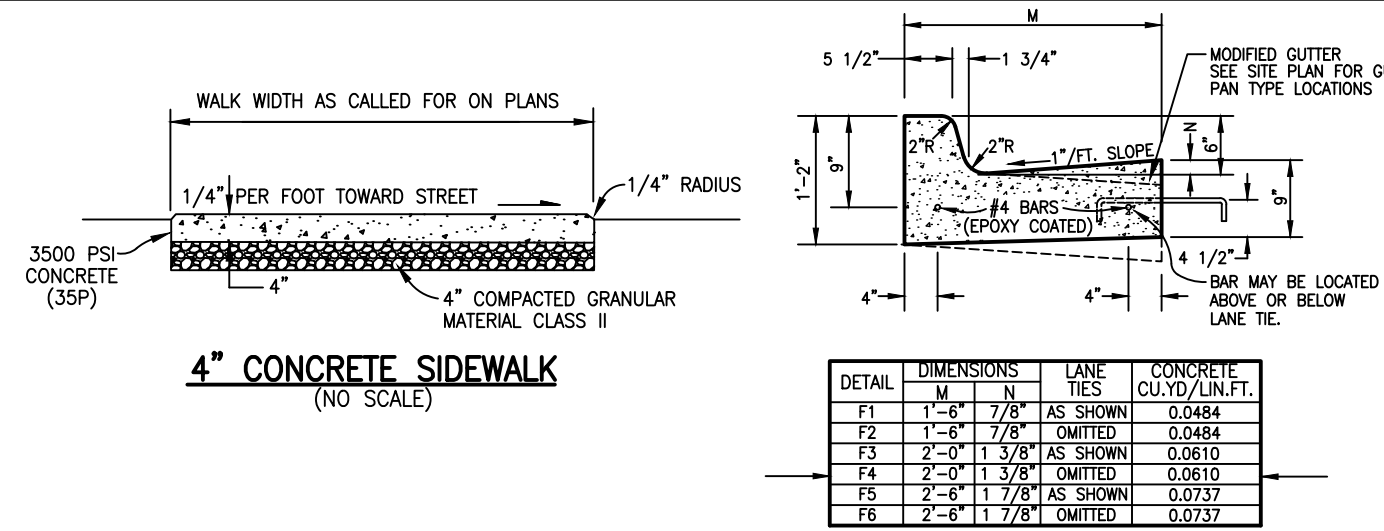


**LIVINGSTON COUNTY SOIL EROSION PERMIT TEMPLATE  
TEMPORARY CONTROLS AND SEQUENCE**

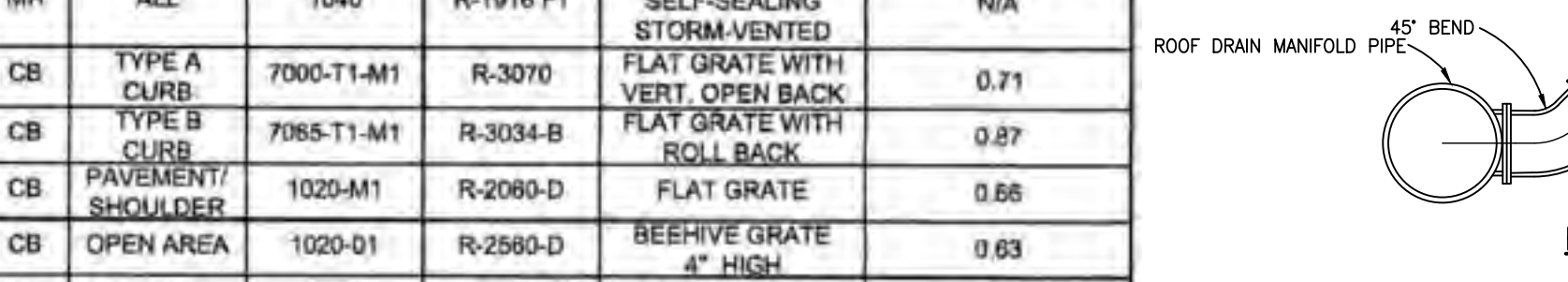
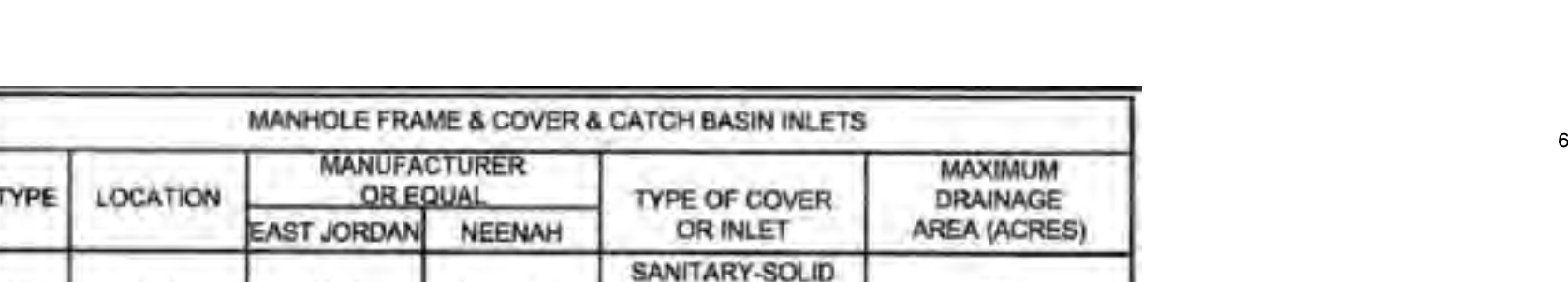
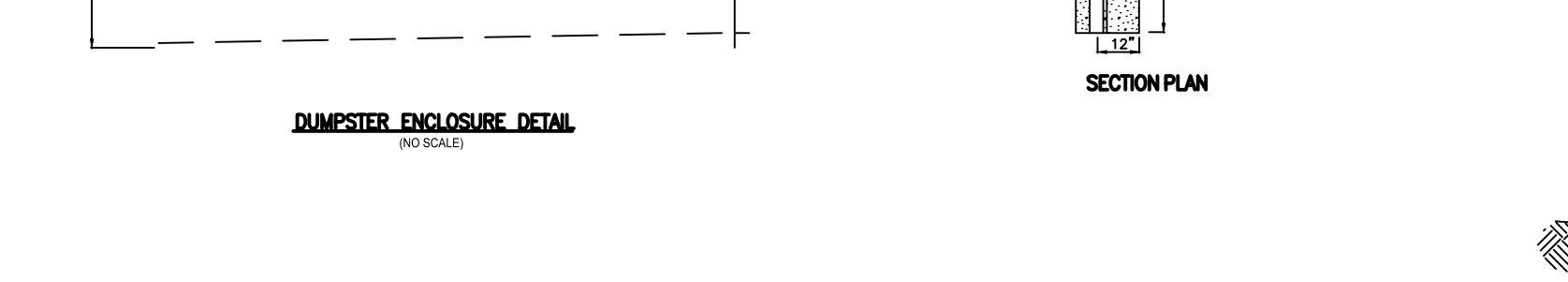
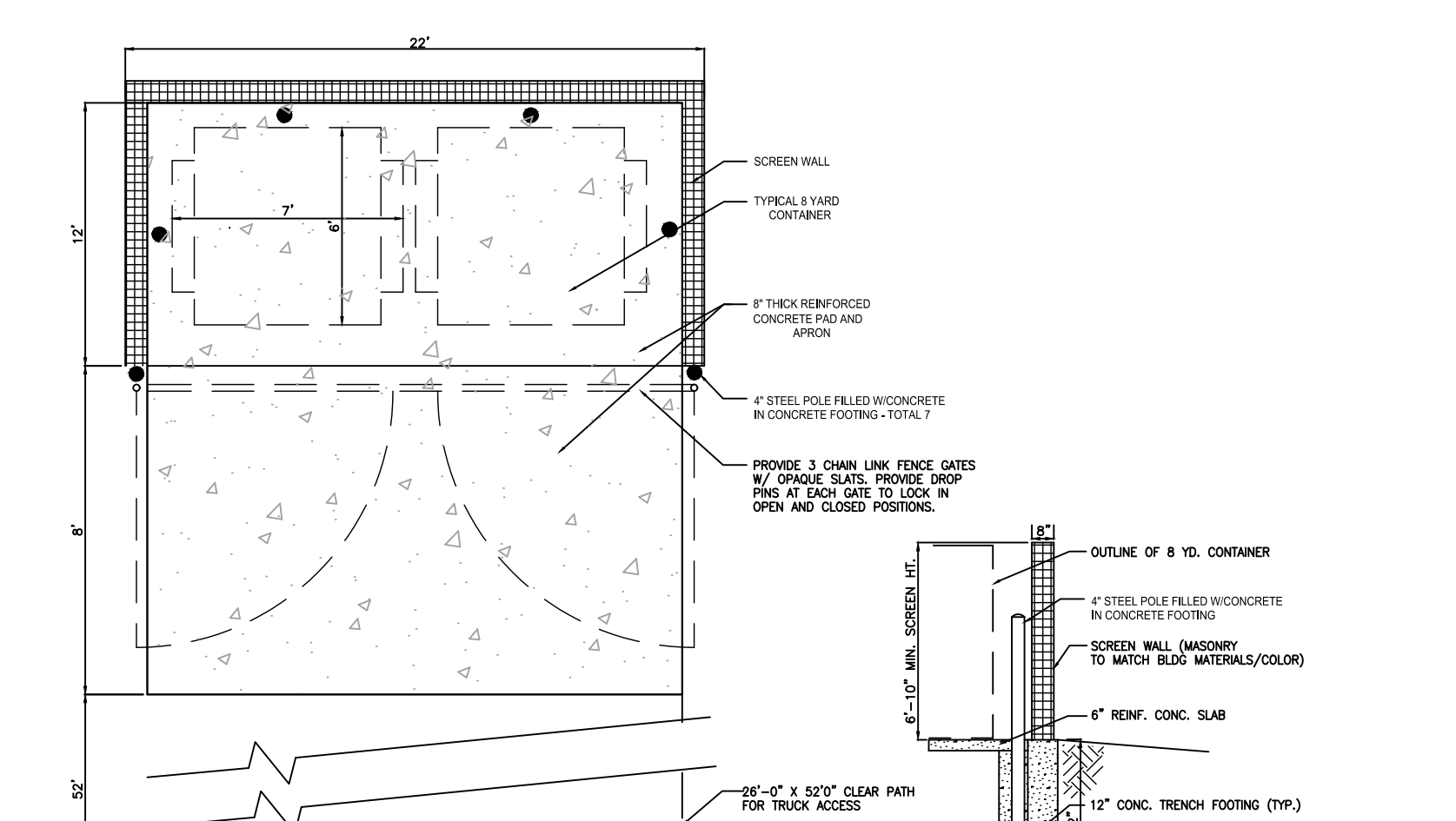
- NOTIFY LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE 24 HOURS PRIOR TO START OF GRADE WORK.
- IN ACCORDANCE WITH PUBLIC ACT NO. 53, OF 1974 THE PERMIT HOLDER SHALL CALL MISS DIG FOR STAKING AND LOCATING OF UTILITIES, AT LEAST 72 HOURS IN ADVANCE OF THE START OF ANY WORK.
- PERMITTING STANDARDS**
  - (IMPORTANT NOTICE) RETENTION/DETENTION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION. INGRESS/EGRESS MUST HAVE LARGE CRUSHED ROCK TO REDUCE THE TRACKING OF SOIL ONTO THE PUBLIC TRAFFIC AREAS. SEE DETAIL ITEMS BELOW.
  - 36" M.D.T. SPECIFICATION TYPE SILT FABRIC FENCE AS SHOWN ON PLANS SHALL BE PLACED AND MAINTAINED ALONG PERMETER ON ALL LOW LYING AREAS OF THE CONSTRUCTION SITE TO FILTER RUNOFF BEFORE LEAVING PROJECT SITE.
  - ALL TEMPORARY EROSION CONTROL DEVICES AS NOTED ON PLANS SHALL BE INSTALLED PRIOR TO THE START OF MASSIVE EARTH DISTRIBUTION.
  - PLAN DOES DENOTE A DETAILED EROSION CONTROL DEVICE TO RESTRICT TRACKING OF MATERIAL ONTO THE HIGHWAY. STONE DIAPHRAGMS SHALL BE INSTALLED AT ALL INGRESS/EGRESS AREAS OF THE SITE PRIOR TO THE START OF MASSIVE EARTH DISTRIBUTION. DIAPHRAGMS SHALL BE OF CRUSHED STONE AND SHALL HAVE A MINIMUM LENGTH OF 100' LINEAL FEET.
  - RETENTION PONDS
    - RETENTION/DETENTION/SEDIMENTATION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION.
    - DETENTION POND OUTLETS SHALL BE OF THE STANDPIPE AND STONE FILTER SYSTEM WITH TRASH SCREEN. OUTLET FLOW SHALL NOT EXCEED 0.20 CUBIC FEET OF WATER PER SECOND/ACRE. POND DIMENSIONS SHALL HAVE A MINIMUM OF ONE (1) FOOT OF FREEBOARD. AN EMERGENCY SPILLWAY SHALL BE CONSTRUCTED WITHIN THE FREEBOARD LEVEL.
    - THE EMERGENCY SPILLWAY FROM THE DETENTION POND SHALL BE SLOPED AND FENCED, OR RIP RAPPED, 15 FEET PAST THE TOE OF THE SLOPE OF THE BERM.
    - DIKES AND BERMS SHALL BE FREE OF ALL ORGANIC MATTER.
    - RETENTION/DETENTION PONDS SHALL BE FENCED WITH A 4" CHAIN LINK FENCE INCLUDING A 12' ACCESS GATE FOR MAINTENANCE UNLESS MINIMUM 5 FT. HORIZONTAL TO 1 FT. VERTICAL SIDE SLOPES ARE PROVIDED. THE FENCE SHALL BE INSTALLED AT THE OUTER PORTION OF THE BERM, TO ALLOW FOR MAINTENANCE WORK TO BE DONE INSIDE THE FENCE.
    - ALL UNIMPROVED DISTURBED AREAS SHALL BE STRIPPED OF TOPSOIL WHICH WILL BE STORED ONSITE DURING THE EXCAVATING STAGE. TOPSOIL PILES SHALL BE SEEDED AND MULCHED, OR MATTED WITH STRAW IN THE NON-GROWING SEASON, IMMEDIATELY AFTER THE STRIPPING. TOPSOIL IS COMPLETED, TO PREVENT WIND AND WATER EROSION.
    - SOIL EROSION CONTROLS SHALL BE MONITORED DAILY BY THE ON-SITE ENGINEER, OR CONTRACTOR, WHICHEVER CASE APPLIES.
- SLOPES AND DITCHES**
  - ON SITE DITCHES SHALL BE OF THE FLAT BOTTOM TYPE MINIMUM WIDTH OF 2" WITH A MINIMUM OF 3 HORIZONTAL TO 1 VERTICAL SIDE SLOPES, 3:1.
  - DITCHES WITH STEEP SLOPES WILL NEED FLOW CHECKS TO PREVENT SCOURING OF THE DITCH BOTTOM. THESE SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR INSPECTOR.
  - SLOPES IN EXCESS OF 3 HORIZONTAL TO 1 VERTICAL SHALL NOT BE USED EXCEPT WITH A MECHANICAL DEVICE SUCH AS A RETAINING WALL, TERRACING, OR OTHER PRIOR APPROVED DEVICE.
  - STORM DRAINS
    - ALL STORM WATER STRUCTURES, CATCH BASINS AND/OR MANHOLES, IF BLOCKED, SHALL BE PLASTERED ON BOTH THE INSIDE AND OUTSIDE OF THE STRUCTURES. GROUTING AND POINTING WILL BE NECESSARY AT THE CASTING AND STRUCTURE JOINT TO PREVENT LEAKAGE AND THE RESULTING SOIL MOVEMENT, AROUND THE STRUCTURE.
    - STORM WATER INLETS SHALL HAVE AS A TEMPORARY CONTROL A STRAW BALE BARRIER AND STONE FILTER INSTALLED AROUND THE INLET DURING CONSTRUCTION. AS AN ALTERNATIVE TO THE STRAW BALE BARRIER, A BURLAP AND PEA STONE FILTER MAY BE USED. THREE LAYERS OF BURLAP FIBER AND A FILTER OF PEA STONE MINIMUM 1 FT. IN DEPTH CAN BE USED. DUE TO THE POROSITY OF THE BURLAP FILTER THE MINIMUM OF 1 FT. OF STONE IS VERY IMPORTANT. THE CONTROL SHALL BE INSTALLED AS SOON AS THE STRUCTURE IS BUILT AND INSPECTED DAILY.
    - BURLAP AND PEA STONE FILTERS WILL NEED TO BE CHANGED AFTER EACH RAINFALL.
    - COUNTY CODE REQUIRES A MINIMUM PIPE SIZE OF 12" IN DIAMETER. IF SMALLER PIPE IS NEEDED FOR OUTLET PURPOSES THE 12" CAN BE BAFFLED TO THE CORRECT SIZE. ALL PIPE SHALL MEET THE 12" DIAMETER CODE SIZE.
    - ALL STORM DRAIN OUTLETS 15" IN DIAMETER OR LARGER SHALL HAVE ANIMAL GUARDS INSTALLED TO PREVENT ENTRANCE TO THE SYSTEM.
- ALL STORM DRAINAGE PIPE 30" IN DIAMETER OR LARGER SHALL BE FRONTED, AT THE JOINTS ON THE INSIDE WITH MORTAR, AFTER BACKFILLING.
- ALL STORM DRAIN OUTLETS THAT DO NOT EMPTY INTO THE RETENTION/DETENTION POND SHALL HAVE A TEMPORARY 5'X10'X3' SUMP INSTALLED AT THE TERMINATION OF THE STORM SEWER. UPON COMPLETION OF THE STABILIZATION WORK THE SUMP AREA SHALL BE FILLED AND RIP RAPPED WITH COBBLE STONE. SILT TRAPS SHALL BE INSPECTED AFTER EACH STORM.
- STORM WATER OUTLETS DO DENOTE RIP RAP. ALL OUTLETS SHALL BE RIP RAPPED OVER KEYED FILTER FABRIC WITH A MINIMUM OF 15 SQ. YARDS OF 6" OR LARGER COBBLE STONE.
- RIP RAP AS NOTED ON THE PLAN SHALL BE OF A FUNNEL SHAPE CONSTRUCTION. WIDTH SHALL INCREASE AS DISTANCE FROM THE OUTLET POINT INCREASES AT A 3:1 RATIO.
- RIP RAP SHALL BE OF COBBLE STONE, 6" IN DIAMETER OR LARGER. GROUTING MAY BE NECESSARY, AND SHALL BE A MINIMUM OF 6" IN DEPTH WITH THE COBBLE SET IN THE CEMENT SLURRY.
- STORM WATER OUTLET IS IN NEED OF A SPLASH BLOCK WHICH IS NOT NOTED ON THE PLAN. INSTALL SPLASH BLOCK IF SLOPE OF THE PIPE IS 4% OR GREATER.
- IT WILL BE NECESSARY FOR THE DEVELOPER TO HAVE THE STORM DRAINAGE LINES CLEANED PRIOR TO FINAL INSPECTION BY THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE. IF REQUIRED, THIS WORK SHALL BE DONE BY A PROFESSIONAL SEWER CLEANING FIRM AND CERTIFIED IN WRITING BY THE PROJECT ENGINEER. ALL SUMPS AND TEMPORARY SILT TRAPS SHALL ALSO BE CLEANED AT THIS TIME.
- ALL UNIMPROVED DISTURBED AREAS SHALL BE RE-TOP SOILED, WITH A MINIMUM OF 3" OF MATERIAL, SEEDED, MULCHED AND TACKED WITHIN 15 DAYS OF THE COMPLETION OF THE MASSIVE EARTH DISRUPTION. IN THE NON-GROWING SEASON STRAW MATTING WILL SUFFICE. HYDROSEEDING WILL BE AN ACCEPTABLE ALTERNATE FOR MULCHING. EXTREME CARE SHOULD BE EXERCISED IN SPRING AND FALL PERIODS AS A FROST WILL BREAK THE BIND OF THE HYDROSEEDING, WHICH WILL AFFECT THE EFFECTIVENESS OF THIS PROCEDURE.
- IN THE NON-GROWING SEASON, TEMPORARY STABILIZATION OF MASSIVELY EXPOSED AREAS FOR WINTER STABILIZATION SHALL BE DONE WITH STRAW MATTING.
- PERIODIC INSPECTIONS WILL BE MADE THROUGHOUT THE COURSE OF THE PROJECT. IT WILL BE THE RESPONSIBILITY OF THE MANAGERS OF THE PROJECT TO CONTACT THIS OFFICE FOR THE FINAL INSPECTION AT THE END OF THE PROJECT.
- THIS COMMERCIAL PERMIT IS VALID FOR THE MASS EARTH MOVEMENT, THE INSTALLATION OF ROADS, DRAINS, AND UTILITIES AND IS NOT FOR ANY SINGLE FAMILY RESIDENCE. ALL RESIDENTIAL BUILDERS WILL NEED TO SECURE WAIVERS AND OR PERMITS AS NECESSARY FOR EACH LOT IN THIS DEVELOPMENT AT THE TIME APPLICATION FOR SINGLE FAMILY RESIDENCE IS MADE.
- THE ISSUING BUILDING DEPARTMENT SHALL NOT ISSUE THE CERTIFICATE OF OCCUPANCY UNTIL THE FINAL INSPECTION LETTER FROM THE LIVINGSTON COUNTY DRAIN COMMISSIONER'S OFFICE HAS BEEN OBTAINED.
- PER THE LIVINGSTON COUNTY DRAIN COMMISSIONER THE SEEDING, FERTILIZER AND MULCH MINIMUM QUANTITIES SHALL BE AS FOLLOWS:
 

TOP-SOIL	3" IN DEPTH
GRASS SEED	218 LBS. PER ACRE
FERTILIZER	150 LBS. PER ACRE
STRAW MULCH	3" IN DEPTH 1.5 TO 2 TONS PER ACRE (ALL MULCHING MUST HAVE A TIE DOWN, SUCH AS TACKIFIER, NET BINDING, ETC.)
- HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1% IN SUCH CASES STABILIZATION SHALL BE DONE WITH SEED AND STRAW MULCH WITH A TACKIFIER.
- PERIODIC INSPECTIONS WILL BE MADE THROUGHOUT THE COURSE OF THE PROJECT. IT WILL BE THE RESPONSIBILITY OF THE MANAGERS OF THE PROJECT TO CONTACT THIS OFFICE FOR THE FINAL INSPECTION AT THE END OF THE PROJECT.
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- RETENTION/DETENTION/SEDIMENTATION PONDS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO THE START OF MASSIVE EARTH DISRUPTION.
- DETENTION POND OUTLETS SHALL BE OF THE STANDPIPE AND STONE FILTER SYSTEM WITH TRASH SCREEN. OUTLET FLOW SHALL NOT EXCEED 0.20 CUBIC FEET OF WATER PER SECOND/ACRE. POND DIMENSIONS SHALL HAVE A MINIMUM OF ONE (1) FOOT OF FREEBOARD. AN EMERGENCY SPILLWAY SHALL BE CONSTRUCTED WITHIN THE FREEBOARD LEVEL.
- THE EMERGENCY SPILLWAY FROM THE DETENTION POND SHALL BE SLOPED AND FENCED, OR RIP RAPPED, 15 FEET PAST THE TOE OF THE SLOPE OF THE BERM.
- DIKES AND BERMS SHALL BE FREE OF ALL ORGANIC MATTER.
- RETENTION/DETENTION PONDS SHALL BE FENCED WITH A 4" CHAIN LINK FENCE INCLUDING A 12' ACCESS GATE FOR MAINTENANCE UNLESS MINIMUM 5 FT. HORIZONTAL TO 1 FT. VERTICAL SIDE SLOPES ARE PROVIDED. THE FENCE SHALL BE INSTALLED AT THE OUTER PORTION OF THE BERM, TO ALLOW FOR MAINTENANCE WORK TO BE DONE INSIDE THE FENCE.
- ALL UNIMPROVED DISTURBED AREAS SHALL BE STRIPPED OF TOPSOIL WHICH WILL BE STORED ONSITE DURING THE EXCAVATING STAGE. TOPSOIL PILES SHALL BE SEEDED AND MULCHED, OR MATTED WITH STRAW IN THE NON-GROWING SEASON, IMMEDIATELY AFTER THE STRIPPING. TOPSOIL IS COMPLETED, TO PREVENT WIND AND WATER EROSION.
- SOIL EROSION CONTROLS SHALL BE MONITORED DAILY BY THE ON-SITE ENGINEER, OR CONTRACTOR, WHICHEVER CASE APPLIES.



ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	1/2\"/>	

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

DETAIL	NO.	DESCRIPTION	CONCRETE CUBIC/YD	CONCRETE CUBIC/UNIT
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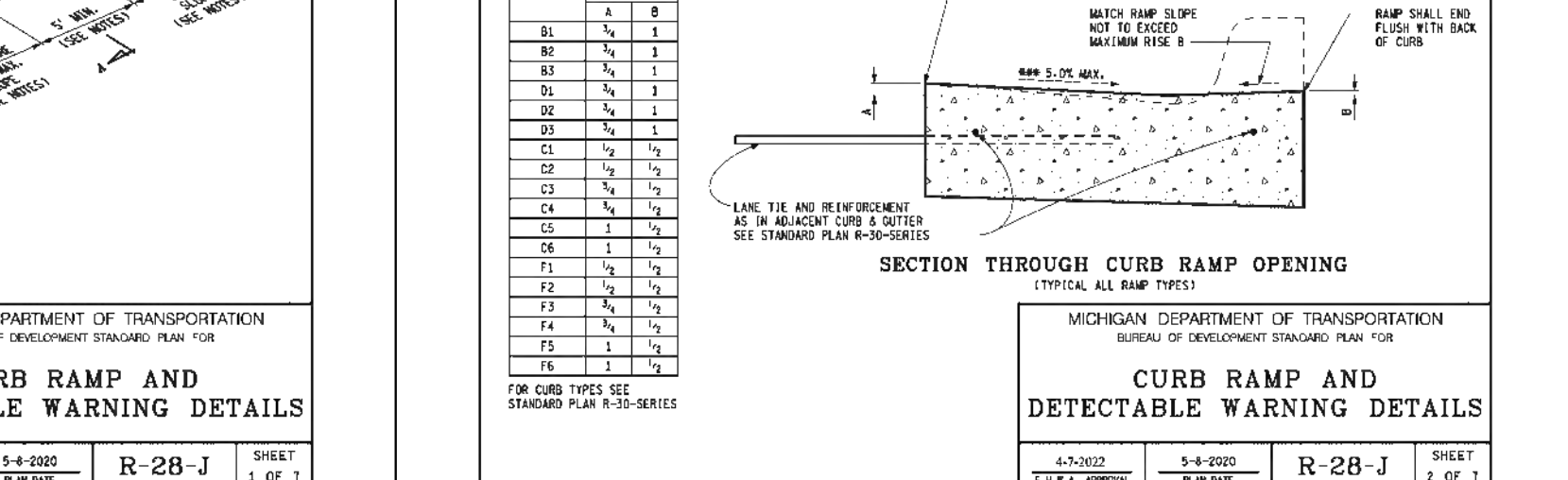
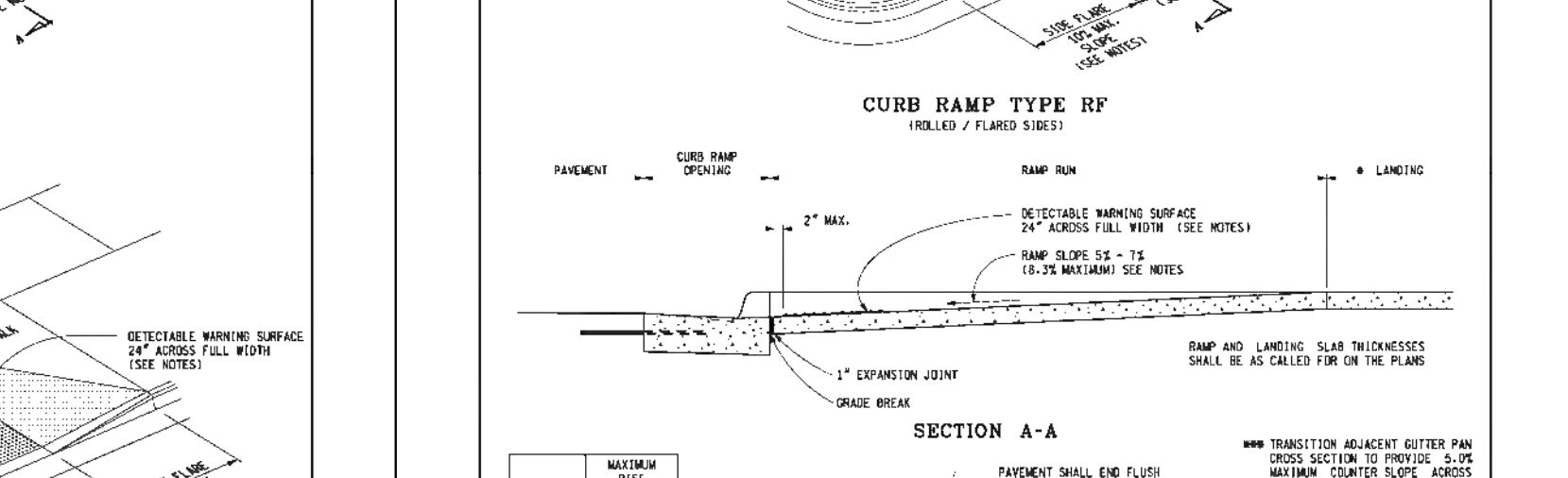
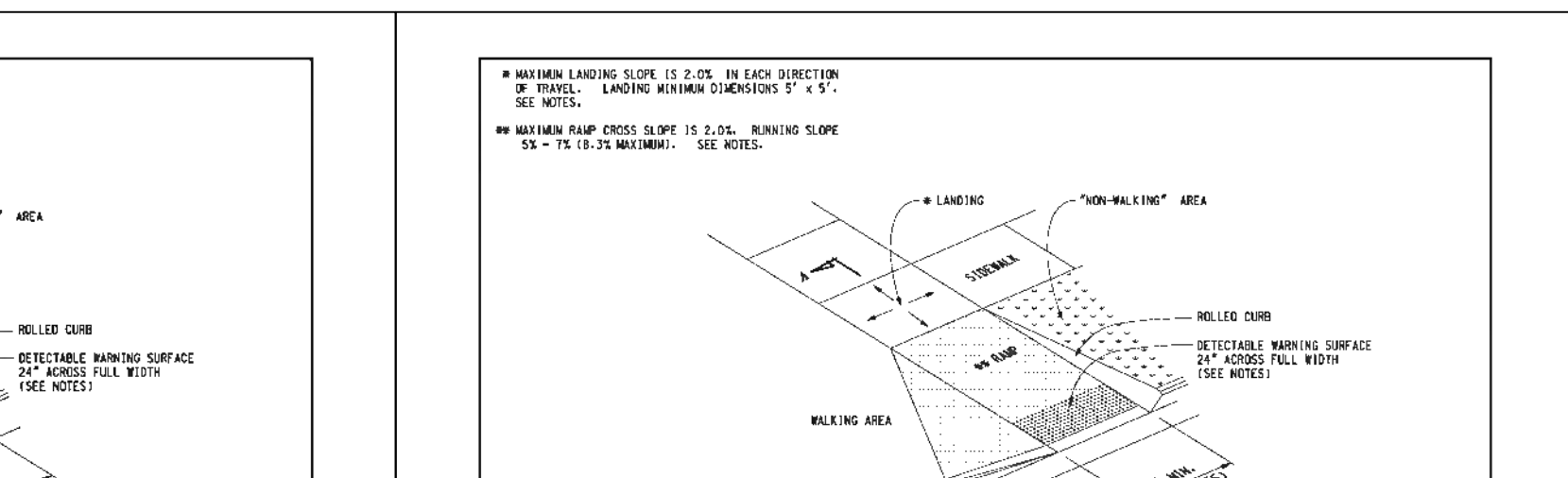
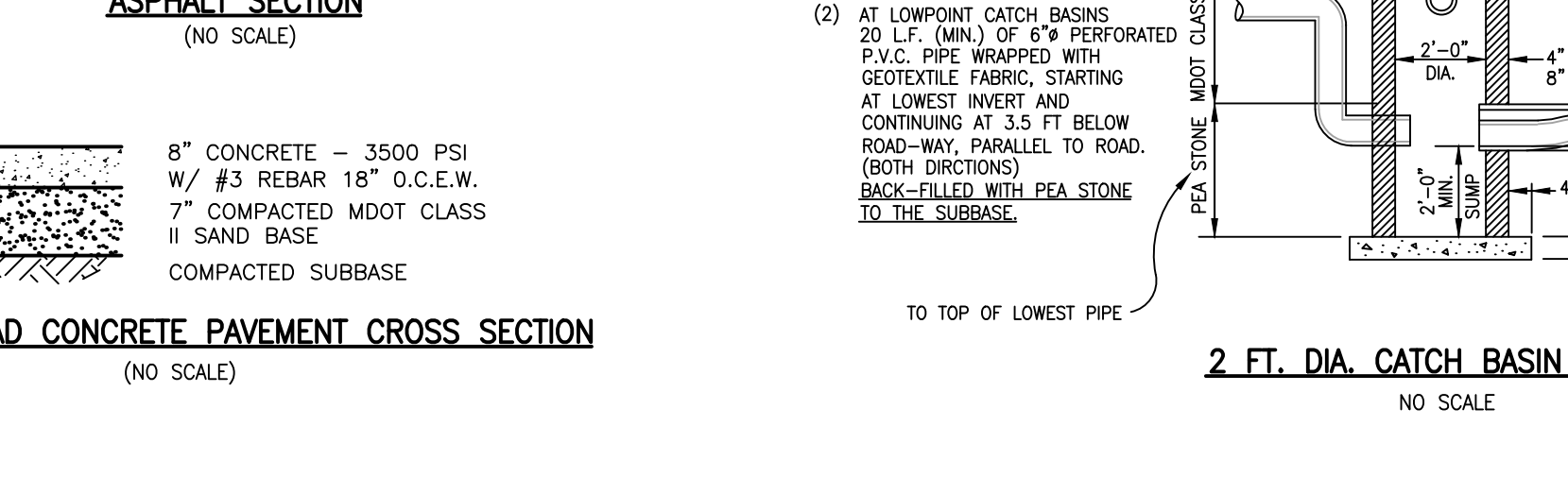
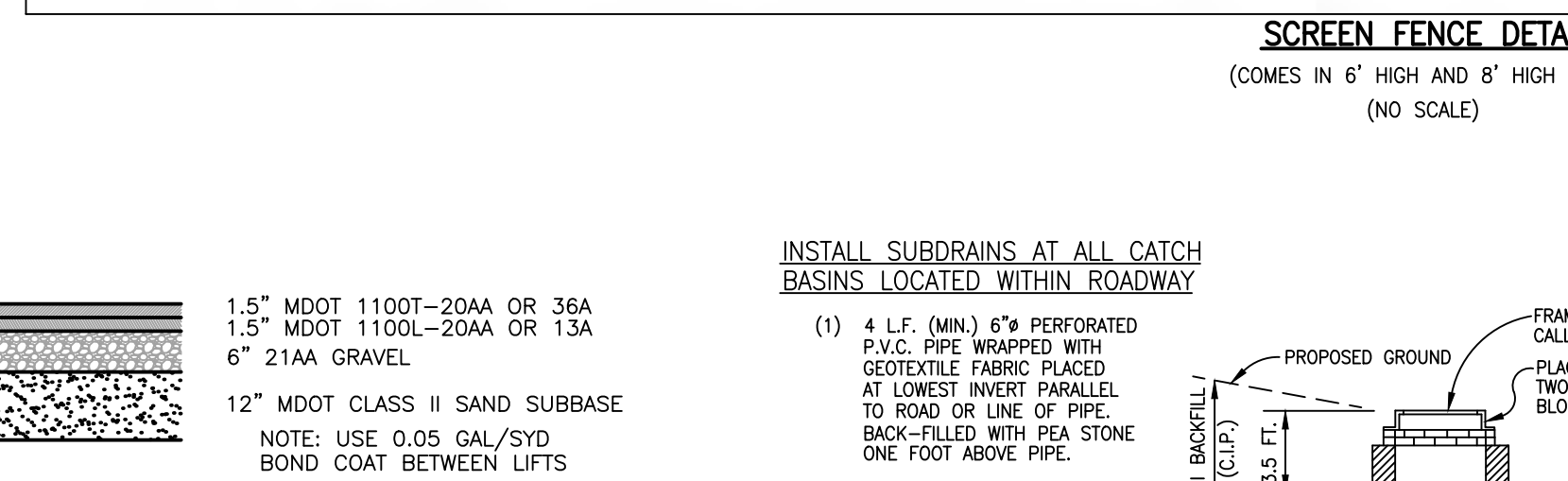
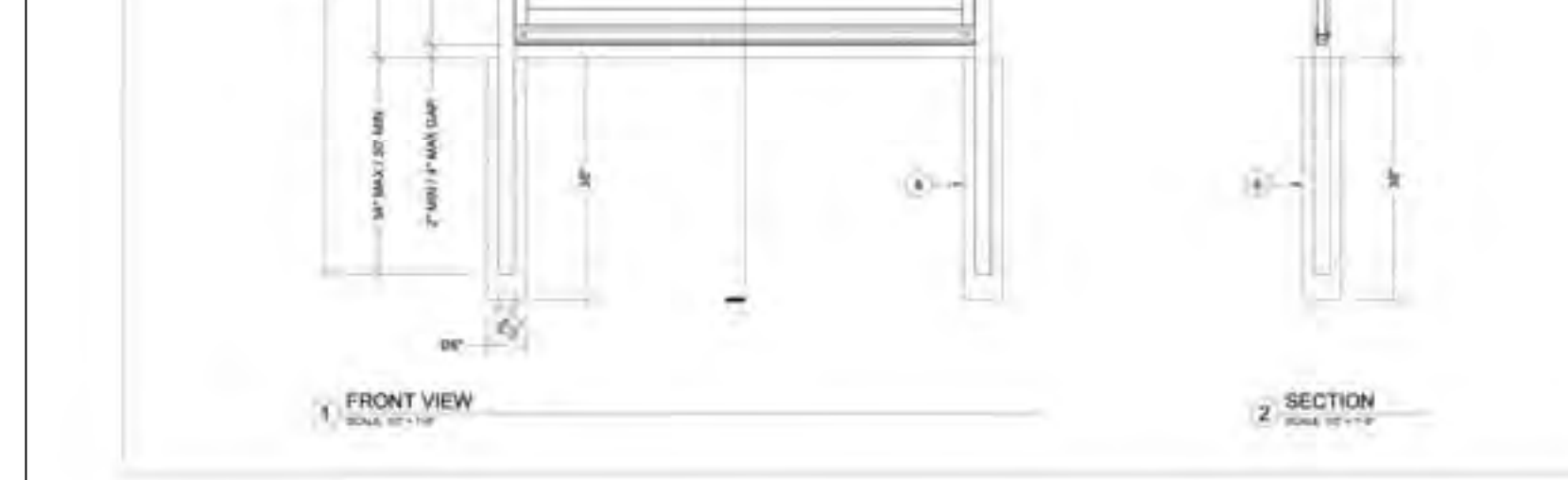
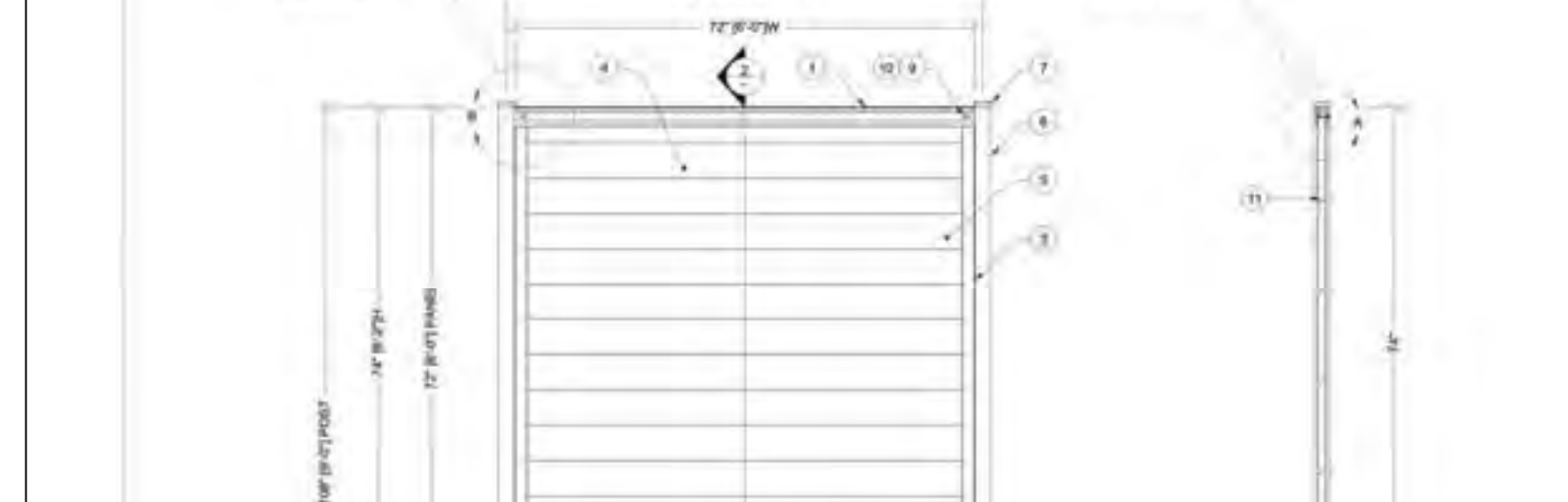
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**BOSS Engineering**  
 Engineers Surveyors Planners Landscape Architects  
 3121 E. GRAND RIVER AVE.  
 HOWELL, MI. 48843  
 517.546.4836 FAX 517.548.1670

**SOUTH LATSON COMMERCIAL DEVELOPMENT**  
 1015 LATSON ROAD LLC  
 26932 BECK ROAD  
 WOODLAND, MI 48393  
 248.773.7992

**CONSTRUCTION DETAILS**

PROJECT	PREPARED FOR	TITLE	DATE
SOUTH LATSON COMMERCIAL DEVELOPMENT	1015 LATSON ROAD LLC	CONSTRUCTION DETAILS	10/04/2023

NO.	DATE	BY	REVISION
1	10-25-23	ST	PER TOWNSHIP COMMENTS
2	12-11-23	ST	PER P.C. MEETING
3	1-16-24	ST	LAYOUT MODIFICATIONS

DESIGNED BY: ST  
 DRAWN BY: DH/JS  
 CHECKED BY:  
 SCALE: NO SCALE  
 JOB NO: 21-519  
 DATE: 10/04/2023  
 SHEET NO. 10



PROJECT SUMMARY

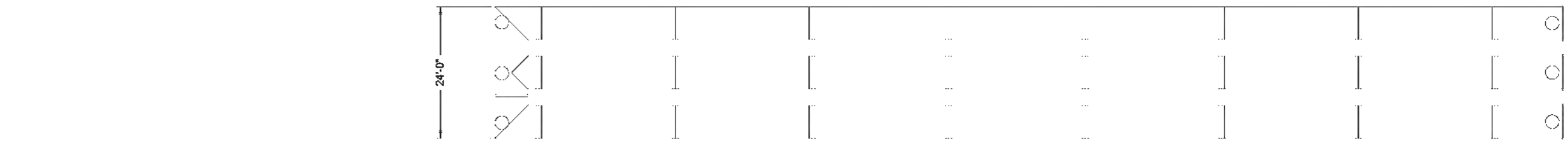
- CALCULATION DETAILS
-LOADING + HEADWINDS
-APPROX. LINEAR FOOTAGE = 593 LF
STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 16,170 CF
- PIPE STORAGE VOLUME = 16,170 CF
- BACKFILL STORAGE VOLUME = 0 CF

PIPE DETAILS

- DIAMETER = 72"
- CORRUGATION = 541
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 30"

BACKFILL DETAILS

- WIDTH AT ENDS = 12"
- ABOVE PIPE = 12"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 12"



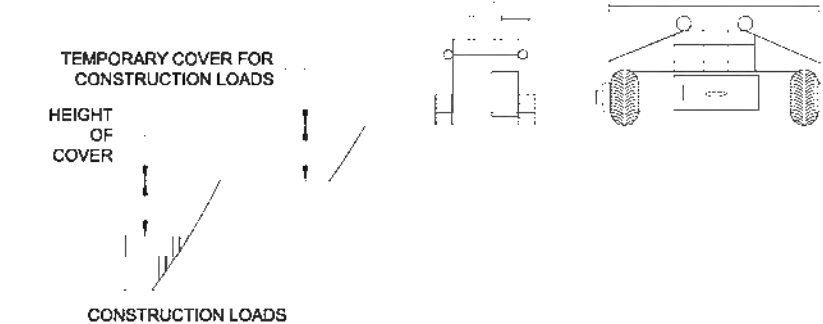
NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERS UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS.

CONTECH ENGINEERED SOLUTIONS LLC logo and contact information.

Project title: DYO39920 East Latson - South Parcel South Parcel - COPY Howell, MI DETENTION SYSTEM

Revision table with columns for NO., DATE, and DESCRIPTION.



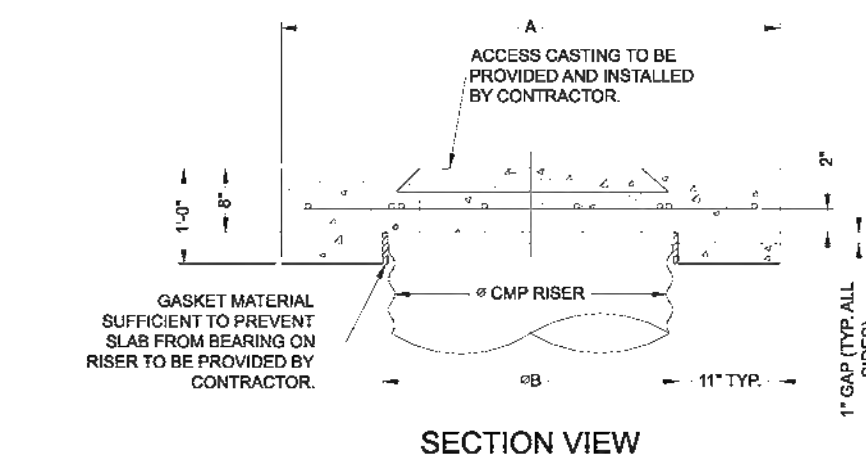
CONSTRUCTION LOADS
FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE.

Table with columns: PIPE SPAN, AXLE LOADS (kips), MINIMUM COVER (FT).

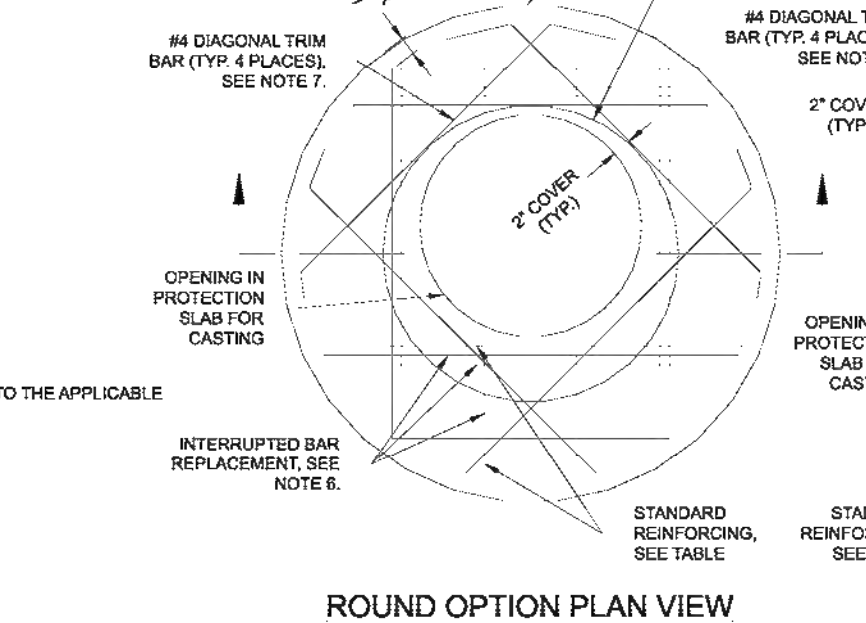
CONSTRUCTION LOADING DIAGRAM
SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM.

- SCOPE
MATERIAL
ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-82.
THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.



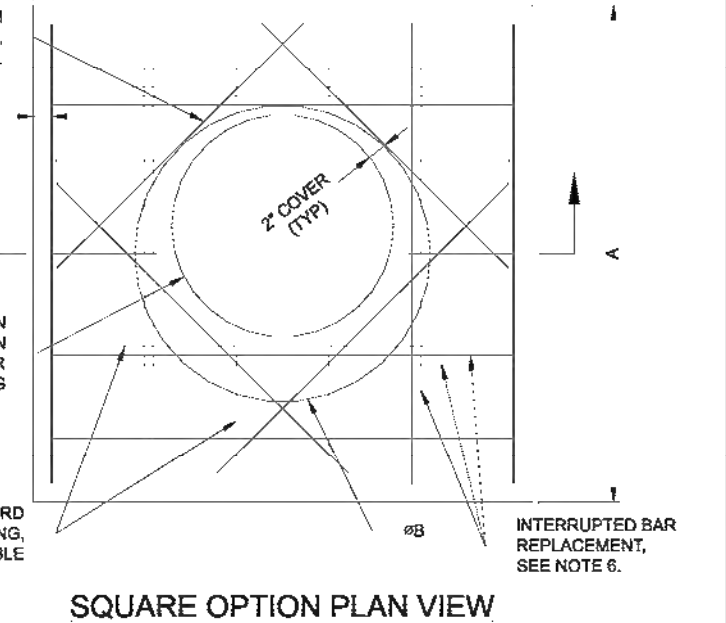
SECTION VIEW



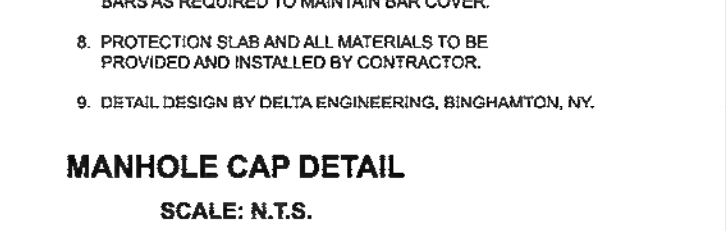
ROUND OPTION PLAN VIEW

REINFORCING TABLE with columns for CMP RISER, A, B, REINFORCING, BEARING PRESSURE (PSF).

ASSUMED SOIL BEARING CAPACITY



SQUARE OPTION PLAN VIEW

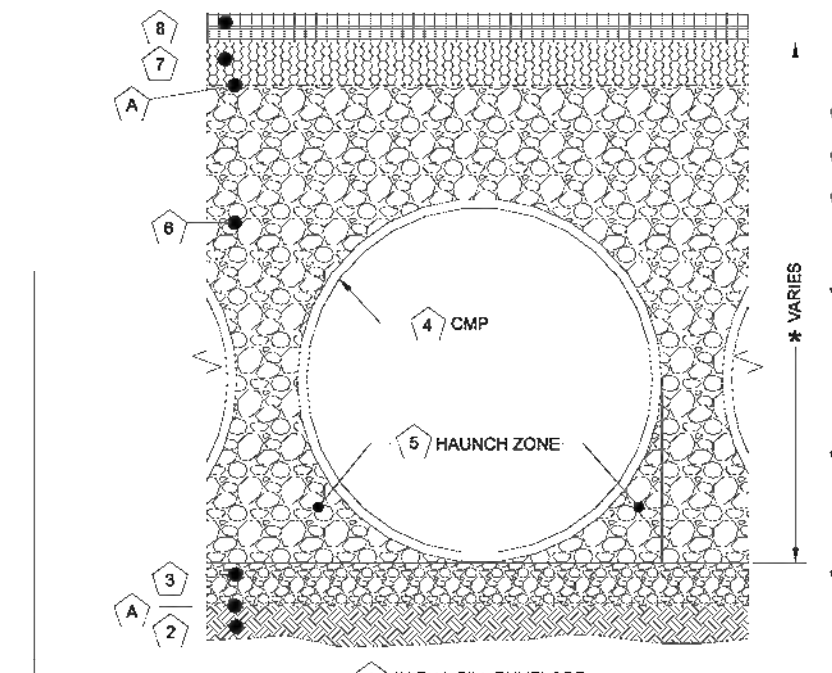


MANHOLE CAP DETAIL
SCALE: N.T.S.

CONTECH ENGINEERED SOLUTIONS LLC logo and contact information.

Project title: DYO39920 East Latson - South Parcel South Parcel - COPY Howell, MI DETENTION SYSTEM

Revision table with columns for NO., DATE, and DESCRIPTION.



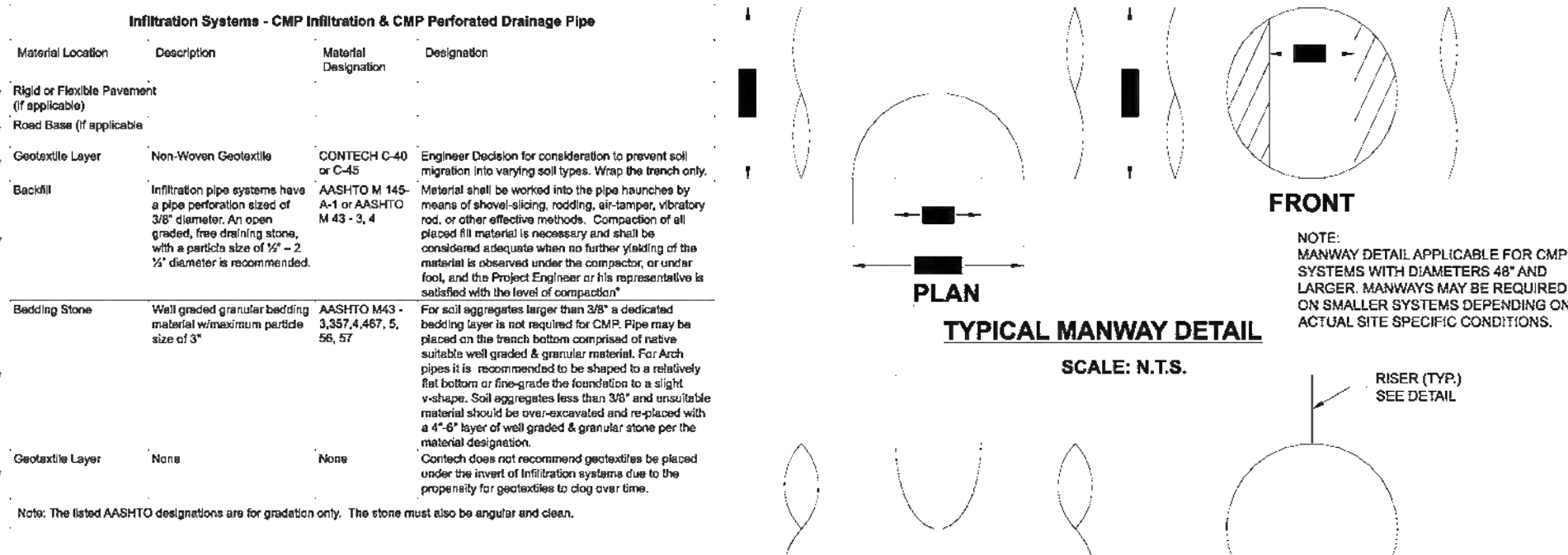
MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGMENT.

- 1. FOUNDATION/BEDDING PREPARATION
2. PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE.
3. BACKFILL MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

BACKFILL MATERIAL SHALL BE PLACED IN 6" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.



TYPICAL MANWAY DETAIL
SCALE: N.T.S.



TYPICAL RISER DETAIL
SCALE: N.T.S.



TYPICAL SECTION VIEW
LINER OVER ROWS
SCALE: N.T.S.

- 1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPENING AREA FOR SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES 1/8"

CONTECH ENGINEERED SOLUTIONS LLC logo and contact information.

Project title: DYO39920 East Latson - South Parcel South Parcel - COPY Howell, MI DETENTION SYSTEM

Revision table with columns for NO., DATE, and DESCRIPTION.

CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG TERM PERFORMANCE.

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.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED.

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.

BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL, SLING, ROCKING, AIR TRAMP, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES 10:20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY.

ADDITIONAL CONSIDERATIONS

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

CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED.

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 FUNCTION AS INTENDED.

BEBOSS Engineering logo and contact information: 3121 E. GRAND RIVER AVE. HOWELL, MI. 48843

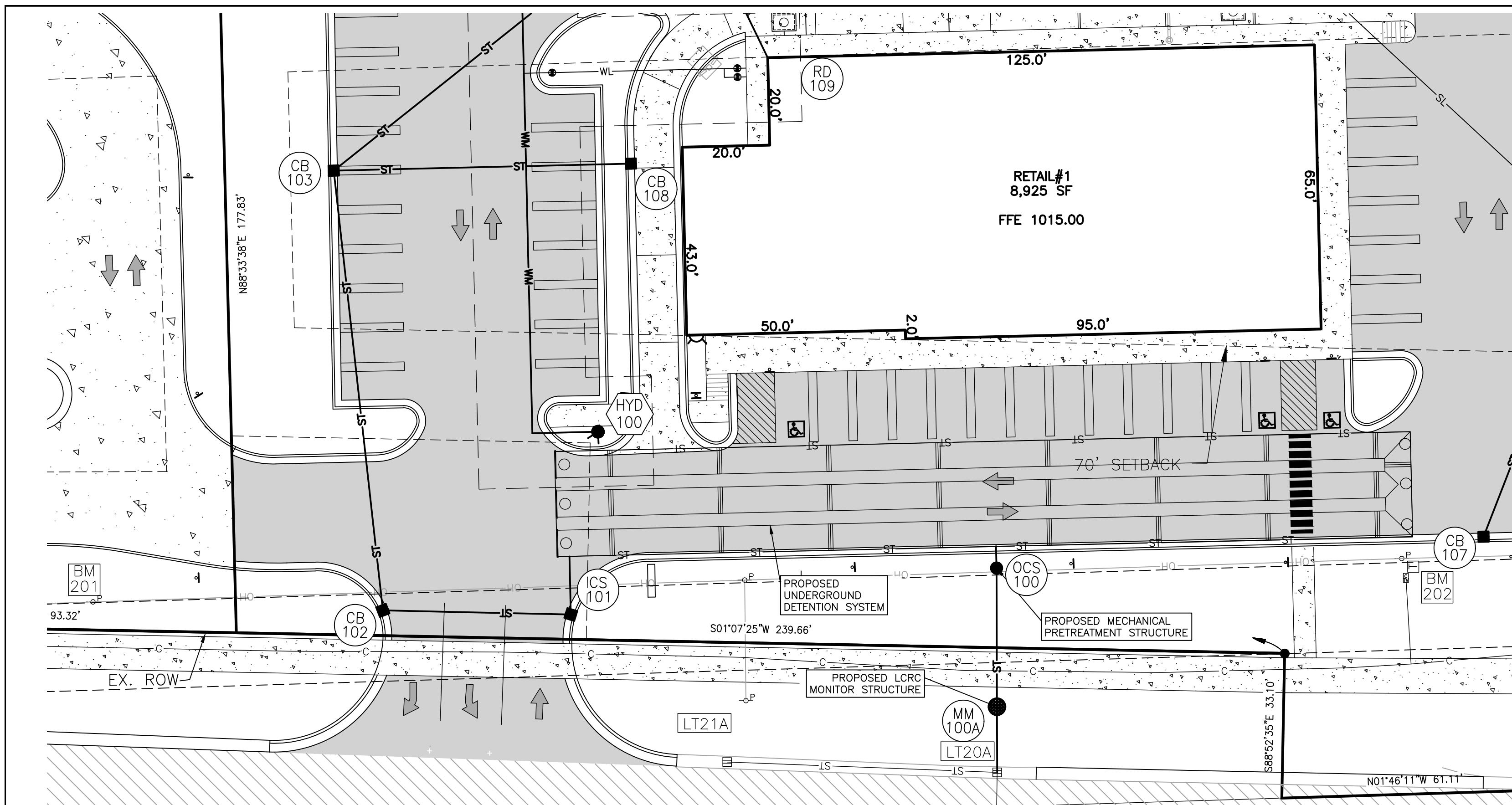
PROJECT: SOUTH LATSON COMMERCIAL DEVELOPMENT PREPARED FOR: 1015 LATSON ROAD LLC

Table with columns: NO., DATE, DESCRIPTION, REVISION PER.

DESIGNED BY: ST
DRAWN BY: DH/JS
CHECKED BY:
SCALE: NO SCALE
JOB NO: 21-519
DATE: 10/04/2023
SHEET NO. 12







**STORM WATER MANAGEMENT NARRATIVE**

**PRE-DEVELOPMENT:**  
THE SITE CURRENTLY SITS VACANT AND SHEET FLOWS FROM EAST TO WEST TO THE LATSON ROAD STORM SEWER SYSTEM.

**POST DEVELOPMENT:**  
THE SITE WILL BE DEVELOPED AND PAVED FOR USE AS A MULTI-TENANT COMMERCIAL SPACE WITH RESTAURANT AND RETAIL USE. THE SITE WILL CONTAIN A STORM SEWER COLLECTION SYSTEM WHICH WILL COLLECT ALL ON-SITE (AND SOME TRIBUTARY OFF-SITE) STORM WATER AND ROUTE IT TO A MECHANICAL PRETREATMENT UNIT. THE MECHANICAL PRETREATMENT UNIT IS PROPOSED AND DESIGNED TO MEET THE REQUIRED WATER QUALITY STANDARDS PRIOR TO DISCHARGE INTO THE PROPOSED ON-SITE UNDERGROUND DETENTION SYSTEM. INFILTRATION TESTING HAS BEEN COMPLETED ON A NEARBY AREA TO THE NORTH THAT INDICATE THAT ON-SITE SOILS IN THE VICINITY OF THE PROPOSED BASIN ARE APPROXIMATELY 1.5 IN/HR. APPLYING A FACTOR OF SAFETY OF 2, THE SITE IS UTILIZING A SOILS INFILTRATIVE CAPACITY OF 0.75 IN/HR.

ONE OF THE MAIN GOALS OF THE CURRENT LIVINGSTON COUNTY DRAIN COMMISSIONER STORM WATER STANDARDS IS TO PROMOTE ON-SITE INFILTRATION IF SUITABLE SOILS EXIST. IF SITE SOILS EXCEED 0.25 IN/HR, INFILTRATION IS EXPECTED TO BE IMPLEMENTED, AND WITH ON-SITE SOILS WITH INFILTRATIVE RATES GREATER THAN 0.50 IN/HR, THE SOILS DO NOT NEED ANY AMENDMENT TO FURTHER PROMOTE INFILTRATION, DUE TO THE GEOMETRICS OF THE SUBJECT SITE (BEING SHALLOW AND A SMALLER COMMERCIAL PARCEL), THERE ARE MINIMAL OPPORTUNITIES TO PROMOTE INFILTRATION OTHER THAN AT THE LOCATION OF THE UNDERGROUND DETENTION SYSTEM. IN ORDER TO PROMOTE INFILTRATION AT THE BASIN FOOTPRINT PRIOR TO STORM WATER DISCHARGE TO THE LATSON ROAD STORM SEWER SYSTEM OCCURRING, THE UNDERGROUND DETENTION SYSTEM PIPE INVERT IS SET BELOW THE OUTLET CONTROL ORIFICE ELEVATION BY 2.5'. SO 2.5' OF THE 6' DIAMETER UNDERGROUND SYSTEM PIPE WILL BE BELOW THE OUTLET ELEVATION. A PERFORATED PIPE AND THE SURROUNDING STRUCTURAL BACKFILL AROUND THE UNDERGROUND DETENTION SYSTEM WILL AID IN PROMOTION OF THE INFILTRATION OF STORM WATER IN THE ON-SITE 0.75 IN/HR SOILS. THE VOLUME WITHIN THE UNDERGROUND SYSTEM THAT IS BELOW THE OUTLET ELEVATION IS 6,613 CFT.

593 LFT PIPE X 11.1511 CFT/LFT OF PIPE (BOTTOM 2.5' OF 6' DIA PIPE) = 6,613 CFT  
THE 6,613 CFT PROVIDED BELOW THE INVERT IS INTENDED TO MEET OR EXCEED THE REQUIRED CHANNEL PROTECTION VOLUME 5,517 CFT. THIS DESIGN MEETS THAT REQUIREMENT.

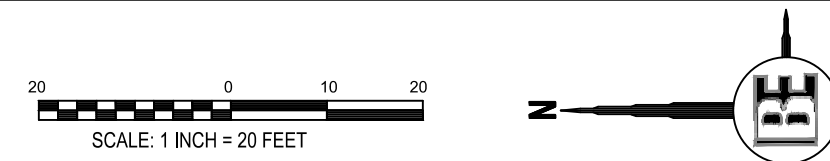
PER THE LDCD STANDARDS, VOLUME PROVIDED FOR THE CHANNEL PROTECTION VOLUME CAN BE CREDITED TOWARDS THE REQUIRED 100-YR DETENTION VOLUME, SO LONG AS THE REMAINING DETENTION VOLUME REQUIRED IS NOT LESS THAN THE EXTENDED DETENTION VOLUME. WITH THIS, A REMAINING 9,019 CFT OF VOLUME IS NEEDED:

15,632 CFT - 6,613 CFT = 9,019 CFT (REMAINING VOLUME NEEDED ABOVE OUTLET)  
9,019 CFT + 8,064 CFT (EXTENDED DETENTION VOLUME)

A VOLUME OF 10,154 CFT IS PROVIDED ABOVE THE OUTLET CONTROL ELEVATION.  
593 LFT PIPE X 17.1232 CFT/LFT OF PIPE (TOP 3.5' OF 6' DIA PIPE) = 10,154 CFT  
THE TOTAL STORAGE VOLUME PROVIDED IN THE SYSTEM IS 16,767 CFT (6,613 CFT BELOW OUTLET FOR CPVC INFILTRATION VOLUME + 10,154 CFT ABOVE OUTLET)

IN ORDER FOR INFILTRATION TO OCCUR IN THE BASIN FOOTPRINT, AN ADEQUATE FOOTPRINT FOR INFILTRATION MUST BE PROVIDED. PER THE LDCD STANDARDS AND WITH AN INFILTRATION RATE OF 0.75 IN/HR, A MINIMUM BASIN FOOTPRINT OF 3,153 SFT IS REQUIRED. A BASIN FOOTPRINT OF THE PROPOSED SYSTEM IS 4,692 SFT. WITH THIS FOOTPRINT AREA AND ON-SITE INFILTRATION RATE, THE PROVIDED RATE OF INFILTRATION IS 293.3 CFT/HR WHICH RESULTS IN FULL INFILTRATION WITHIN 22.5 HOURS.

4,692 SFT X (0.75 IN/HR X 1FT/12IN) = 293.3 CFT/HR  
6,613 CFT / 293.3 CFT/HR = 22.5 HRS TO INFILTRATE THE PROVIDED CPVC STORAGE VOLUME BELOW THE OUTLET INVERT.



SEE SHEET 2 FOR GENERAL NOTES AND LEGEND

**LIVINGSTON COUNTY DETENTION BASIN CALCULATIONS**

AREA (ACRES)	IMPERVIOUS FACTOR	ACRE IMPERVIOUS
1.23	0.9	1.10
0.00	0.7	0.00
0.35	0.2	0.07

COMPOUND C: 0.74  
TOTAL DRAINAGE AREA: 1.58 ACRES

**WATER QUALITY VOLUME  $V_{WQ}$**   
 $V_{WQ} = 3,630(C)/A = 4244 \text{ FT}^3$   
Are upstream infiltration BMP's provided? no  
 $V_{i} = 0.15(V_{WQ}) = 637 \text{ FT}^3$

**WATER QUALITY RATE FOR MECHANICAL STRUCTURE**  
 $T_c = \text{MAX TIME OF CONCENTRATION} = 18.63 \text{ MIN}$   
 $Q_{WQ} = (C)(A)^{0.2}(T_c + 9.17)^{0.81} = 2.39 \text{ CFS}$

**CHANNEL PROTECTION VOLUME CONTROL - REQUIRED**  
 $V_{CP,R} = 4.719(C)/A = 5517 \text{ FT}^3$

**CHANNEL PROTECTION VOLUME CONTROL - PROVIDED**  
In-Situ Infiltration rate = 0.75 IN/HR  
Are upstream infiltration BMP's provided? NO INFILTRATION  
Basin Footprint Infiltration Area Required = 3153  $\text{FT}^2$   
 $V_{CP,P} = 6613 \text{ FT}^3$

**CHANNEL PROTECTION RATE CONTROL (EXTENDED DETENTION VOLUME)**  
 $V_{ED} = 6,897(C)/A = 8064 \text{ FT}^3$

**EXTENDED DETENTION OUTLET RATE**  
 $Q_{ED} = V_{ED}/(48\text{hr}) = 0.047 \text{ CFS}$   
 $H_{ED} = V_{ED}/4,800 (H^2)^{0.5} = 1.0 \text{ 1" HOLES}$   
 $H = 2.39 \text{ FT}$   
 $ELEV_{ED} = 1010.56 \text{ FT}$

**100-YEAR ALLOWABLE OUTLET RATE**  
 $Q_{DRAIN} = \text{Restricted Drain Rate} = 0.15 \text{ CFS/ACRE}$   
 $Q_{RNR} = 1.1055 - 0.206LN(A) = 1.000 \text{ CFS/ACRE}$   
 $Q_{RNDP} = (\text{LESSER OF } Q_{DRAIN} \text{ \& } Q_{RNR})^A = 0.237 \text{ CFS}$

**100-YEAR DETENTION VOLUME**  
 $V_{100R} = 18985(C)/A = 22197 \text{ FT}^3$   
 $Q_{100IN} = (C)(A)^{0.833}/(T_c + 9.17)^{0.81} = 6.59 \text{ CFS}$   
 $R = 0.206 - 15 \ln(Q_{100R}/Q_{100IN}) = 0.7048$   
 $V_{1000} = V_{100R} - R \cdot V_{CP,P} = 9031 \text{ FT}^3$   
Is  $V_{1000} \geq V_{ED}$ ? YES

**BASIN STORAGE PROVIDED**  
Lineal Footage of Pipe in system: 593 ft

ELEVATION	INCREMENTAL VOLUME / LFT	VOLUME (FT <sup>3</sup> )	TOTAL VOLUME (FT <sup>3</sup> )
1011.67	1.1254	667.4	10,154
1011.17	1.9721	1169.5	9,487
1010.67	2.4302	1441.1	8,317
1010.17	2.7225	1614.4	6,876
1009.67	2.9009	1720.2	5,262
1009.17	2.9861	1770.8	3,542
1008.67	2.9861	1770.8	1,771
1008.17	0.0	0.0	0
1008.17	2.9009	1720.2	6,613
1007.67	2.7225	1614.4	4,892
1007.17	2.4302	1441.1	3,278
1006.67	1.9721	1169.5	1,837
1006.17	1.1254	667.4	667
1005.67	0	0	0

PROVIDED FOOTPRINT OF BASIN BOTTOM AREA: 4692  $\text{FT}^2$

**OUTLET CONTROL STRUCTURE**

$H_{ED} = 1 \text{ (1" HOLES)}$   
 $A_{ED} = 0.0055 \text{ FT}^2$   
 $Q_{ED-ACTUAL} = (A_{ED})^{0.62} \times (2 \times 32.2 \times h^{0.5}) = 0.042 \text{ CFS}$

**ORIFICE OUTLET**  
 $Q_{IND-ACTUAL} = Q_{RNDP} - Q_{ED-ACTUAL} = 0.195 \text{ CFS}$   
 $A_{100} = Q_{IND-ACTUAL} / (0.62 \times (2 \times 32.2 \times (ELEV_{DHVIL} - ELEV_{ED})^{0.5})) = 0.037 \text{ FT}^2$   
AREA OF 2 INCH DIAMETER ORIFICE = 0.022  $\text{FT}^2$   
# ORIFICES =  $A_{100} / 0.005 = 1.0$  ORIFICES

**OVERFLOW SPILLWAY DESIGN**  
Design Flow Rate:  $Q_{100IN} = 6.59 \text{ CFS}$   
Depth of Spillway:  $D_{SPILL} = 6 \text{ INCHES}$   
Width of Spillway:  $W_{SPILL} = Q_{100IN} / 3.33 D_{SPILL}^{3/2} = 5.6 \text{ FT}$

**BASIN DESIGN SUMMARY**

BASIN SIZE REQUIRED =	9031 $\text{FT}^3$
BASIN SIZE PROVIDED =	10,154 $\text{FT}^3$

**ORIFICE DESIGN SUMMARY**

ELEVATION	# OF HOLES	DIAMETER OF HOLES
1008.17	1.0	1-INCH
1010.56	1.0	2-INCH

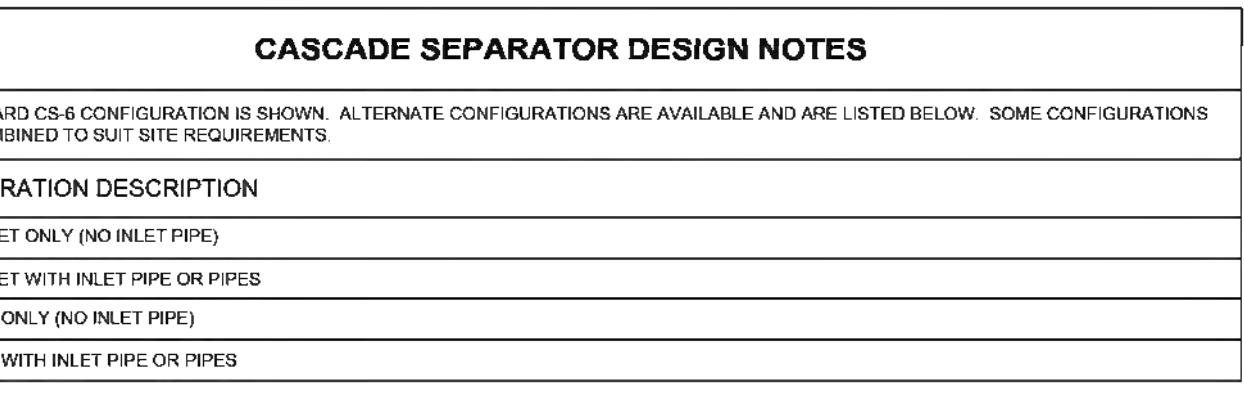
**OVERFLOW SPILLWAY SUMMARY**  
WIDTH OF OVERFLOW SPILLWAY = 6 FT

**Design Criteria**

Site Designation	CS 101	Sizing Method	Treatment Flow Rate
Screening Required?	No	Treatment Flow Rate	2.58
Groundwater Depth (ft)	5 - 10	Pipe Invert Depth (ft)	0 - 5
Multiple Inlets?	No	Grate Inlet Required?	Yes
Required Particle Size Distribution?	No	90' between two inlets?	N/A
		Pipe Size (in)	18.00

**Treatment Selection**

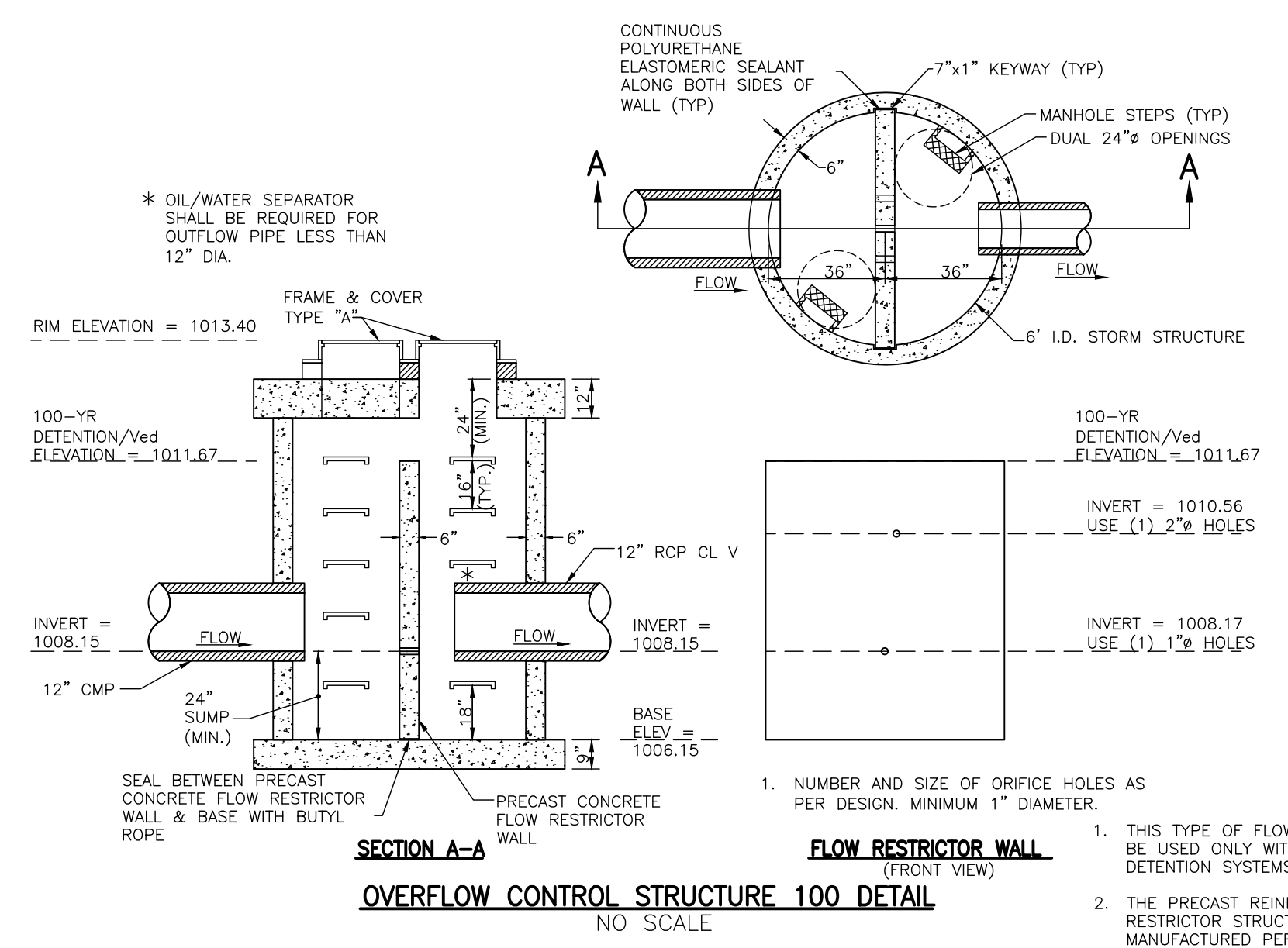
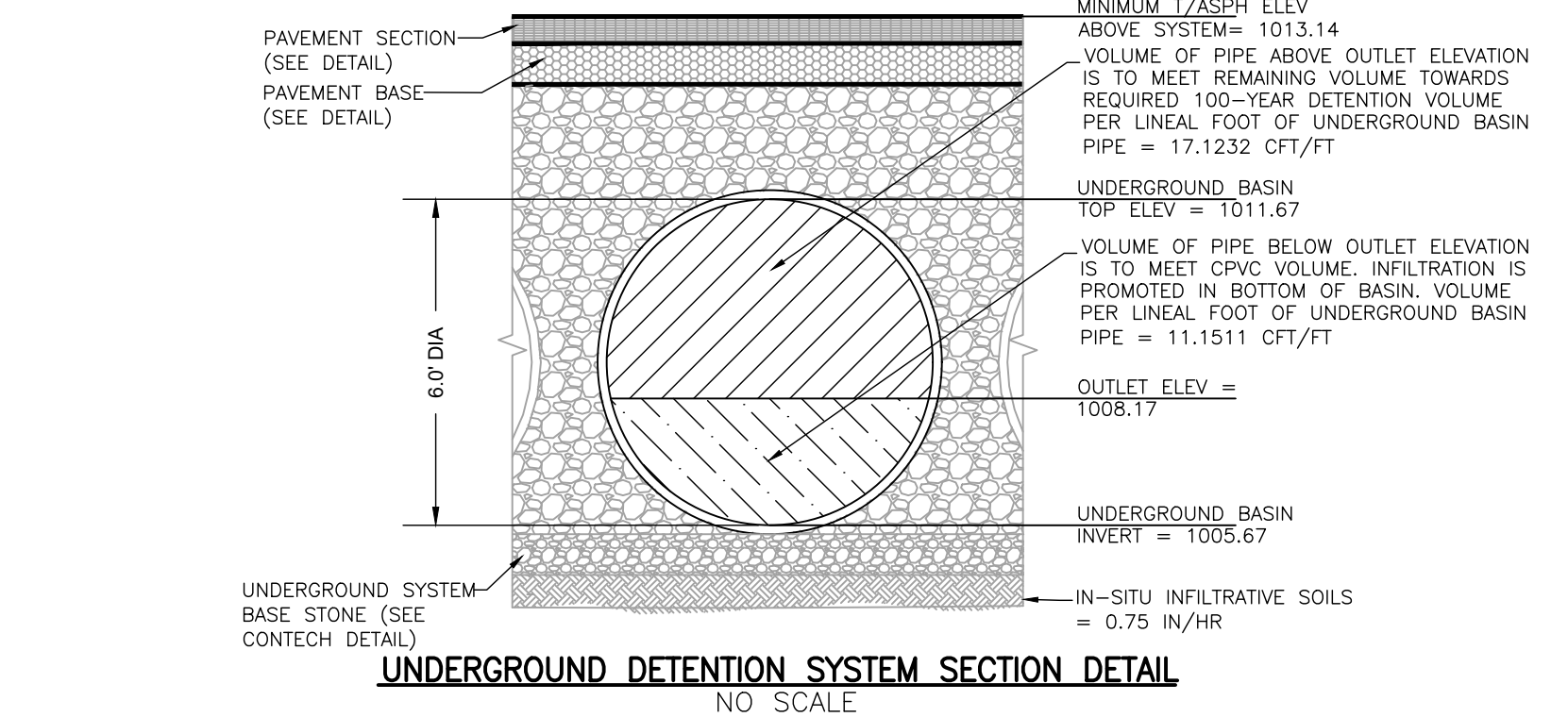
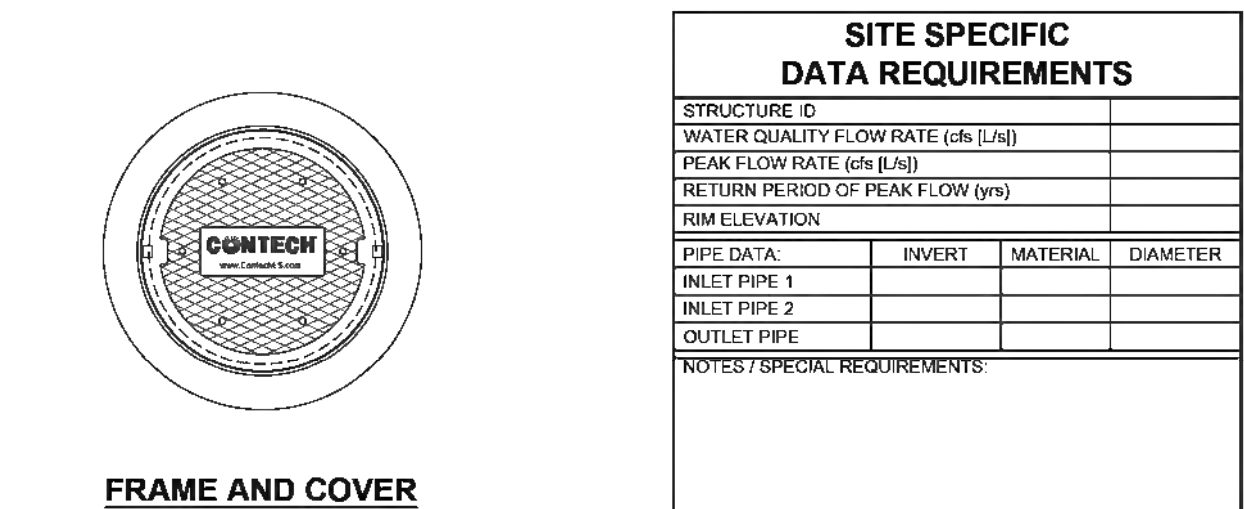
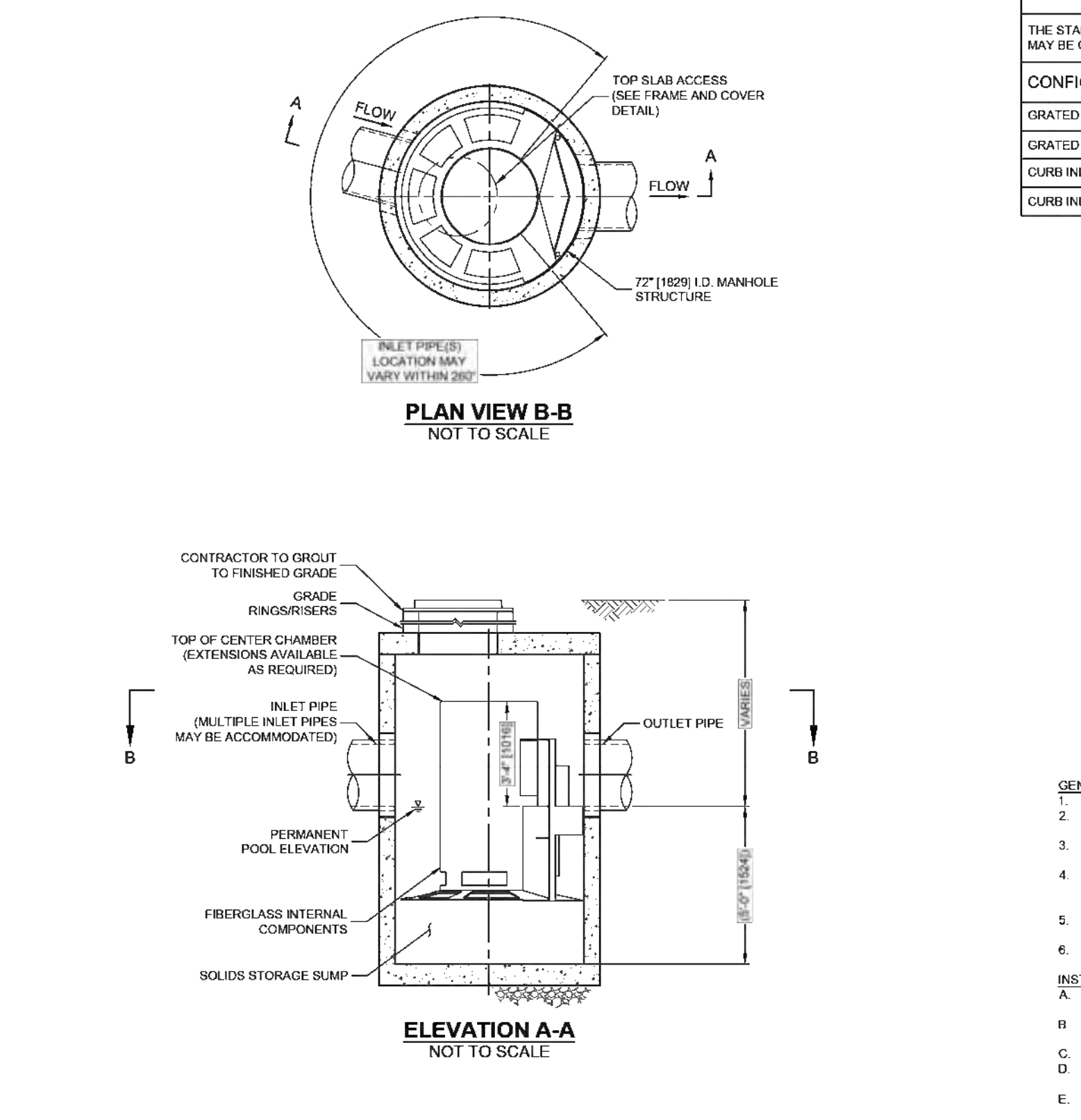
Treatment Unit	CASCADE SEPARATOR	System Model	CS-6
Target Removal	80%	Particle Size Distribution (PSD)	250



**SITE SPECIFIC DATA REQUIREMENTS**

STRUCTURE ID			
WATER QUALITY FLOW RATE (cfs [L/s])			
PEAK FLOW RATE (cfs [L/s])			
RETURN PERIOD OF PEAK FLOW (yrs)			
RIM ELEVATION			
PIPE DATA			
INLET PIPE 1	INVERT	MATERIAL	DIAMETER
INLET PIPE 2			
OUTLET PIPE			

NOTES/SPECIAL REQUIREMENTS:



**CASCADE separator™**

CONTRACTOR TO GROUT TO FINISHED GRADE GRADE RINGS/RISERS TOP OF CENTER CHAMBER (EXTENSIONS AVAILABLE AS REQUIRED) INLET PIPE (MULTIPLE INLET PIPES MAY BE ACCOMMODATED) PERMANENT POOL ELEVATION FIBERGLASS INTERNAL COMPONENTS SOLIDS STORAGE BUMP

**CONTECH ENGINEERS SOLUTIONS LLC**

8025 Contech Drive Dr. Suite 400, West Chester, OH 45380  
937.338.1122 513.645.7000 513.645.7993 FAX

**CS-6 CASCADE SEPARATOR STANDARD DETAIL**

**BEBOSSEngineering**

Engineers Surveyors Planners Landscape Architects

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

**SOUTH LATSON COMMERCIAL DEVELOPMENT**

PROJECT PREPARED FOR

1015 LATSON ROAD LLC  
29592 BECK ROAD  
WILKON, MI 48393  
248.773.7992

**BASIN DETAILS**

NO	BY	DATE	REVISION PER	COMMENTS
1	ST	1-16-24		LAYOUT MODIFICATIONS
2	ST	12-11-23		PER P.C. MEETING
1	ST	10-25-23		PER TOWNSHIP COMMENTS

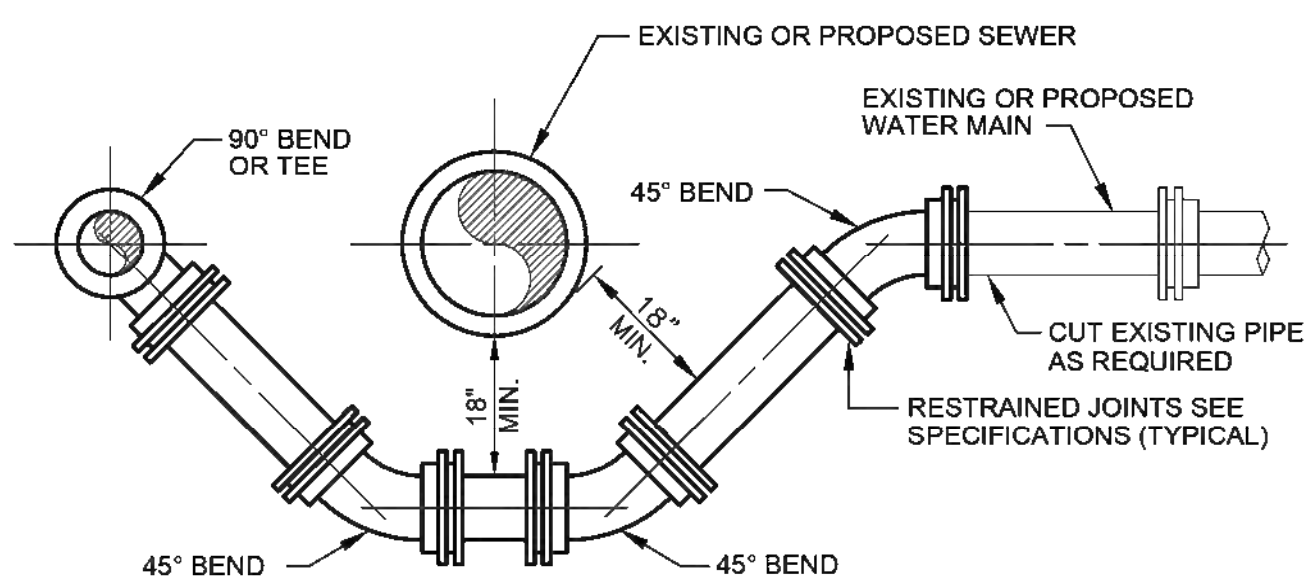
DESIGNED BY: ST  
DRAWN BY: DH  
CHECKED BY:  
SCALE: 1" = 20'  
JOB NO: 21-519  
DATE: 10/04/2023  
SHEET NO. 11



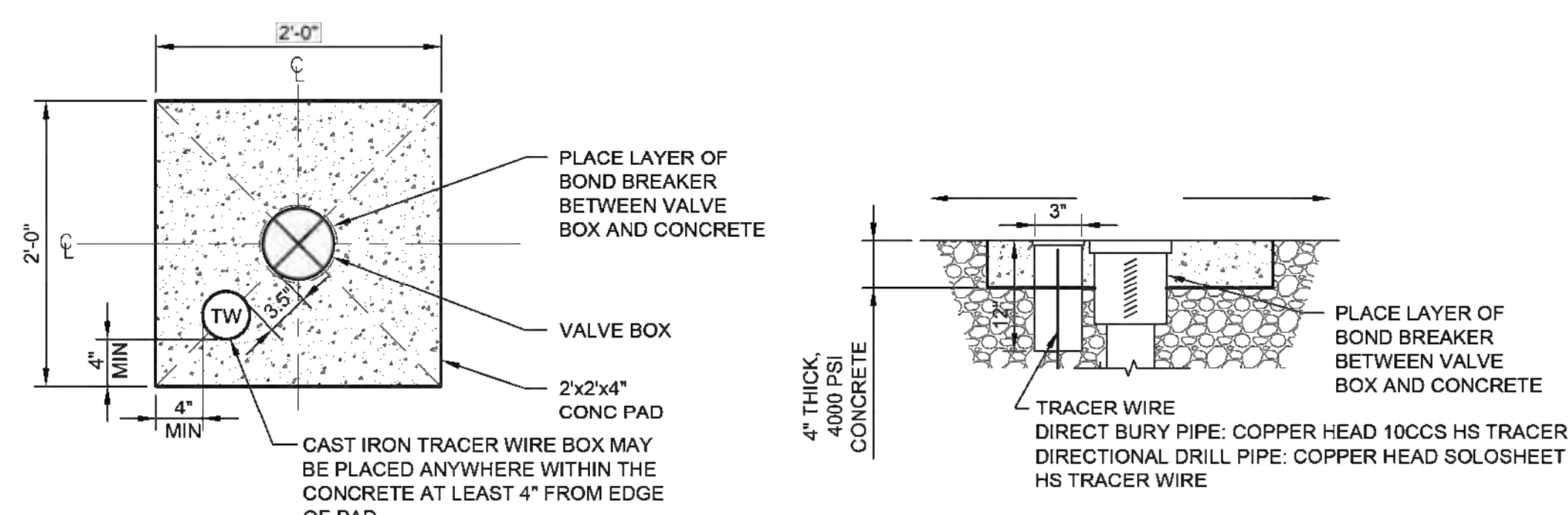
PIPE RESTRAINT SCHEDULE							
GROUND BURIED PRESSURE PIPE - POLYETHYLENE ENCASED DUCTILE IRON PIPE							
PIPE DIAMETER	TEES, 90° BENDS	45° BENDS	22-1/2° BENDS	11-1/4° BENDS	DEAD ENDS	REDUCERS (ONE SIZE REDUCTION)*	REDUCERS (TWO SIZE REDUCTION)*
4	13	5	3	1	40	--	--
6	19	8	4	2	58	31	--
8	24	10	5	2	75	30	70
12	34	14	7	3	107	57	116
16	43	18	9	4	139	59	137
20	52	22	10	5	169	59	134
24	61	25	12	6	199	60	132
30	73	30	15	7	242	85	168
36	84	35	17	8	281	84	168

- LENGTHS OF PIPE RESTRAINT ARE GIVEN IN FEET.
- IF REQUIRED PIPE DIAMETER IS NOT LISTED IN THIS TABLE, THE NEXT LARGEST PIPE DIAMETER SHALL BE USED.
- THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE PLUS WATER HAMMER. FOR OTHER TEST PRESSURES, ALL VALUES TO BE INCREASED OR DECREASED PROPORTIONALLY.
- THE VALUES PROVIDED OF RESTRAINT LENGTH ARE IN EACH DIRECTION FROM THE POINT OF DEFLECTION OR TERMINATION EXCEPT FOR TEES, AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE STEM.
- IF THE RODS ARE USED, USE FOUR RODS MINIMUM AND ADD 1/8-INCH TO BAR DIAMETER AS CORROSION ALLOWANCE.

\* SIZE REDUCTION IS BASED UPON THE PIPE DIAMETER SHOWN IN THIS TABLE.  
 BASED UPON: INTERNAL PRESSURE: 180  
 PIPE DEPTH: 5  
 BEDDING CLASS: TYPE 4  
 SOIL TYPE: GOOD SAND  
 SAFETY FACTOR: 2

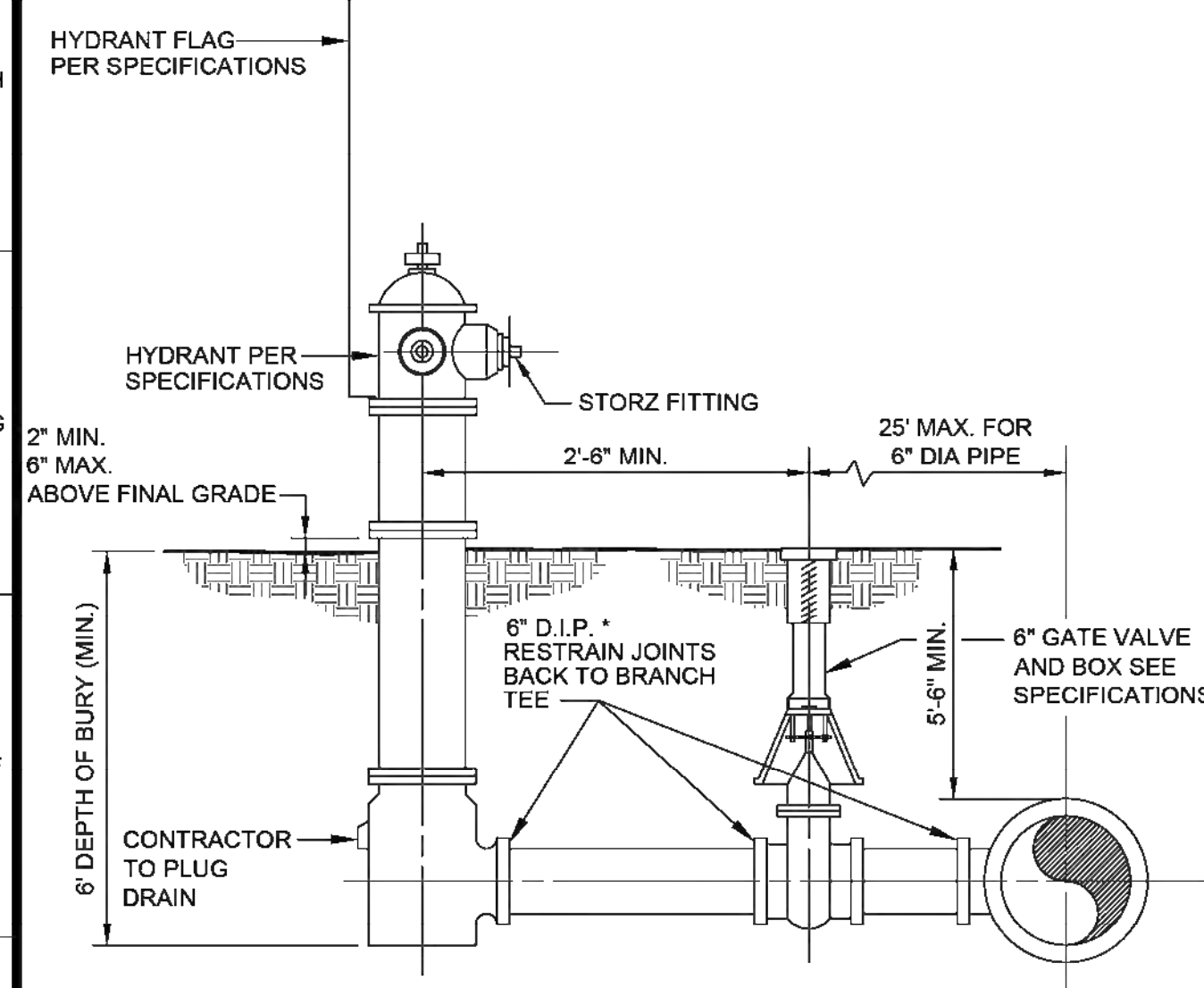


**WATER MAIN UTILITY OFFSET**

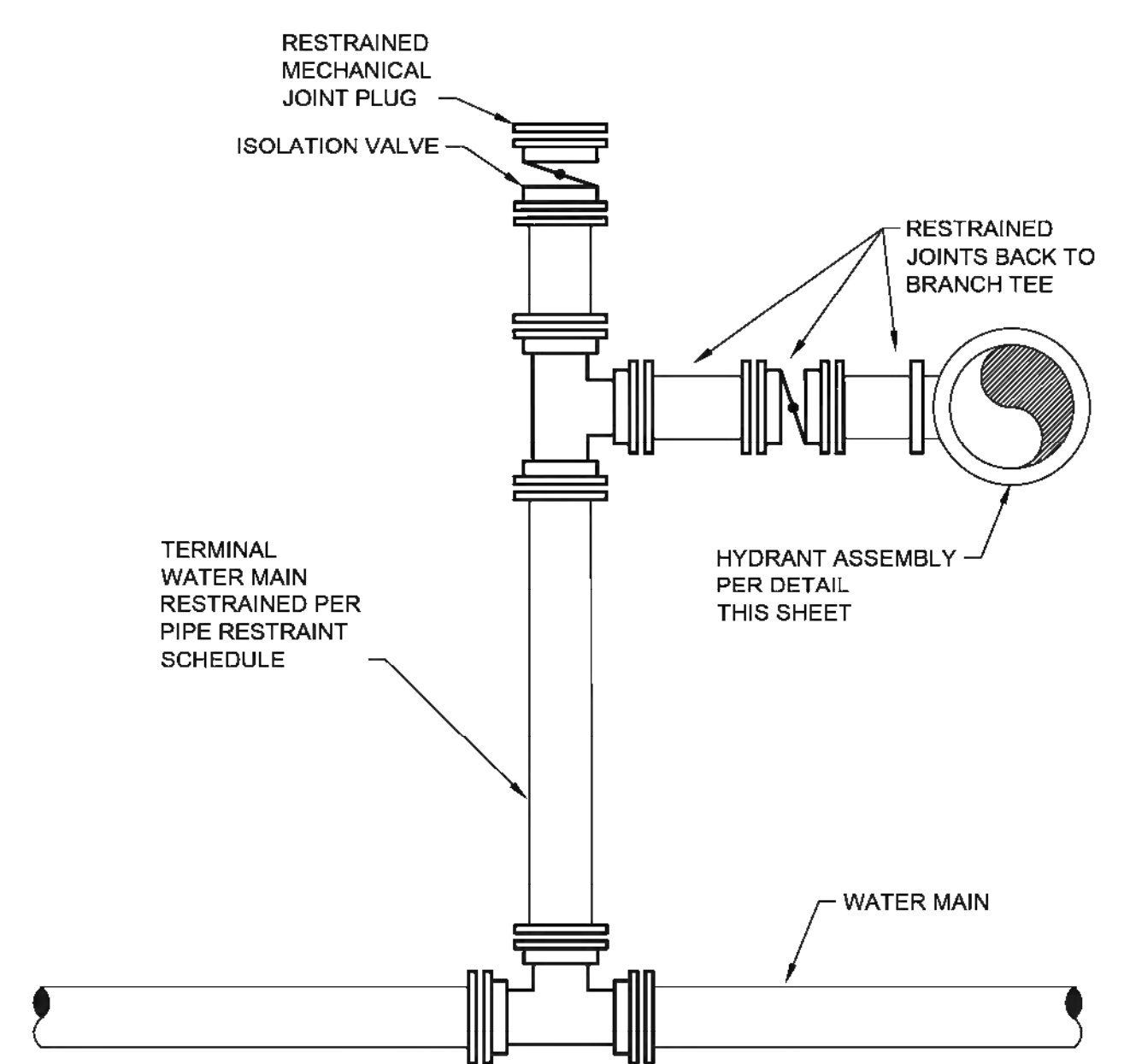


- NOTE: ALL BOXES & ADJOINING TW BOXES SHALL BE ENCASED IN A CONC. PAD UNLESS OTHERWISE DETERMINED BY MHOG.
- TRACER WIRE BOXES LOCATED WITHOUT A VALVE BOX ONLY REQUIRE AN 18" X 18" CONCRETE PAD.
  - TRACER WIRE BOX SHALL HAVE A LOCKING LID W/STANDARD AWWA PENTAGON KEY.
  - TRACER WIRE BOX SHALL BE COPPERHEAD RB14"TP IN ASPHALT INSTALLATIONS AND CD14"TP FOR ALL OTHER INSTALLATIONS.

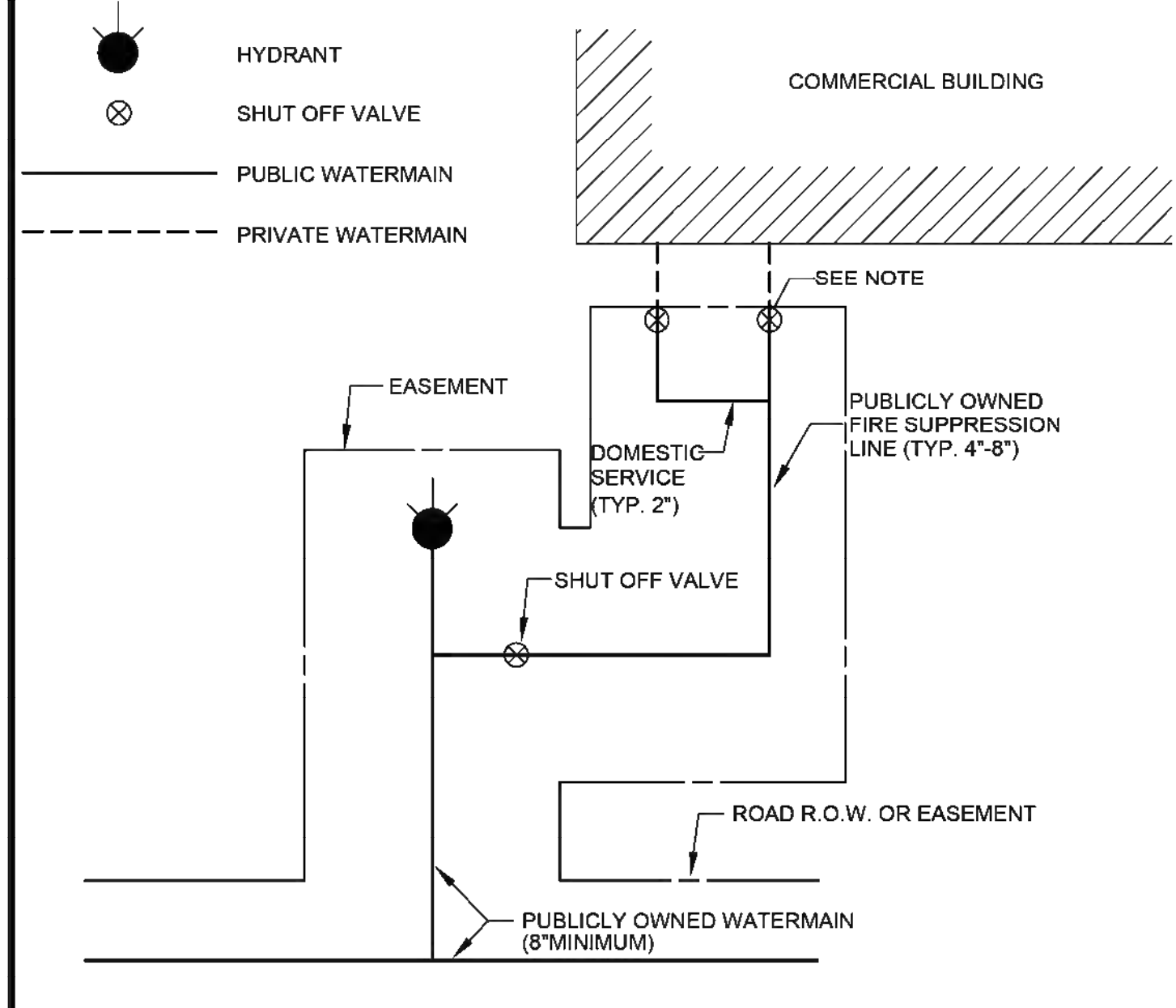
**VALVE/TRACER WIRE BOX IN CONCRETE DETAIL**



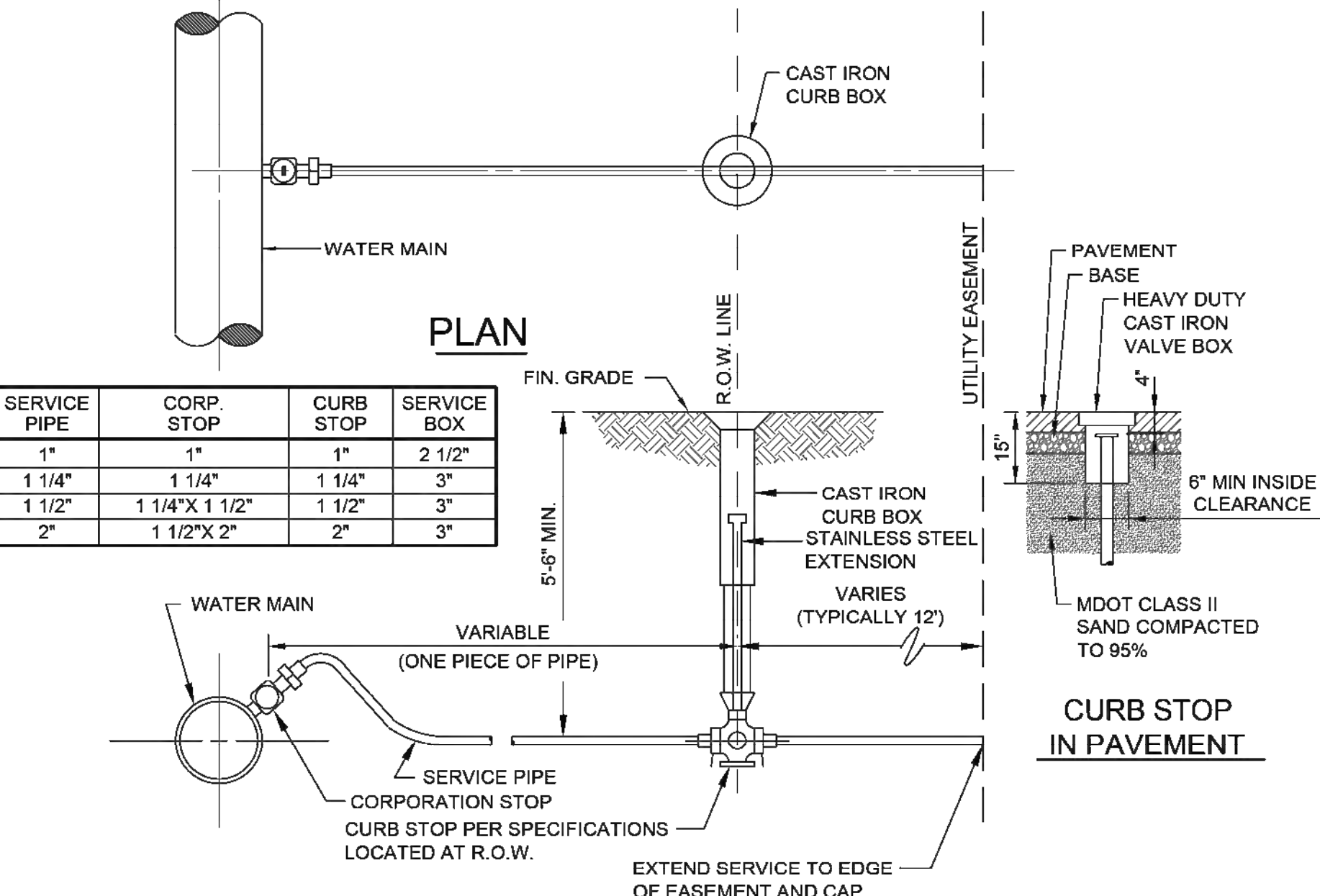
**FIRE HYDRANT ASSEMBLY**



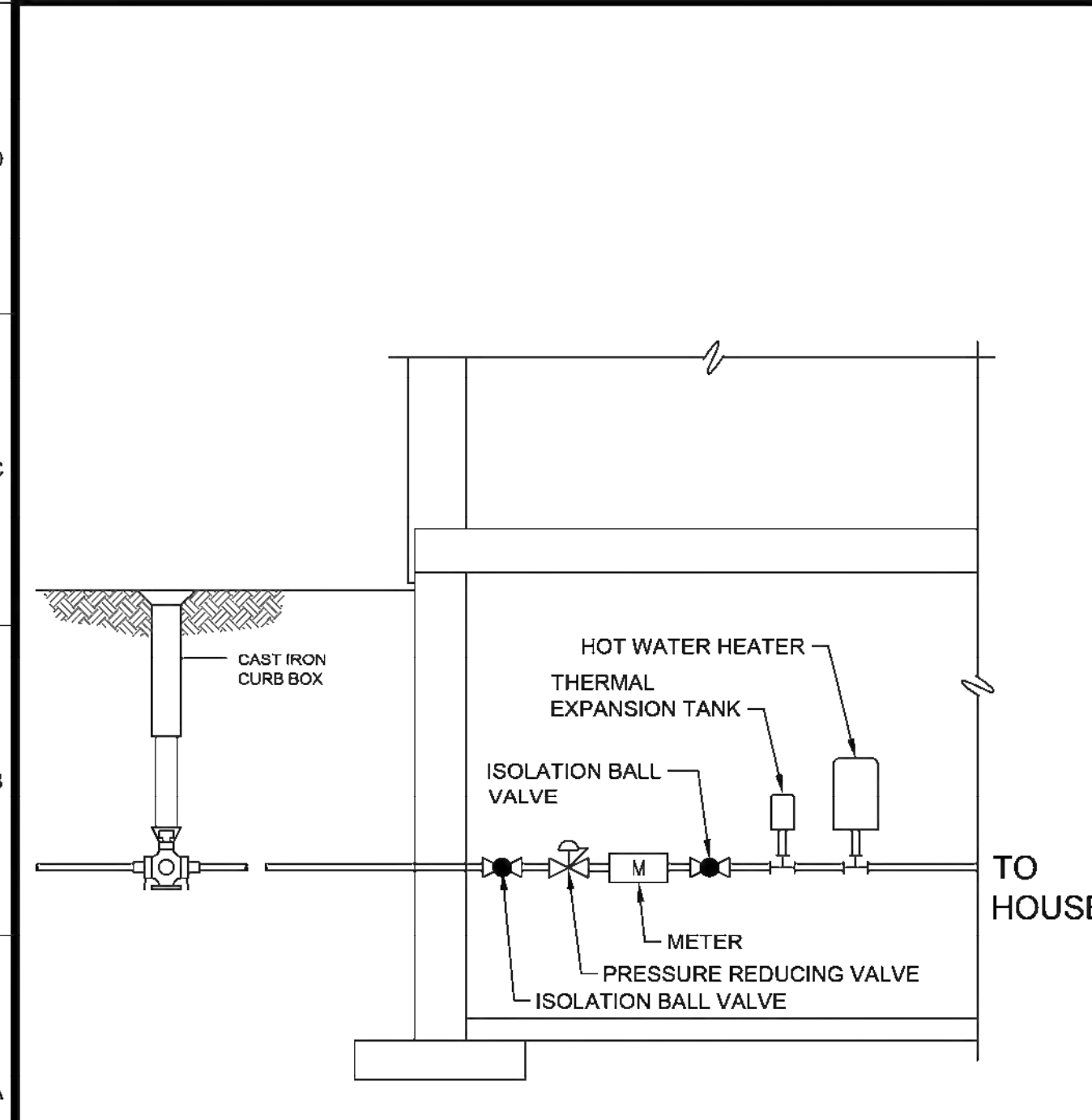
**TERMINAL HYDRANT DETAIL**



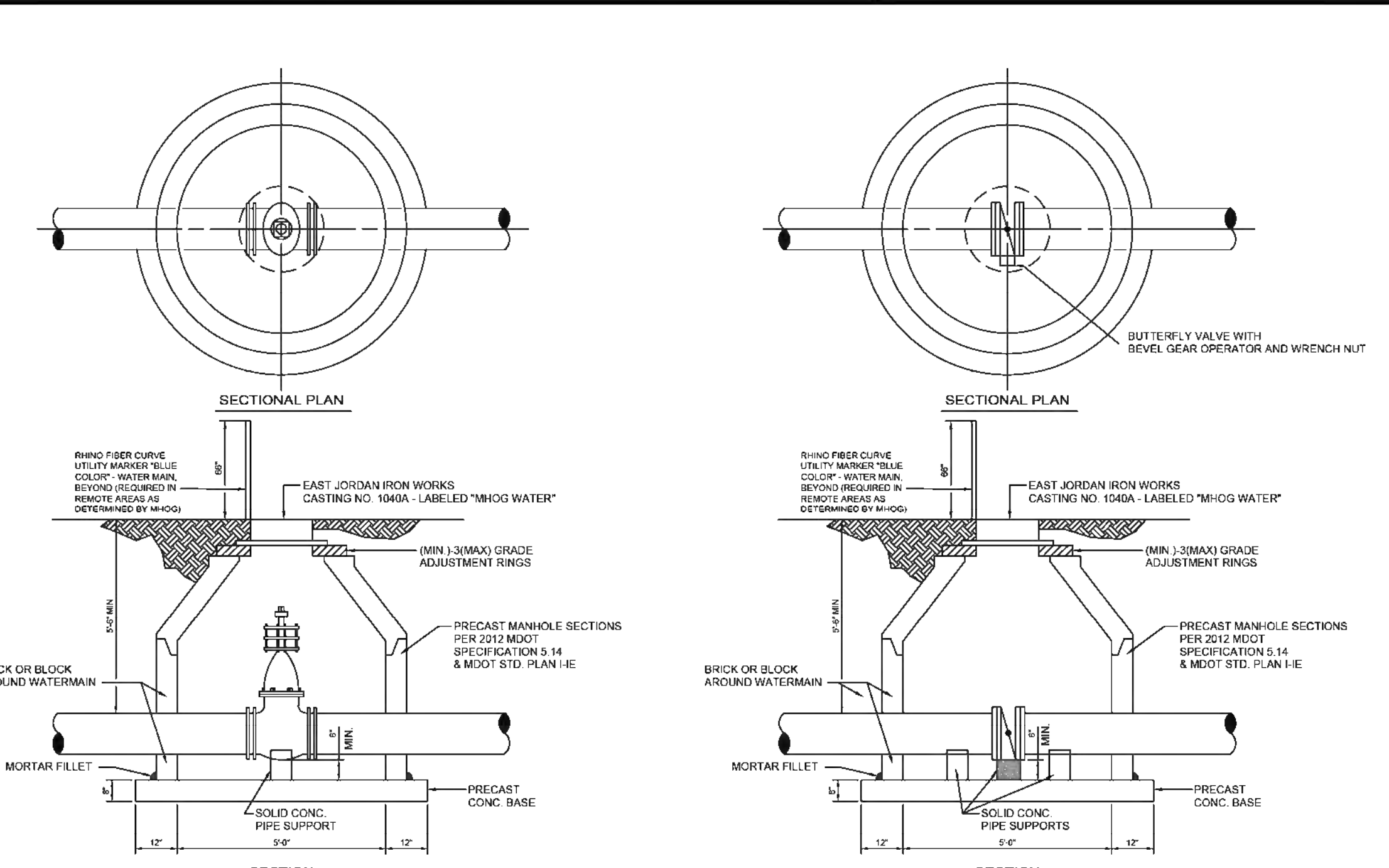
**COMMERCIAL BUILDING WATER SERVICE LAYOUT**



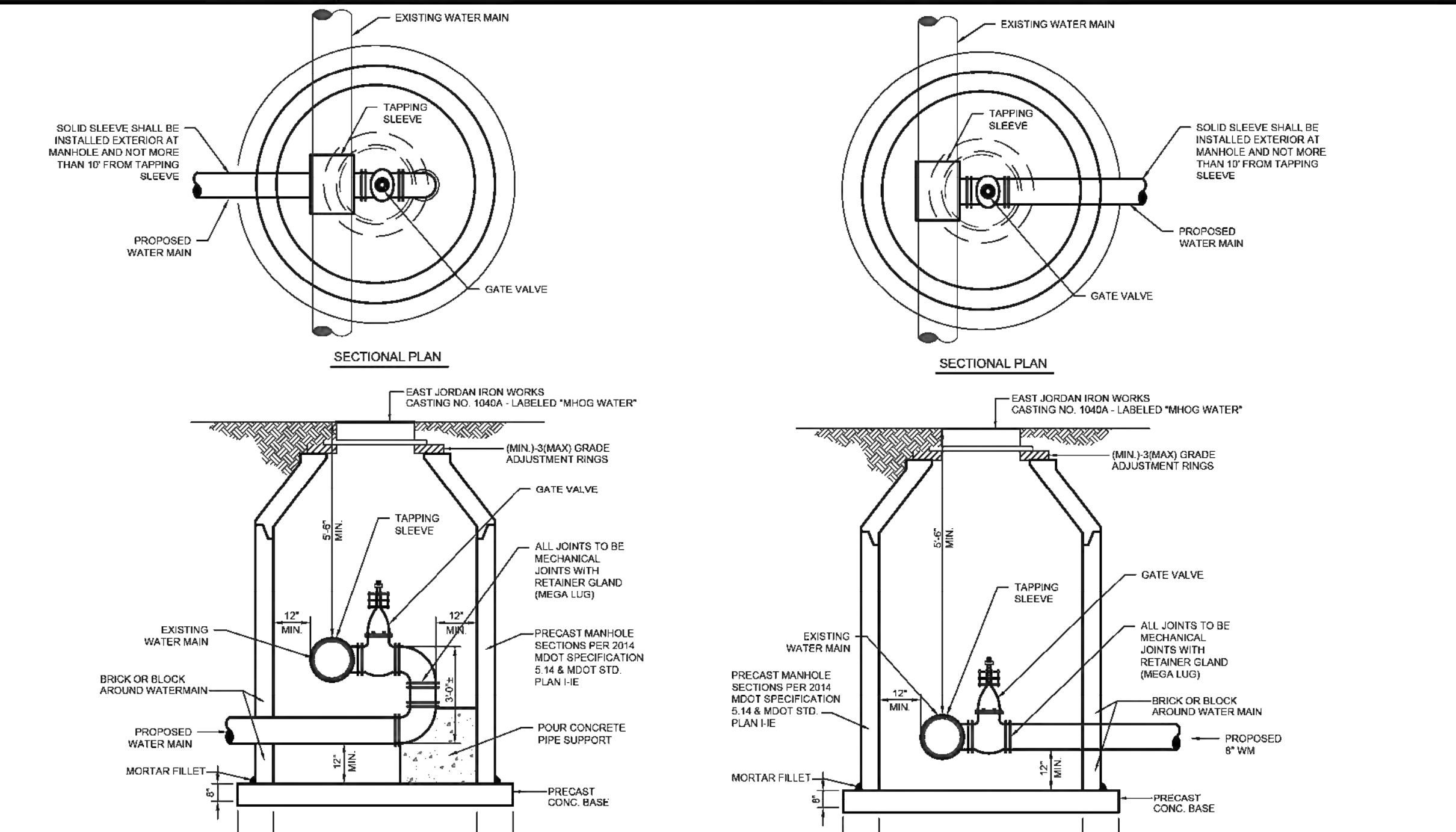
**WATER SERVICE LATERAL**



**PRIVATE RESIDENCE PRESSURE REDUCING VALVE (PRV)**



**VALVE AND GATE WELL**



**REVERSE TAP GATE WELL**

**REGULAR TAP GATE WELL**

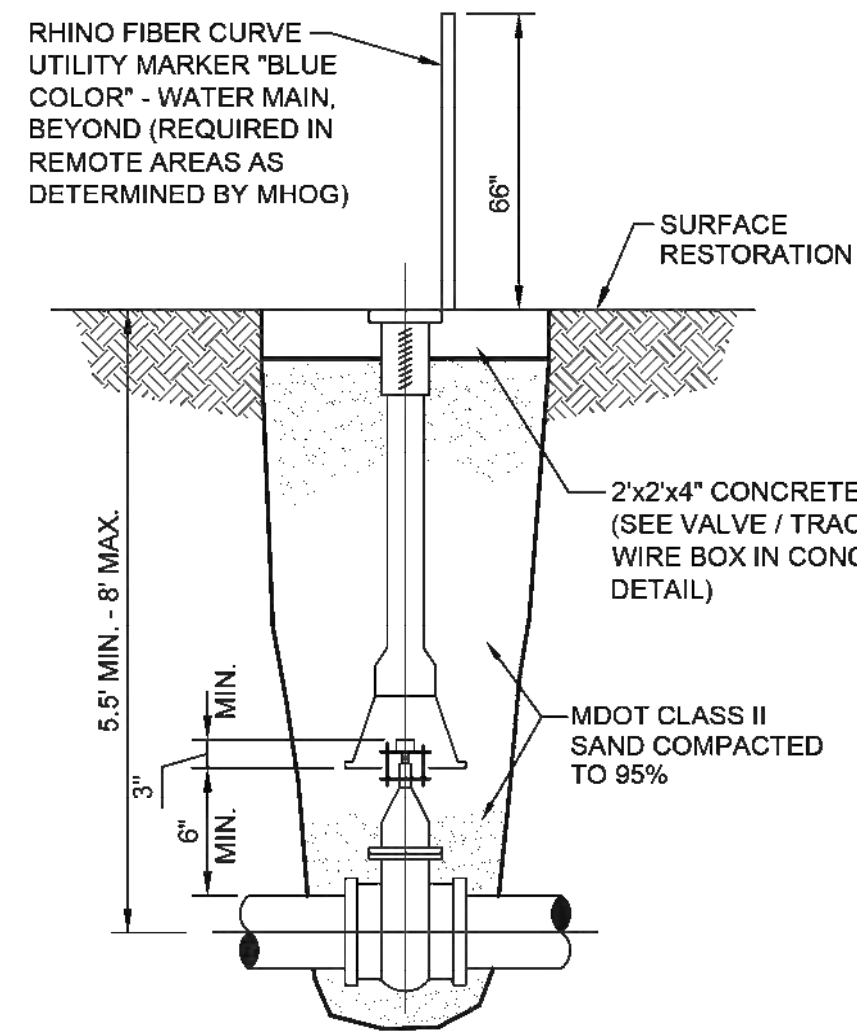


**MARION HOWELL OCEOLA GENOA**  
 Sewer and Water Authority

Scale: NONE  
 Issued Date: JANUARY - 2014  
 UPDATED: MAY 2015  
 UPDATED: FEBRUARY 2016  
 UPDATED: APRIL 2016  
 UPDATED: OCTOBER 2017  
 UPDATED: FEBRUARY 2019  
 UPDATED: NOVEMBER 2022

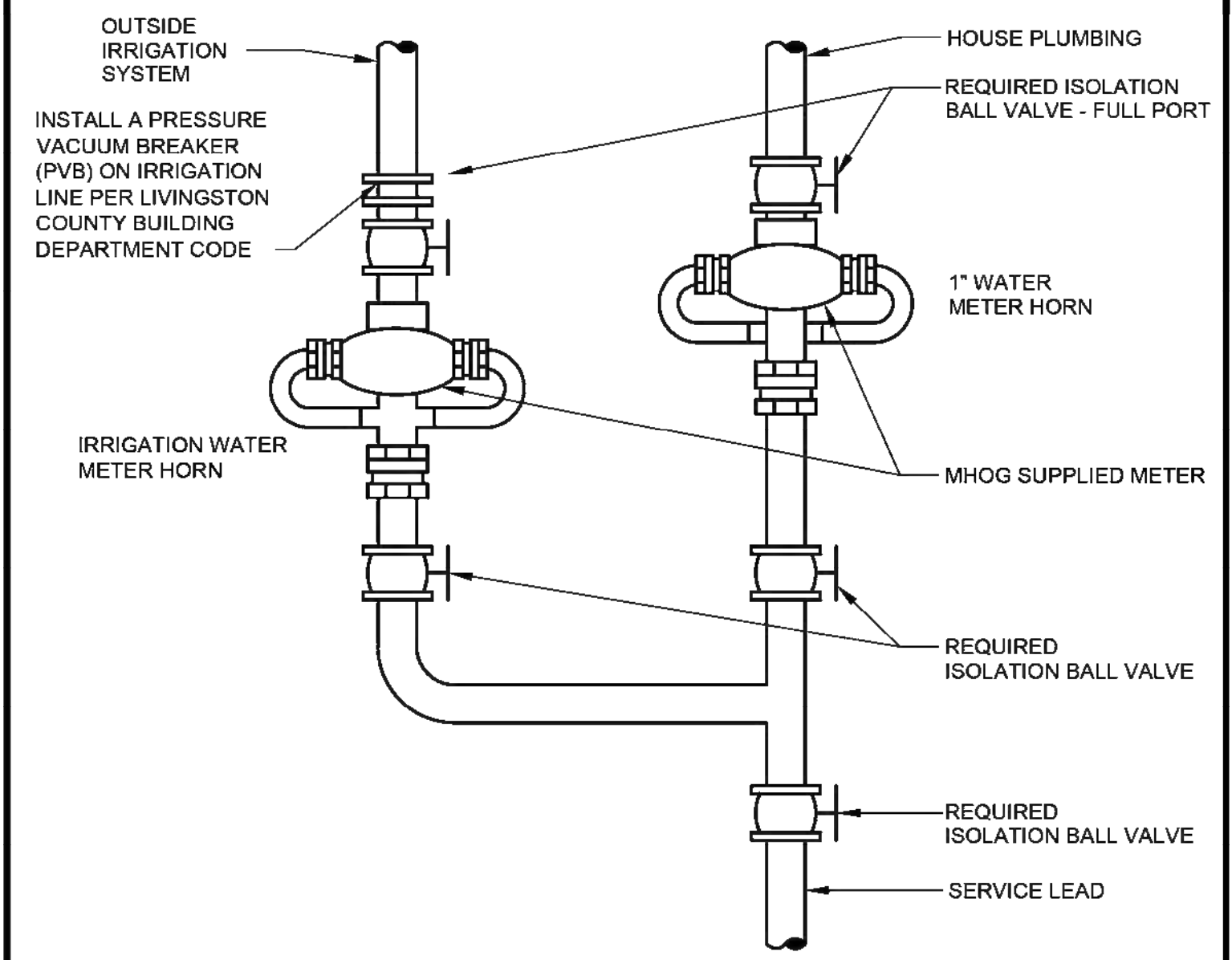
STANDARD DETAILS





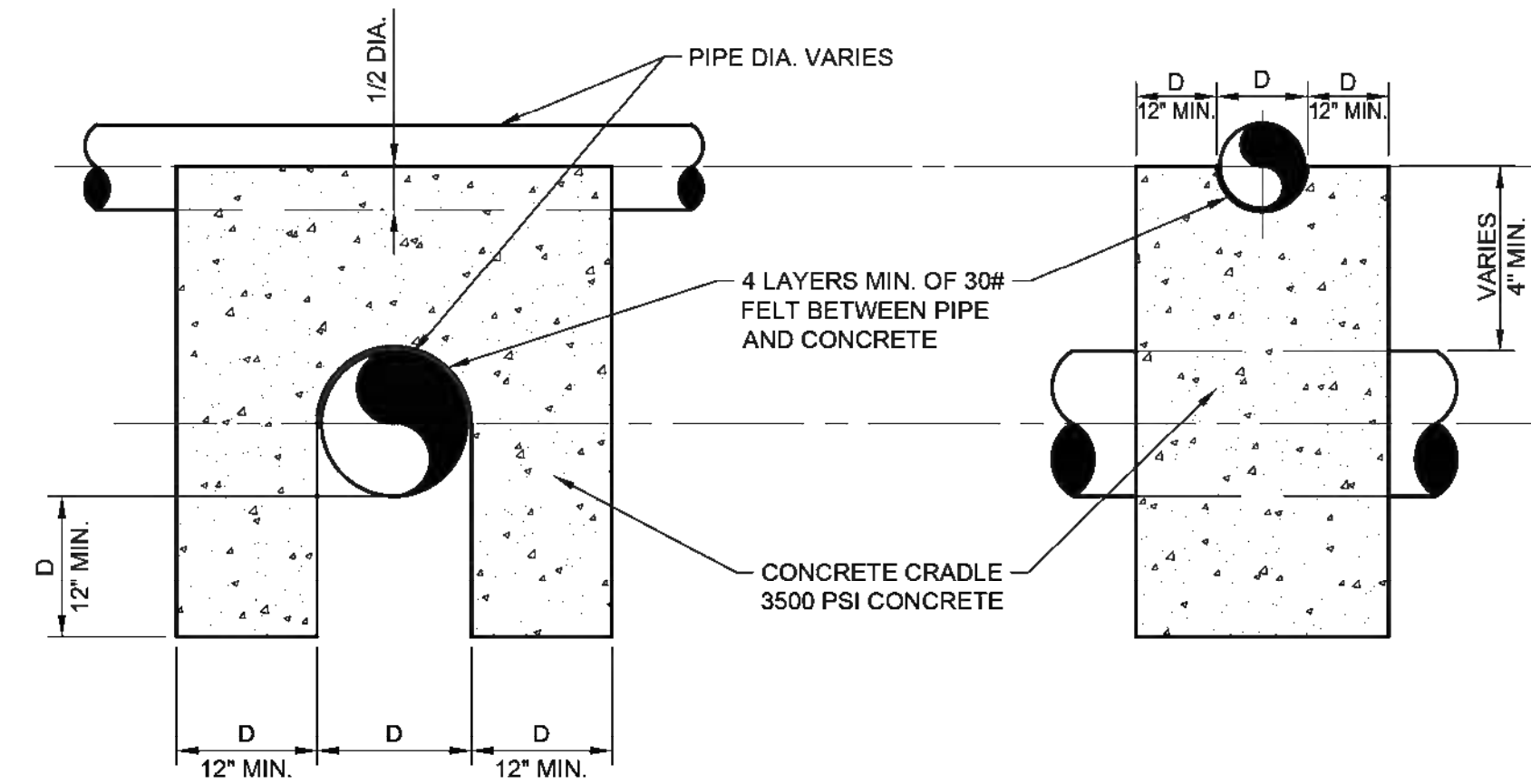
- NOTES:
1. VALVE BOX SHALL NOT REST ON VALVE OR MAIN LINE PIPE.
  2. A VALVE STEM EXTENSION WITH CENTERING RING IS REQUIRED FOR VALVES BURIED DEEPER THAN 6'.

**GATE VALVE AND BOX**



- NOTES:
1. ALL METERS ARE TO BE INSTALLED HORIZONTALLY IN A DRY, CLEAN, SANITARY LOCATION THAT IS READILY ACCESSIBLE. THIS DRAWING IS NOT TO SCALE & IS ONLY A REPRESENTATION OF HOW THE VALVES AND METERS SHOULD BE INSTALLED. THE SECOND METER IS OPTIONAL FOR IRRIGATION USAGE. METERS SHOULD NOT BE INSTALLED IN LINE (ONE RIGHT AFTER THE OTHER).
  2. PROPERTIES DESIGNATED "HIGH HAZARD" PER THE MHOG CROSS CONNECTION RULES MANUAL WILL REQUIRE THE INSTALLATION OF A REDUCED PRESSURE ZONE (RPZ) BACK FLOW PREVENTION DEVICE.

**TYPICAL METER HORN INSTALLATION**



**CONCRETE CRADLE DETAIL**

SCALE: NONE



**MHOG CASTING DETAIL**

NO SCALE

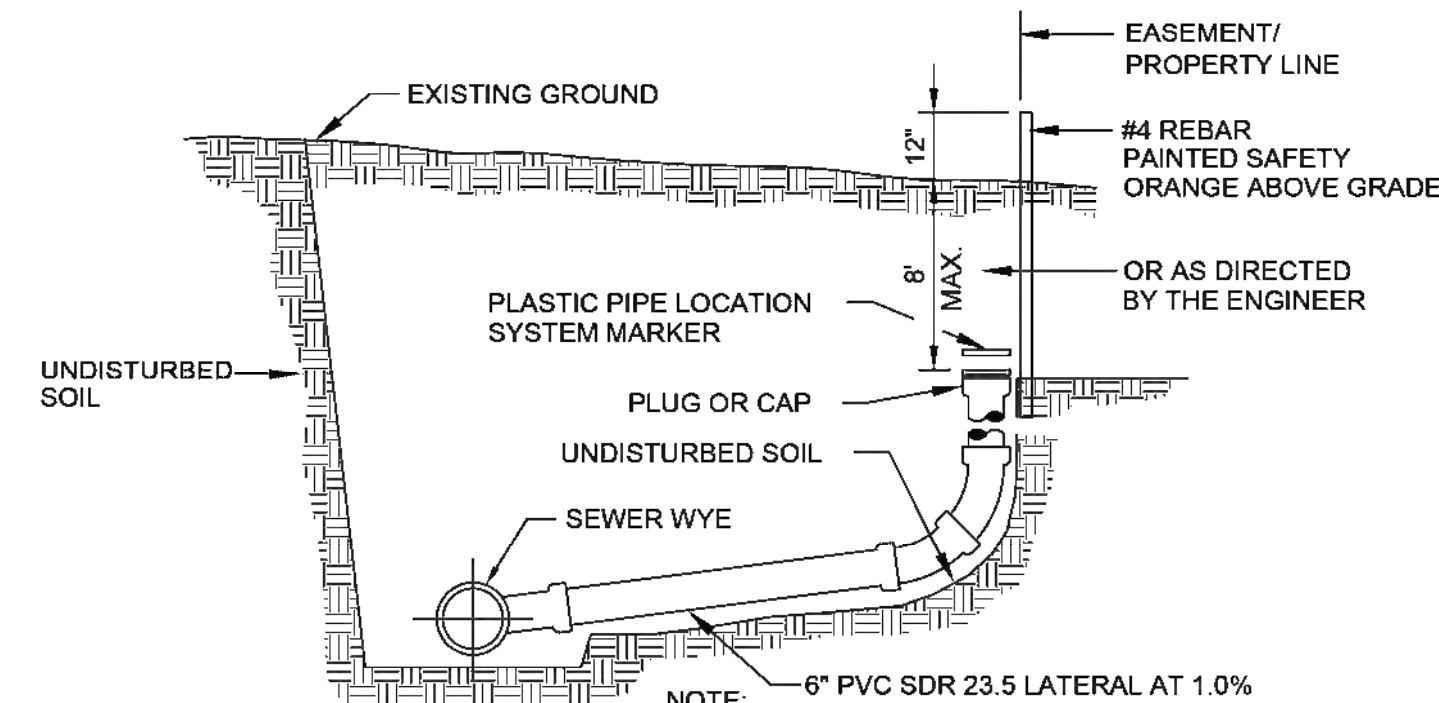


MARION HOWELL OCEOLA GENOA  
Sewer and Water Authority

STANDARD DETAILS

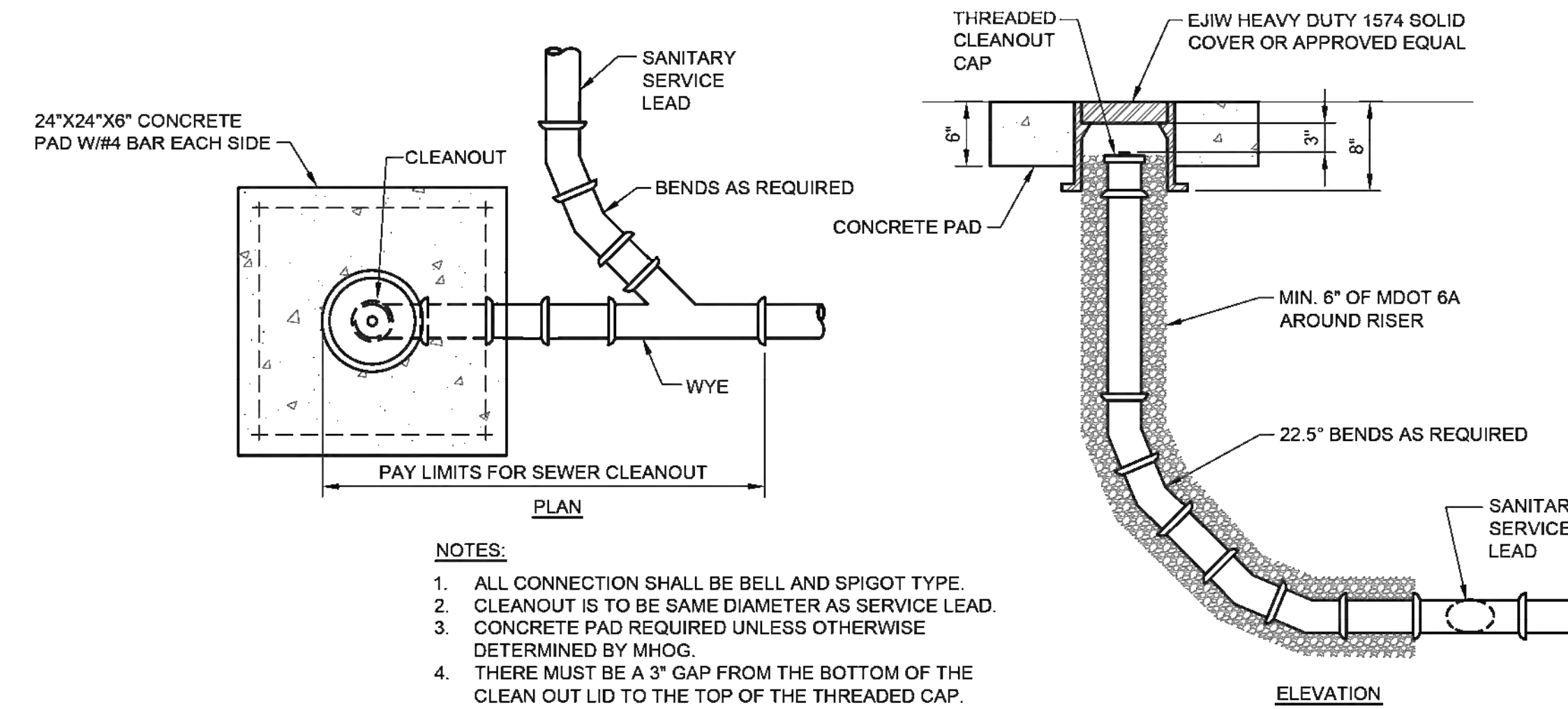
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Issued Date	JANUARY - 2014
UPDATED:	MAY 2015
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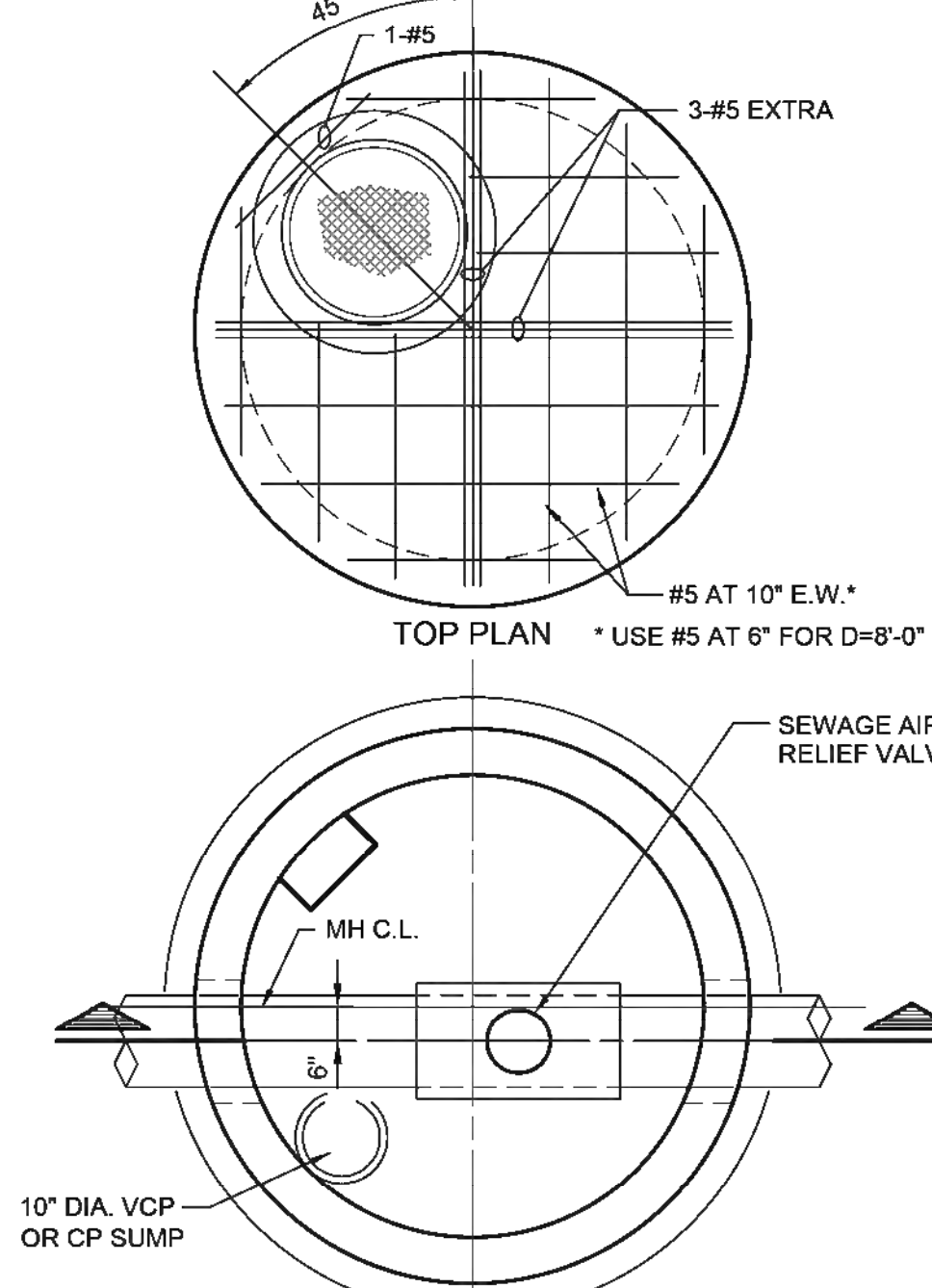
**SANITARY SEWER LATERAL**

- NOTE:  
 1. RISER PIPE MAY NOT BE REQUIRED FOR SHALLOW SEWERS AS SHOWN.  
 2. WHEN CONNECTING TO AN EXISTING SEWER THE AUTHORITY MAY REQUIRE CORING OF THE EXISTING PIPE AND INSTALLATION OF A SEWER SADDLE. SADDLE SHALL BE ROMAC "CB" SEWER SADDLE OR APPROVED EQUAL.

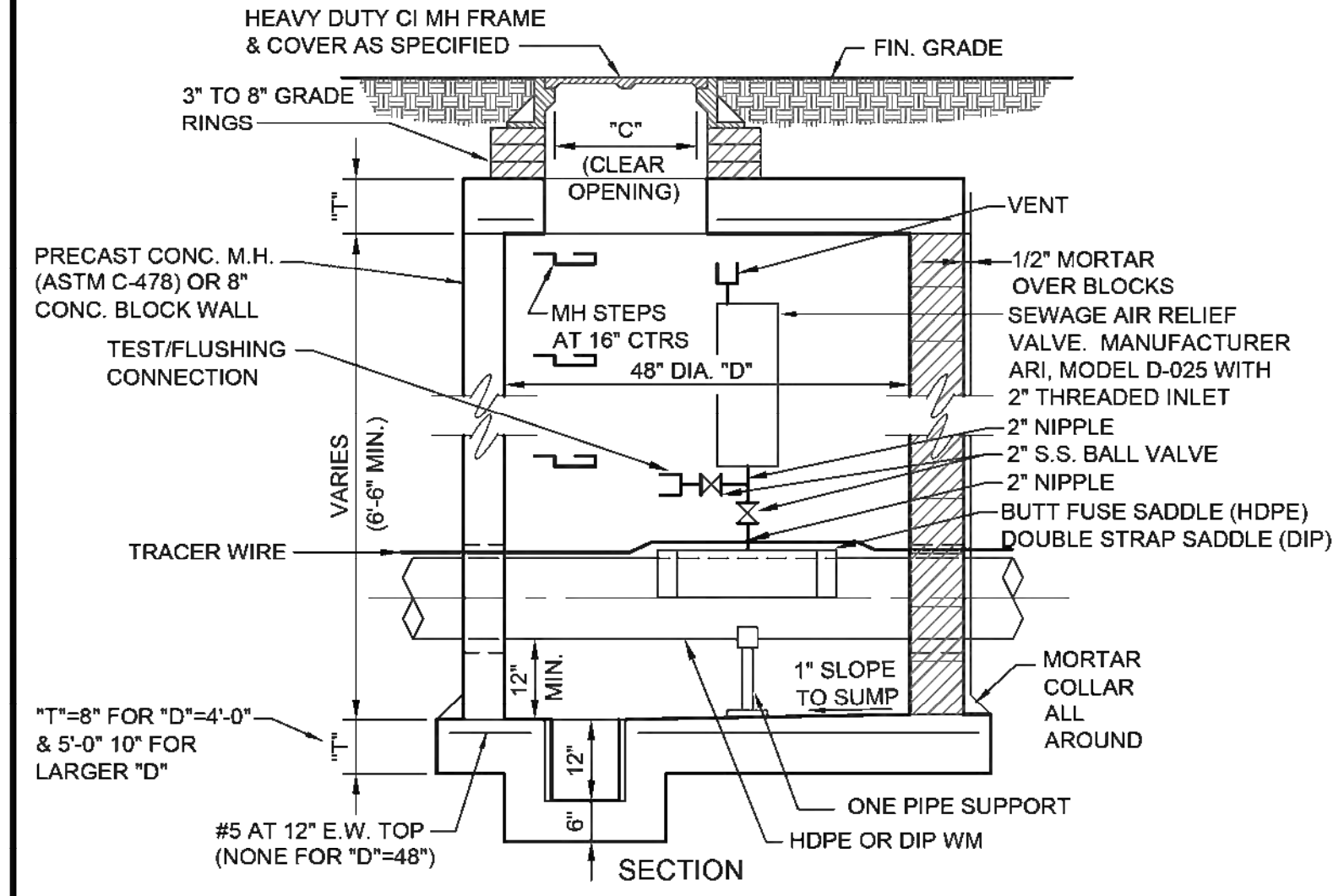


**SEWER CLEANOUT DETAIL**

- NOTES:  
 1. ALL CONNECTION SHALL BE BELL AND SPIGOT TYPE.  
 2. CLEANOUT IS TO BE SAME DIAMETER AS SERVICE LEAD.  
 3. CONCRETE PAD REQUIRED UNLESS OTHERWISE DETERMINED BY MHO.  
 4. THERE MUST BE A 3" GAP FROM THE BOTTOM OF THE CLEAN OUT LID TO THE TOP OF THE THREADED CAP.

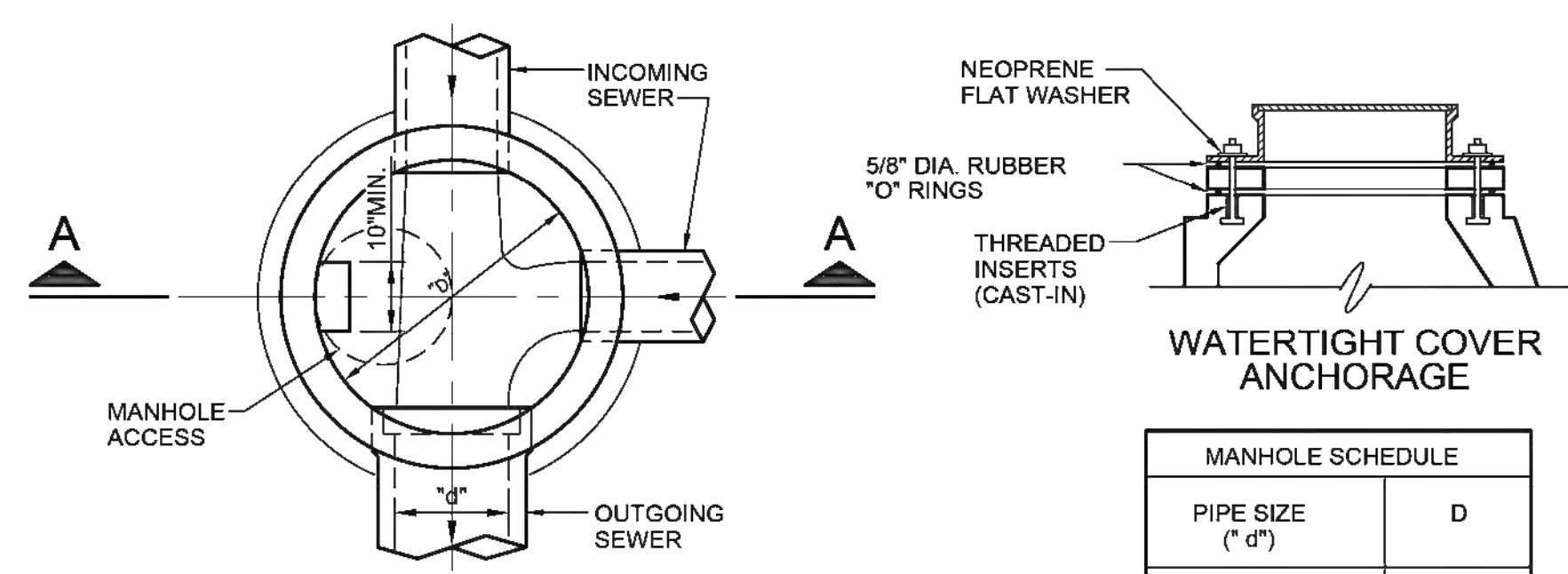


**AIR RELIEF STRUCTURE**

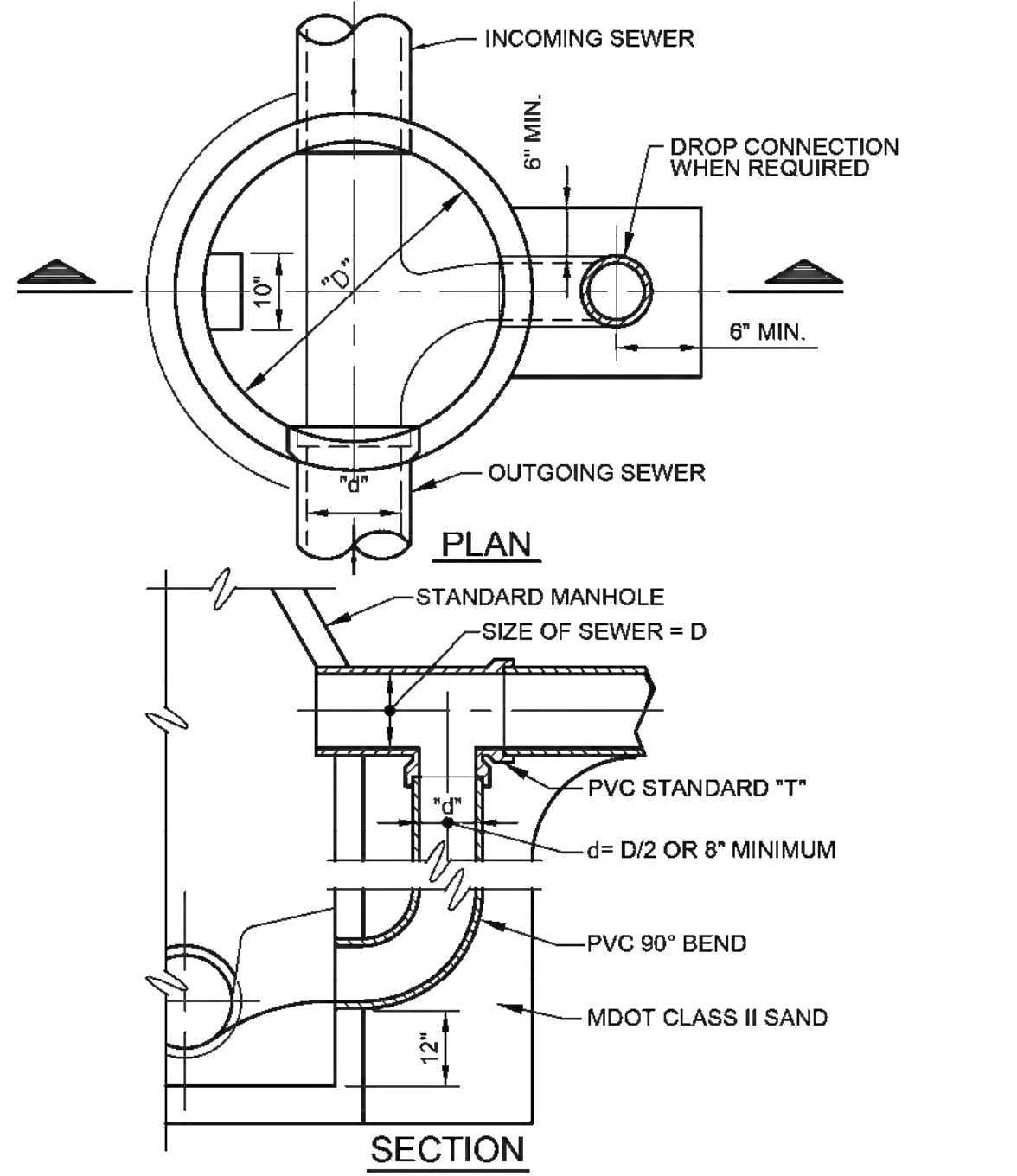


**AIR RELIEF STRUCTURE**

- NOTE: ALL PLUMBING MATERIALS TO BE NON-CORROSIVE, ALL FITTINGS SHALL BE STAINLESS STEEL.

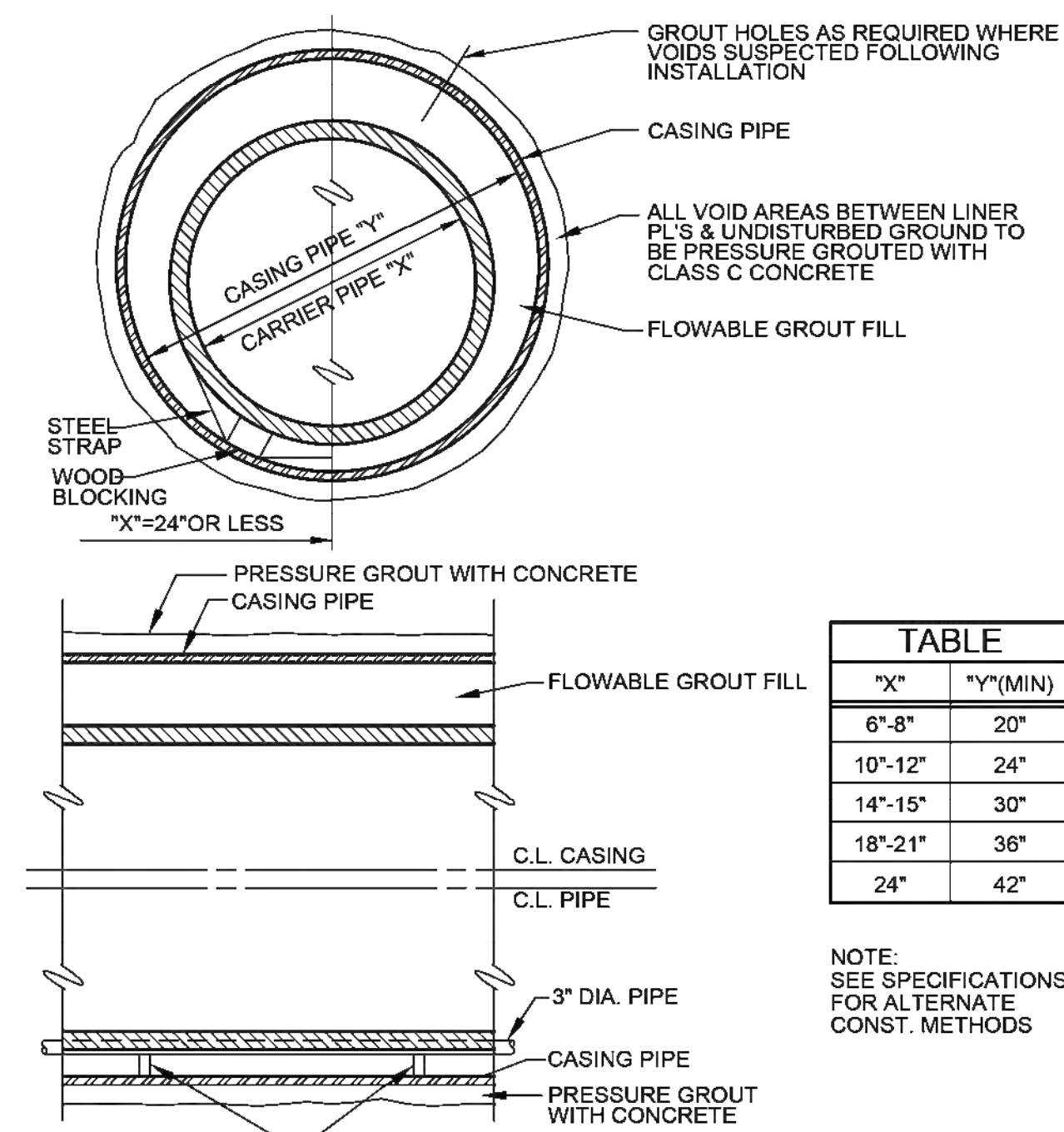


MANHOLE SCHEDULE	
PIPE SIZE ("d")	D
8"-24"	48"
27"-36"	60"
42"-48"	72"
54"	84"



**DROP CONNECTION**

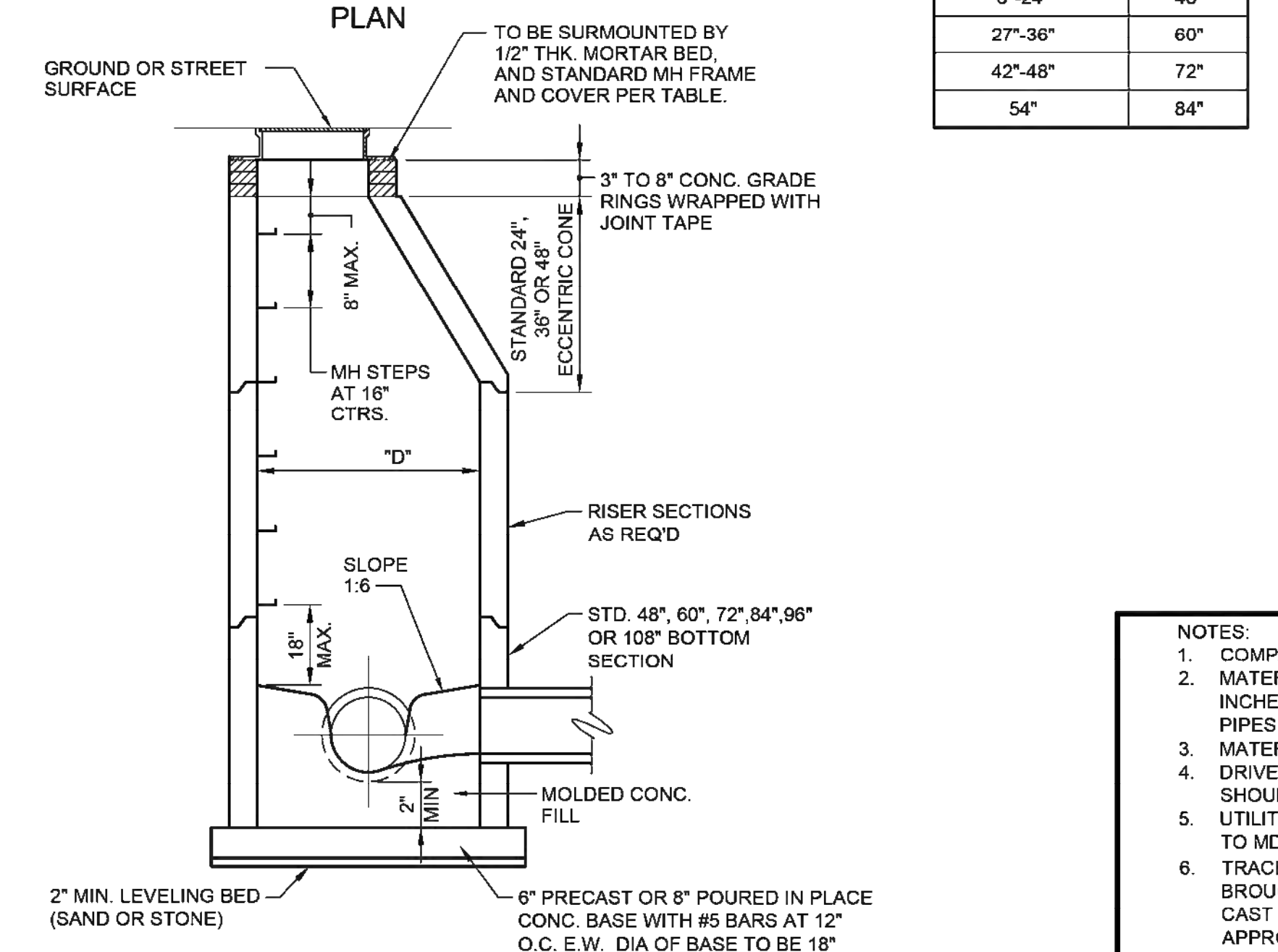
- REQUIRED WHEN AN INLET PIPE IS 24" OR MORE ABOVE THE OUTLET PIPE IN A MANHOLE



**CASING PIPE**

"X"	"Y"(MIN)
6"-8"	20"
10"-12"	24"
14"-15"	30"
18"-21"	36"
24"	42"

NOTE: SEE SPECIFICATIONS FOR ALTERNATE CONST. METHODS

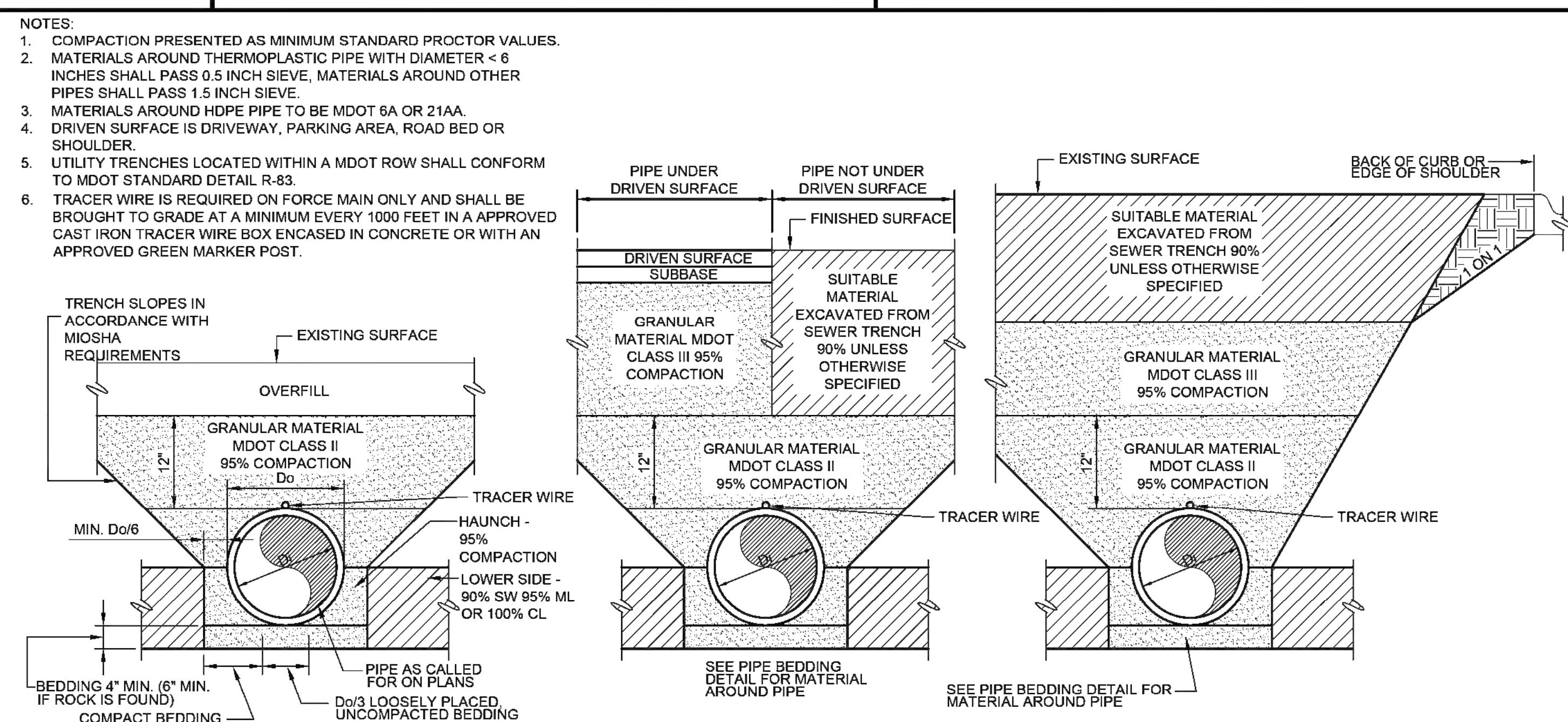


**SECTION A-A**

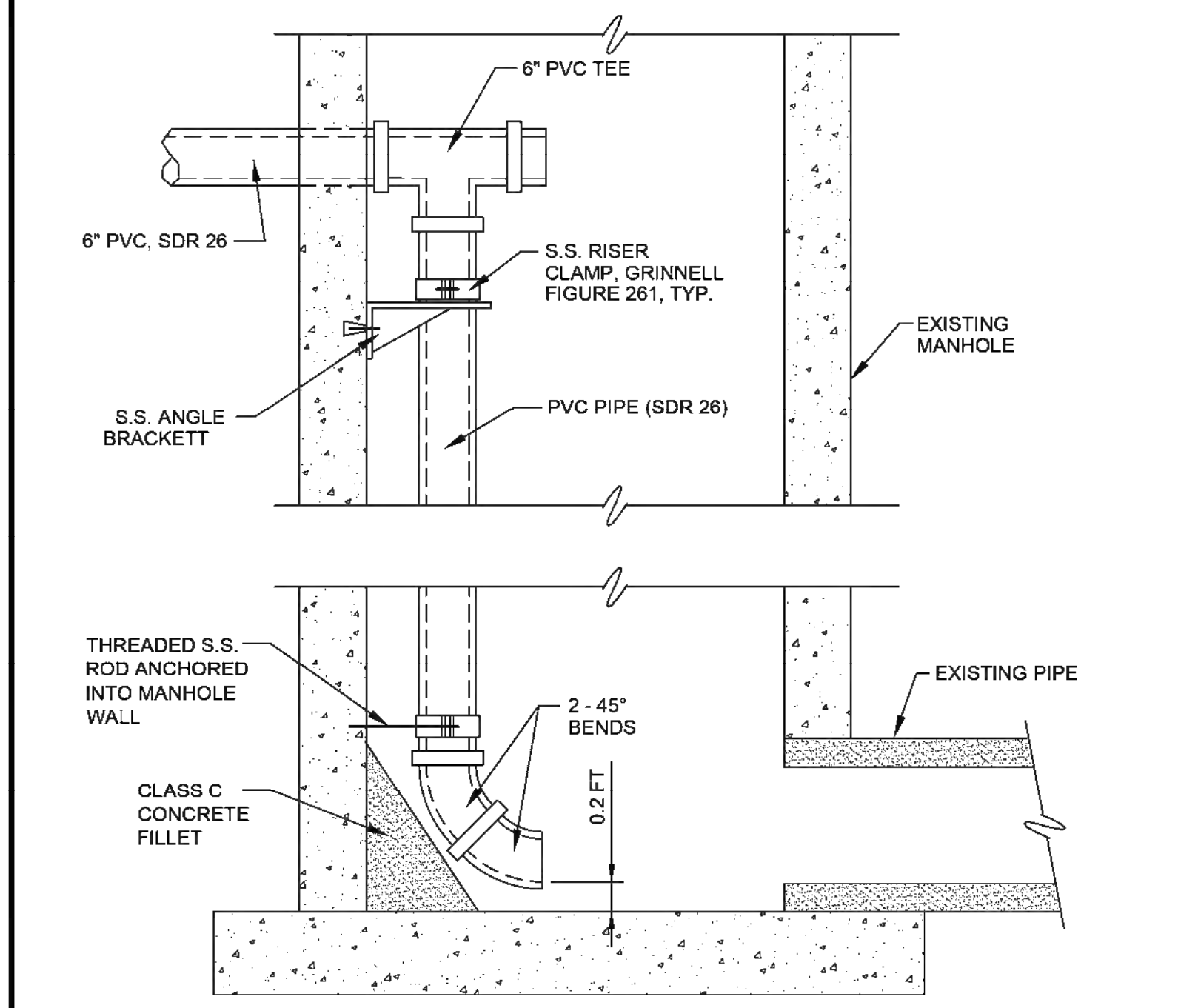
- NOTES:  
 1. ALL SANITARY MANHOLES TO BE PRECAST REINFORCED CONCRETE WITH PREMIUM JOINTS. SEE SPECIFICATIONS FOR BASE SLAB AND PIPE OPENINGS AND CONNECTIONS.  
 2. MANHOLE CONES SHALL BE THE ECCENTRIC TYPE.  
 3. PROVIDE 6" OF COMPACTED GRANULAR MATERIAL UNDER ALL PRECAST CONCRETE BASE SLPV.  
 4. FORCE MAINS CONNECT DIRECTLY TO A MANHOLE SHALL BE INSTALLED SO THAT THE ELEVATION OF THE PIPE CROWNS MATCH. THE FORCE MAIN SHALL BE DIRECTED DOWNWARD INTO THE FLOW CHANNEL.  
 5. FOR SANITARY SEWERS ALL PIPES SHALL ENTER MANHOLE THROUGH RUBBER BOOTED CONNECTION.

FRAME & COVER FOR SANITARY SEWER MANHOLES			
TYPE	TYPE OF COVER	MANUFACTURER OR EQUAL	
		EAST JORDAN	NEENAH
MH	SANITARY - SOLID SELF-SEALING	1040.0000	R-1642
MH	SANITARY - SOLID WATERTIGHT	1040-APT	R-1916-F
CO	SOLID	1574A	R-1973-A

**STANDARD MANHOLE**



**PIPE BEDDING TRENCH EXCAVATION & PIPE BEDDING**



**INTERIOR SEWER LATERAL DROP CONNECTION**

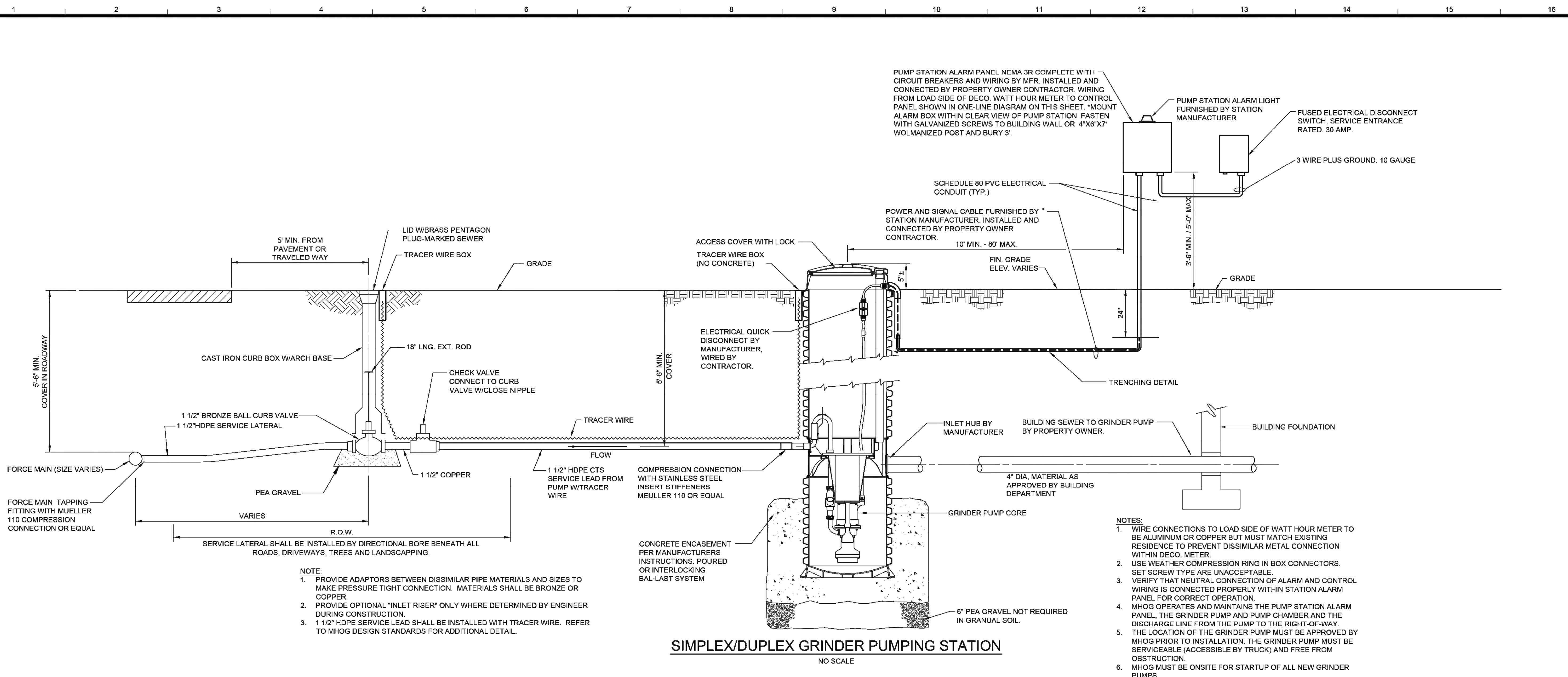


MARION HOWELL OCEOLA GENOA Sewer and Water Authority

STANDARD DETAILS

Scale: NONE  
 Issued Date: JANUARY - 2014  
 UPDATED: MAY 2015  
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 UPDATED: FEBRUARY 2019

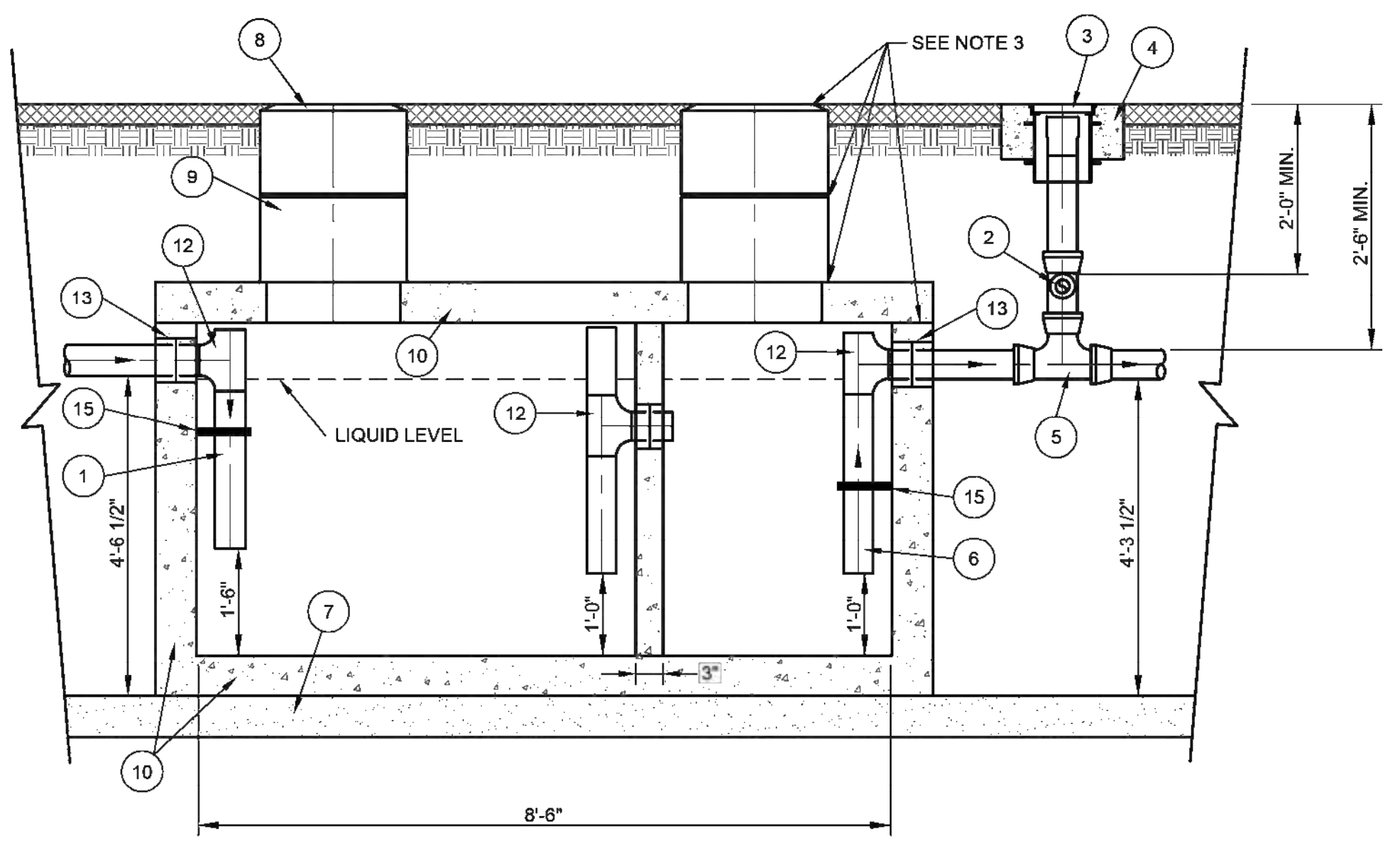
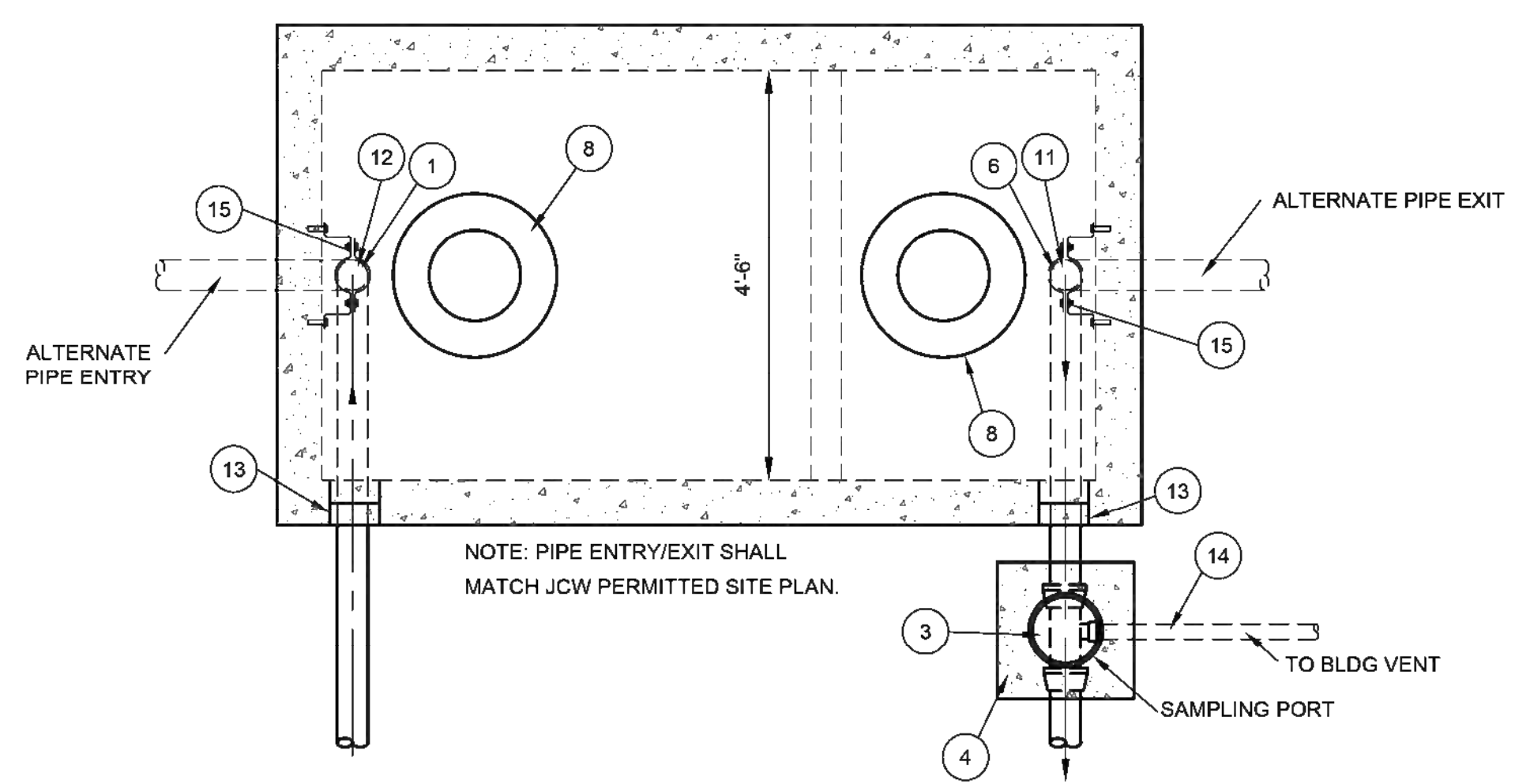




**SIMPLEX/DUPLEX GRINDER PUMPING STATION**  
NO SCALE

- NOTE:
1. PROVIDE ADAPTORS BETWEEN DISSIMILAR PIPE MATERIALS AND SIZES TO MAKE PRESSURE TIGHT CONNECTION. MATERIALS SHALL BE BRONZE OR COPPER.
  2. PROVIDE OPTIONAL "INLET RISER" ONLY WHERE DETERMINED BY ENGINEER DURING CONSTRUCTION.
  3. 1 1/2" HDPE SERVICE LEAD SHALL BE INSTALLED WITH TRACER WIRE. REFER TO MHOG DESIGN STANDARDS FOR ADDITIONAL DETAIL.

- NOTES:
1. WIRE CONNECTIONS TO LOAD SIDE OF WATT HOUR METER TO BE ALUMINUM OR COPPER BUT MUST MATCH EXISTING RESIDENCE TO PREVENT DISSIMILAR METAL CONNECTION WITHIN DECO. METER.
  2. USE WEATHER COMPRESSION RING IN BOX CONNECTORS. SET SCREW TYPE ARE UNACCEPTABLE.
  3. VERIFY THAT NEUTRAL CONNECTION OF ALARM AND CONTROL WIRING IS CONNECTED PROPERLY WITHIN STATION ALARM PANEL FOR CORRECT OPERATION.
  4. MHOG OPERATES AND MAINTAINS THE PUMP STATION ALARM PANEL, THE GRINDER PUMP AND PUMP CHAMBER AND THE DISCHARGE LINE FROM THE PUMP TO THE RIGHT-OF-WAY.
  5. THE LOCATION OF THE GRINDER PUMP MUST BE APPROVED BY MHOG PRIOR TO INSTALLATION. THE GRINDER PUMP MUST BE SERVICEABLE (ACCESSIBLE BY TRUCK) AND FREE FROM OBSTRUCTION.
  6. MHOG MUST BE ONSITE FOR STARTUP OF ALL NEW GRINDER PUMPS.



ITEM	DESCRIPTION
1	4" PVC INLET PIPE*
2	4"x4"x2" TEE WITH 2" PIPE TO BUILDING VENT*
3	THREADED C/O CAP JOSAM 58880 OR APP EQUAL**
4	CONCRETE PAD
5	4"x4"x4" TWO-WAY CLEANOUT TEE*
6	4" PVC OUTLET*
7	4" - 6" GRAVEL BEDDING
8	HEAVY-DUTY CAST IRON FRAME AND COVER ***
9	CONCRETE ADJUSTMENT RINGS
10	REINFORCE AS REQUIRED FOR SERVICE CONDITIONS
11	4" PVC 90° ELBOW*
12	4" PVC TEE*
13	A-LOK OR PRESS SEAL PSX PIPE/WALL CONNECTOR
14	2" VENT PIPE (IDENTIFY PIPE TYPE, CLASS & JOINT AS REQUIRED FOR PROJECT)
15	STAINLESS STEEL PIPE SUPPORT CLAMP ****

- \* 6" PIPE MAY BE SUBSTITUTED TO MATCH UPSTREAM PIPE DIAMETER.  
 \*\* REFER TO CLEAN OUT DETAILS(S) ON STANDARD DETAIL SHEET.  
 \*\*\* CLAY & BAILEY 2008 BV OR EQUAL (FROST PROOF COVERS OPTIONAL)  
 \*\*\*\* FM STAINLESS FASTNERS #63 OR EQUAL. 1/2"x2-1/2" SS BRACKET W/ 1/2"x1-1/2" FULLY THREADED SS HEX BOLT WITH 1/2" SS WASHER AND 1/2"x1-3/4" SS ANCHORS. CLAMP TO BE FACTORY INSTALLED.

- NOTES:
1. THREE COVERS AND RISERS SHOWN. TWO COVERS AND RISERS CENTERED OVER UPPER TWO BAFFLES ARE OPTIONAL.
  2. INTERCEPTOR SIZE - 1000 GAL MINIMUM (REVISE THE SIZE DIMENSIONS, AS NEEDED, FOR LARGER CAPACITY INTERCEPTORS)
  3. ALL JOINTS AT THE FRAME & COVER\*, CONCRETE ADJUSTMENT RINGS AND THE LID OF THE INTERCEPTOR SHALL BE SEALED WITH A MINIMUM OF TWO (2) ROWS OF 3/4 TO 1 INCH PREFORMED BUTYL JOINT SEALER AND A 6" BUTYL JOINT WRAP AROUND SLEEVE (EZ WRAP). THE ENDS OF THE 6" EZ WRAP SHALL OVERLAP BY 12".
  4. PIPING ON THE INTERIOR OF THE INTERCEPTOR SHALL BE PVC WITH SOLVENT-CEMENTED JOINTS.
  5. GREASE INTERCEPTOR INCLUDING ADJUSTMENT RINGS AND CASTINGS SHALL BE WATER TESTED FOR WATER TIGHTNESS AFTER THE BACKFILL OPERATIONS HAVE BEEN COMPLETED. WATER TESTING SHALL CONSIST OF THE FOLLOWING: 1. SEAL THE TANK, 2. FILL WITH WATER, 3. LET STAND FOR 24 HOURS, 4. REFILL TANK, 5. TANK IS APPROVED IS WATER LEVEL IS HELD FOR 1 HOUR.
  6. ONLY KITCHEN WASTE SHALL BE DIVERTED TO THE GREASE TRAP.

**GREASE INTERCEPTOR 1000 GALLON**  
NO SCALE



**MARION HOWELL OCEOLA GENOA**  
Sewer and Water Authority

**STANDARD DETAILS**

Scale: NONE  
 Issued Date: JANUARY - 2014  
 UPDATED: MAY 2015  
 UPDATED: FEBRUARY 2016  
 UPDATED: APRIL 2016  
 UPDATED: OCTOBER 2017  
 UPDATED: FEBRUARY 2019  
 UPDATED: NOVEMBER 2022



### D-Series Size 1 LED Area Luminaire

**Specifications**

- EPA: 0.69 ft<sup>2</sup> (0.06 m<sup>2</sup>)
- Length: 32.71" (833 mm)
- Width: 14.26" (362 mm)
- Height H1: 7.68" (195 mm)
- Height H2: 2.73" (69 mm)
- Weight: 34 lbs (15.4 kg)

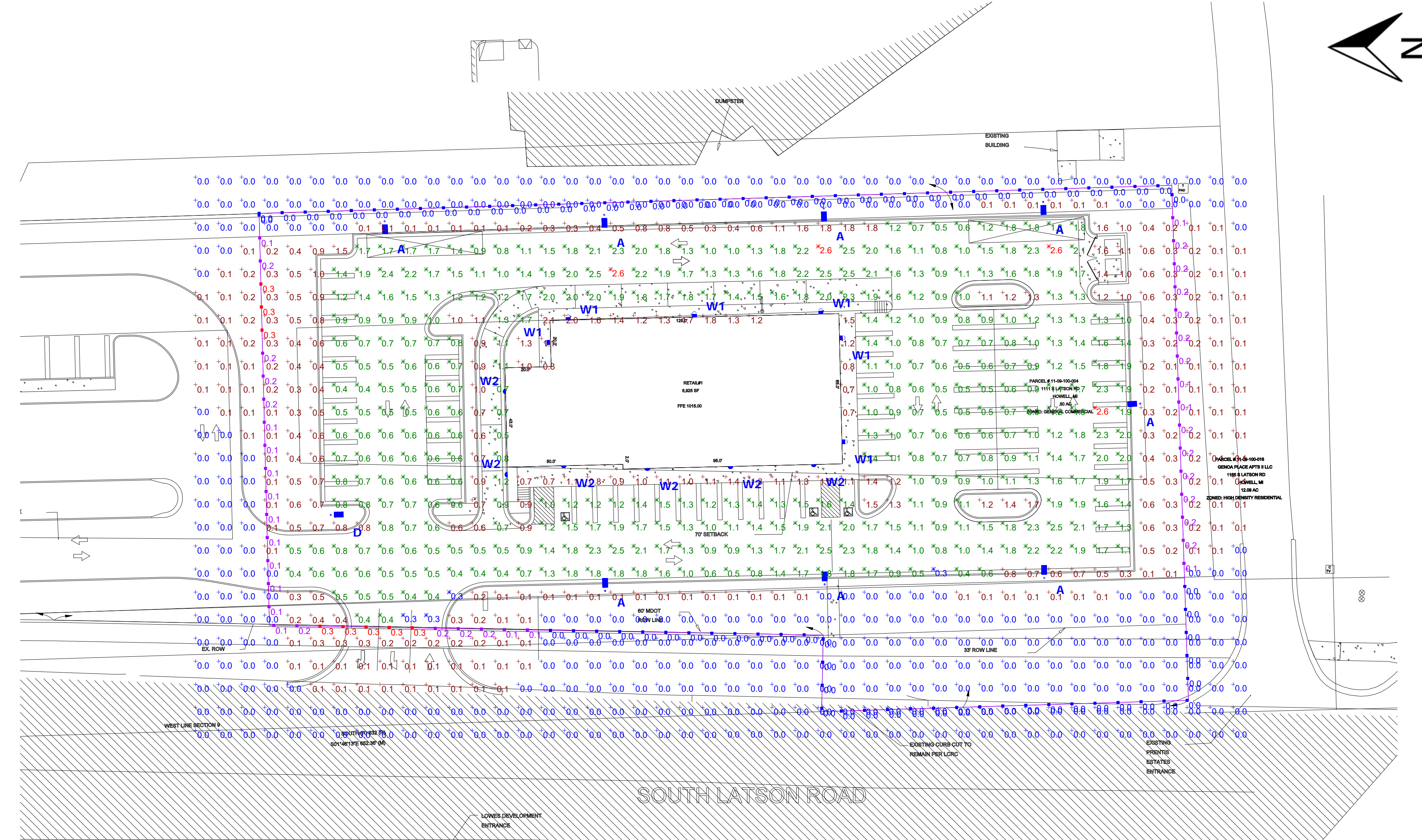
**Introduction**

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

**Ordering Information** EXAMPLE: DSX1 LED P7 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBX2

Series	LED	Color Temperature	Color Rendering Index	Distribution	Finish	Mounting	Shipped Included
DSX1 LED	F1	P6	3000K	70CRI	AIR	Type I Medium	MVOLT (120V-277V)
	F2	P7	4000K	70CRI	T3M	Type II Medium	MVOLT (120V-277V)
	F3	P8	5000K	70CRI	T3M	Type III Medium	MVOLT (120V-277V)
	F4	P9	5000K	70CRI	T3M	Type III Medium	MVOLT (120V-277V)
	F5	P10	5000K	70CRI	T3M	Type III Medium	MVOLT (120V-277V)



LITHONIA LIGHTING COMMERCIAL OUTDOOR One Lithonia Way • Conyers, Georgia 30012 • Phone: 1-800-705-SERV (7378) • FAX: 770-947-2222

### WDGE2 LED Architectural Wall Sconce Precision Reflective Optic

**Specifications**

- Depth (D1): 7"
- Depth (D2): 1.5"
- Height: 9"
- Width: 11.5"
- Weight: 13.5 lbs (without options)

**Introduction**

The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectangular design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight™ AIR wireless control, the WDGE family provides additional energy savings and code compliance.

WDGE2 with industry leading precision reflective optics provides great uniform distribution and optical control. When combined with multiple integrated emergency battery backup options, including an 18W cold temperature option, the WDGE2 becomes the ideal wall-mounted lighting solution for pedestrian scale applications in any environment.

**WDGE LED Family Overview**

Luminaire	Optic	Standard EM, FT	Color, 30°C	Sensor	FP	P1	P2	P3	P4	P5	P6
WDGE1 LED	Visual Comfort	4W	19W	Standard	750	1,200	2,000	3,000	4,500	6,000	—
WDGE2 LED	Visual Comfort	19W	19W	Standard / Height	1,200	2,000	3,000	4,500	6,000	—	
WDGE3 LED	Precision Reflective	30W	19W	Standard / Height	700	1,200	2,000	3,200	4,200	—	
WDGE4 LED	Precision Reflective	15W	19W	Standard / Height	7,500	8,500	10,000	12,000	—	—	
WDGE4 LED	Precision Reflective	15W	19W	Standard / Height	12,000	16,000	18,000	20,000	22,000	25,000	

**Ordering Information** EXAMPLE: WDGE2 LED P3 40K 80CRI VF MVOLT SRM DDBX2

Series	Package	Color Temperature	CR	Distribution	Finish	Mounting	Shipped Included	Shipped Separately
WDGE2 LED	P0	27K	2500K	70CRI	T15	Type I Short	MVOLT	3/8" x 3/8" Acbr/bracket wall space
	P1	30K	3000K	80CRI	T3M	Type II Medium	347	SRM Surface mounting bracket
	P2	40K	4000K	UP Limited	T3M	Type II Medium	480	SRM Surface mounting bracket
	P3	50K	5000K	Wavelength	T3M	Type II Medium	480	SRM Surface mounting bracket

**Options**

Option	Description	Notes
E190W	Emergency battery backup, Certified in CA Title 20 (MA202)	150W, 5" x 5"
E20WC	Emergency battery backup, Certified in CA Title 20 (MA202)	150W, 5" x 5"
E21	PhotoCell, Sunset Type	
OMG	0-10V dimming wires pulled outside fixture for use with an external control, ordered separately	
BCE	Battery constant entry for back box (P9001), Total of 4 entry points	
BAA	Buy American Act Compliant	

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### PRO-15 [H4]

**STANDARD SPECIFICATIONS**

**FRAME**  
Heavy duty aluminum with roll formed aluminum bands. The optional trim bars are solid 0.25" thick aluminum, held in place by fasteners.

**DIFFUSER**  
Translucent, UV stabilized, white acrylic. Diffuser is form molded allowing for a uniform standard thickness of 0.100" throughout.

**PAN**  
Heavy duty formed aluminum, featuring thread inserts to prevent nutting of fasteners.

**LED PERFORMANCE - 3500K STANDARD**  
120-277V - 3500K, 82 CRI - L80 rating - 60,000 hrs - L70 rating (projected) - 100,000 hrs  
Amperage rated @ 110V input  
Operating ambient temperature: -20°C / -4°F - 50°C / 122°F

Delivered 3500K lumens noted. Consult Brownlee.com for performance of all CCTs.  
B06 - 6W nominal, 25 A input - 484 lm, Non-dimming  
B12 - 12W nominal, 10 A input - 957 lm, Dimmable (0-10V)  
C09 - 9W nominal, 10 A input - 675 lm, Dimmable (0-10V)  
C17 - 10W nominal, 15 A input - 1584 lm, Dimmable (0-10V)  
C24 - 23W nominal, 20 A input - 2186 lm, Dimmable (0-10V)

**MOUNTING**  
Directly to box (by others). Mounting hardware included.

**FINISH**  
All 7601 parts are prepared using a three step pre-treatment/finishing process, followed by a powder coat primer prior to applying any of the Brownlee paint finishes.

**WARRANTY**  
5 year limited warranty on this LED product. Consult factory for details.

**ORDERING INFORMATION**

Model	2.	3.	4.	5.	G. (if required)
7601					

**2. FINISH**

Code	Finish
AB	Antique Bronze
AS	Antique Silver
BL	Black
BR	Bronze
DB	Desert Bronze
GM	Gun Metal
MB	Metallic Bronze
NI	Nickel Tone
PL	Platinum
WH	White

**3. WATTAGE**

Code	Wattage
B06	6W B Series LED
B12	12W B Series LED
C09	9W C Series LED
C17	10W C Series LED
C24	23W C Series LED

**4. TRIM**

Code	Trim
V80	No trim
V81	1 vertical bar*
V82	2 vertical bars*

**5. COLOR TEMPERATURE**

Code	Color Temperature
35K	3500K standard color temperature
27K	2700K color temperature
30K	3000K color temperature
40K	4000K color temperature

**6. AVAILABLE OPTIONS**

Code	Description
BAC	Buy American Compliant
BBP	Integral Battery Backup (IBB) (adds 1.5" to depth)
BBC	Integral Battery Backup, Cold Weather (110W) (adds 1.5" to depth)
BBD	Battery used for secondary power source
BLE	0-10V Dimming (All except B06)
DTR	Trac (Line Voltage Dimming) (20V) (All except B06)
ECW	Extreme Cold Weather (-40°C / -40°F min.)
ES	ENERGY STAR
EXT	Extended Housing (designed to match BB(C) aesthetic) (Adds 1.5" to depth)
FCL	French Canadian Labels
DCC	Discrepancy Sensor
T2P	Title 24 (if Compliant (B12 & C24) in 3500K only)

**PROJECT:**  
**MODEL #:**  
**FIXTURE TYPE:**

**Plan View**  
Scale - 1" = 30ft

**Ordering Note**

FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

**Drawing Note**

THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

**General Note**

- SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
- SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
- CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0'.

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIREMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705

**Schedule**

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Lumens per Lamp	LLF	Wattage	Mounting Height
A		8	Lithonia Lighting	DSX1 LED P2 40K 70CRI BLCA	D-Series Size 1 Area Luminaire P2 Performance Package 4000K CCT 70 CRI Type 4 Extreme Backlight Control	LED	1	7334	0.9	67.79	20'-0"
D		1	Lithonia Lighting	DSX1 LED P1 40K 70CRI 15W HS	D-Series Size 1 Area Luminaire P1 Performance Package 4000K CCT 70 CRI Type 5 Wide Housewide Shield	LED	1	5473	0.9	50.9015	20'-0"
W1		6	Lithonia Lighting	WDGE2 LED P1 40K 70CRI 14M	WDGE2 LED WITH P1 - PERFORMANCE PACKAGE 4000K, 70CRI, TYPE 4 MEDIUM OPTIC	LED	1	1397	0.9	11,1658	12'-0"
W2		6	Brownlee Lighting	7601-C17-40K	Formed housing, frosted plastic lens enclosure	LED	1	1594	0.9	16,21	12'-0"

**Statistics**

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max
OVERALL	+	0.6 fc	2.6 fc	0.0 fc	N/A	N/A	0.2:1
PROPERTY LINE	+	0.1 fc	0.3 fc	0.0 fc	N/A	N/A	0.3:1
RETAIL PARKING	x	1.2 fc	2.6 fc	0.3 fc	8.7:1	4.0:1	0.5:1

















**GENOA CHARTER TOWNSHIP**  
**Application for Site Plan Review**

GENOA TOWNSHIP

JAN 18 2024

RECEIVED

**TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:**

APPLICANT NAME & ADDRESS: MITTS, LLC 5796 E. Grand River, Howell

*If applicant is not the owner, a letter of Authorization from Property Owner is needed.*

OWNER'S NAME & ADDRESS: MITTS, LLC 5796 E. Grand River, Howell

SITE ADDRESS: 5776 E. Grand River, Howell, MI. PARCEL #(s): 4711-10-400-007

APPLICANT PHONE: (810) 923-8334 OWNER PHONE: (810) 923-8337

OWNER EMAIL: cjmitter@WonderlandMarineWest.com

LOCATION AND BRIEF DESCRIPTION OF SITE: South side of Grand River, West of Dorr Road. Existing commercial building with paved driveway.

BRIEF STATEMENT OF PROPOSED USE: Temporary Wonderland Marine West showroom, sales center, offices and new boat display for use during renovation of their adjacent existing showroom and sales center.

THE FOLLOWING BUILDINGS ARE PROPOSED: Existing building to remain.  
No new buildings are proposed.

**I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.**

BY: Gary Mitter

ADDRESS: 5796 E. Grand River, Howell, MI.

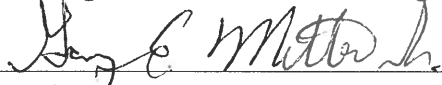


**Contact Information** - Review Letters and Correspondence shall be forwarded to the following:

1.) Gary Mitter, Sr. of MITTS, LLC at cjmitter@wonderlandmarinewest.com  
Name Business Affiliation E-mail Address

**FEE EXCEEDANCE AGREEMENT**

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE:  DATE: 1-17-24  
PRINT NAME: Gary Mitter PHONE: 810 923-8334  
ADDRESS: 5796 E. Grand River, Howell, MI. 48843



GENOA CHARTER TOWNSHIP  
Special Land Use Application

GENOA TOWNSHIP

JAN 18 2024

RECEIVED

This application **must** be accompanied by a site plan review application and the associated submittal requirements. (The Zoning Official may allow a less detailed sketch plan for a change in use.)

APPLICANT NAME & ADDRESS: MITTS, LLC, 5796 E. Grand River, Howell, MI 48843

*Submit a letter of Authorization from Property Owner if application is signed by Acting Agent.*

APPLICANT PHONE: ( 810) 923-8334 EMAIL: cjmitter@WonderlandMarineWest.com

OWNER NAME & ADDRESS: MITTS, LLC, 5796 E. Grand River, Howell, MI 48843

SITE ADDRESS: 5776 E. Grand River, Howell, MI PARCEL #(s): 4711-10-400-007

OWNER PHONE: ( 810) 923-8337 EMAIL: cjmitter@WonderlandMarineWest.com

Location and brief description of site and surroundings:

South side of Grand River, West of Dorr Road. Existing commercial building and paved driveway.

Proposed Use:

Temporary Wonderland Marine West new and used boat sales and service showroom, sales center and offices

Describe how your request meets the Zoning Ordinance General Review Standards (section 19.03):

- a. Describe how the use will be compatible and in accordance with the goals, objectives, and policies of the Genoa Township Comprehensive Plan and subarea plans, and will promote the Statement of Purpose of the zoning district in which the use is proposed.

Proposed use of the site for new and used boat sales and service will remain the same as their current use of the adjacent site.

The use as a retail business serving the requirements of the overall community. Future land use of the property, and the adjacent parcel is anticipated to be Commercial.

- b. Describe how the use will be designed, constructed, operated, and maintained to be compatible with, and not significantly alter, the existing or intended character of the general vicinity.

Use of the existing building as a temporary showroom, sales center and offices is the same as the current use on the adjacent property. The proposed renovation of the existing building and site will provide a significant improvement to the area.

- c. How will the use be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage structures, water and sewage facilities, refuse disposal and schools?

The existing building is currently served by public facilities and services. The proposed use of the building will not require any significant change in use of public services.



d. Will the use involve any uses, activities, processes, or materials potentially detrimental to the natural environment, public health, safety, or welfare by reason of excessive production of traffic, noise, vibration, smoke, fumes, odors, glare, or other such nuisance? If so, how will the impacts be mitigated?

Proposed use as a showroom and sales offices for new and used boats is the same as the existing adjacent use.

The activities are not detrimental to the environment, public health, safety or welfare.

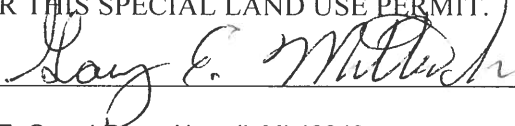
e. Does the use have specific criteria as listed in the Zoning Ordinance (sections 3.03.02, 7.02.02, & 8.02.02)? If so, describe how the criteria are met.

7.02.02(c) - Site is adjacent to the location of the existing showroom and sales offices for new and used boats, outdoor display areas on the parcel are paved and not within greenbelt areas, existing building is 7,124 sq.ft. in area, adequate truck maneuvering area is provided, and the parcel does not abut residentially zoned property.

I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I AGREE TO DESIGN, CONSTRUCT AND OPERATE, AND MAINTAIN THESE PREMISES AND THE BUILDINGS, STRUCTURES, AND FACILITIES WHICH ARE GOVERNED BY THIS PERMIT IN ACCORDANCE WITH THE STATED REQUIREMENTS OF THE GENOA TOWNSHIP ZONING ORDINANCE, AND SUCH ADDITIONAL LIMITS AND SAFEGUARDS AS MAY BE MADE A PART OF THIS PERMIT.

THE UNDERSIGNED Gary Mitter, MITTS, LLC STATES THAT THEY ARE THE FREE OWNER OF THE PROPERTY OF PROPERTIES DESCRIBED ABOVE AND MAKES APPLICATION FOR THIS SPECIAL LAND USE PERMIT.

BY: Gary Mitter



ADDRESS: 5796 E. Grand River, Howell, MI 48843

**Contact Information** - Review Letters and Correspondence shall be forwarded to the following:

Gary Mitter, Sr. of MITTS, LLC at cjmitter@wonderlandmarine.com  
Name Business Affiliation Email

**FEE EXCEEDANCE AGREEMENT**

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE: Gary E. Mitter DATE: 1-17-24

PRINT NAME: Gary Mitter PHONE: 810-923-8334



March 5, 2024

Planning Commission  
Genoa Township  
2911 Dorr Road  
Brighton, Michigan 48116

<b>Attention:</b>	Amy Ruthig, Planning Director
<b>Subject:</b>	Wonderland Marine West – Special Land Use and Site Plan Review #2
<b>Location:</b>	5776 Grand River Avenue – south side of Grand River, west of Dorr Road
<b>Zoning:</b>	GCD General Commercial District

Dear Commissioners:

At the Township’s request, we have reviewed the revised submittal from Wonderland Marine to use the existing commercial site as a temporary location for boat sales (plans dated 2/19/24).

**A. Summary**

**1. Special Land Uses (Section 19.03):**

- a. The special land use standards of Section 19.03 are generally met.
- b. In order to make favorable findings related to compatibility and impacts, the use requirements of Section 7.02.02(c) must be met to the Commission’s satisfaction.
- c. The applicant must address any comments provided by the Township Engineer or Brighton Area Fire Authority regarding public facilities and services.

**2. Use Requirements (Section 7.02.02(c)):**

- a. The majority of the use conditions are met; however, the buffer zone/screen fence requirement for outdoor storage is not fully met at the rear of the site (6’ decorative aluminum fence proposed).

**3. Site Plan Review:**

- a. The building front setback will no longer be compliant with the introduction of front yard parking.
- b. The applicant must either relocate the 3 front yard parking spaces, or obtain a variance for the deficient building front setback.
- c. Since they are located behind gates, we request the applicant explain how the rear parking spaces will be accessed or that they be identified as employee parking.
- d. Bumper blocks are prohibited unless deemed necessary by the Planning Commission.
- e. The Commission may wish to require new/modified light fixtures that meet current standards.
- f. The front yard greenbelt is deficient in tree plantings and a hedgerow/wall.
- g. We encourage removal of the nonconforming pole sign.

**B. Proposal/Process**

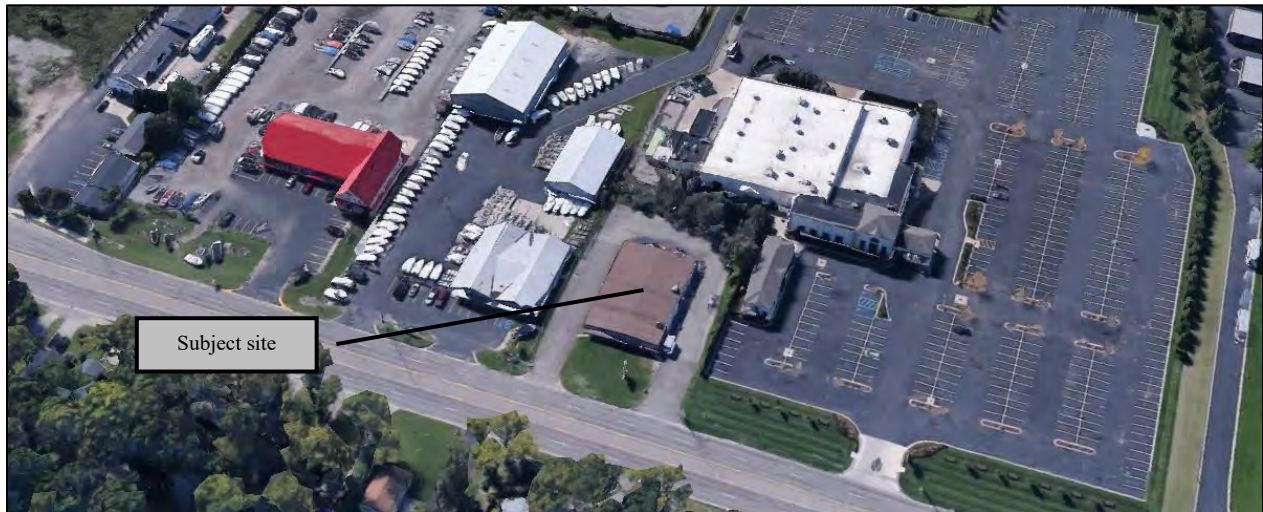
The applicant proposes to use the previously developed commercial site, including the 7,124 square foot building, as a temporary location for boat sales and service with outdoor storage during redevelopment of their current operation on the adjacent property.

Table 7.02 lists boat sales as a special land use in the GCD. The request is also subject to the use requirements of Section 7.02.02(c).

It is important to note that, while the description of the project is for a “temporary” use, special land use approval runs with the land unless it is abandoned or a new use is approved in its place.

Procedurally, the Planning Commission is to review the special land use, site plan, and Environmental Impact Assessment, and put forth recommendations to the Township Board following a public hearing.





*Aerial view of site and surroundings (looking south)*

### **C. Special Land Use Review**

Section 19.03 of the Zoning Ordinance identifies the review criteria for Special Land Use requests, as follows:

- 1. Master Plan.** The Township Master Plan identifies the subject site as Mixed-Use East Grand River. The intent of this category includes site elements such as walkability and districts of mutually supportive uses, in addition to a mixture of uses.

While the proposal does not entail a mix of uses, it will improve an older commercial site with new landscaping, a public sidewalk, and a limited amount of parking (given that needed for the use).

The proposed use is also consistent with other uses along this portion of Grand River.

- 2. Compatibility.** This portion of Grand River is developed with a variety of office, service, and commercial uses, including the applicant's existing boat sales and service operation.

The intent of the project is to use this site while the adjacent property is being improved.

Given the nature of existing uses in the area, we anticipate that the proposal will be compatible; however, the use requirements of Section 7.02.02(c) must be met to the Commission's satisfaction.

- 3. Public Facilities and Services.** The subject site fronts Grand River and was previously developed for commercial purposes.

As such, we anticipate that necessary public facilities and services are in place; however, the applicant must address any comments provided by the Township Engineer and/or Brighton Area Fire Authority.

- 4. Impacts.** As a previously developed site on the main commercial corridor through the Township, additional impacts to the environment, public health, safety and welfare are not anticipated.

However, similar to previous comments, the use requirements of Section 7.02.02(c) must be met to the Commission's satisfaction.

- 5. Mitigation.** If further land use concerns arise as part of the review process, the Township may require additional efforts to mitigate potential adverse impacts.

#### **D. Use Requirements**

Boat sales are subject to the use requirements of Section 7.02.02(c), as follows:

- 1. Sale space for used mobile homes, recreational vehicles and boats may only be carried on in conjunction with a regularly authorized new mobile home, recreational vehicle or boat sales dealership on the same parcel of land.**

The submittal materials identify the sale of new and used boats as part of a boat sales dealership.

- 2. All outdoor storage areas shall be paved with a permanent, durable and dustless surface and shall be graded and drained to dispose storm water without negatively impact adjacent property. The Township Board, following a recommendation of the Planning Commission and the Township Engineer, may approve a gravel surface for all or part of the display or storage area for low intensity activities, upon a finding that neighboring properties and the environment will not be negatively impacted.**

The project includes a mix of existing and proposed pavement. The new boat display/storage area at the rear of the property will be on a paved surface.

- 3. No storage or display of vehicles shall be permitted in any landscape greenbelt area, provided the Township may permit a display pod for an automobile within the greenbelt area where it is integrated into the landscape design.**

The outdoor display/storage area is at the rear of the site and not within a required greenbelt area.

- 4. The site shall include a building of at least five hundred (500) feet of gross floor area for office use in conjunction with the use.**

The existing building contains 7,124 square feet of gross floor area.

- 5. All loading and truck maneuvering shall be accommodated on-site.**

The project includes a new drive connection with the adjacent property to the east, which the applicant also owns. Aside from the drive connection, maneuvering will be accommodated on-site.

- 6. All outdoor storage area property lines adjacent to a residential district shall provide a buffer zone A as described in Section 12.02. A buffer zone B shall be provided on all other sides. The Planning Commission may approve a six (6) foot high screen wall or fence, or a four (4) foot high landscaped berm as an alternative.**

The site contains existing fences of varying heights along both side lot lines.

A 6-foot fence is proposed along the rear lot line; however, the detail depicts a decorative aluminum fence that will not provide the screening required by this standard.

#### **E. Site Plan Review**

- 1. Dimensional Requirements.** No changes are proposed to the existing building, which currently complies with the dimensional requirements of the GCD. However, with the introduction of front yard parking, the building front setback will no longer be compliant.

Specifically, the GCD requires a 35-foot front building setback when there is no parking in the front yard, and a 70-foot front building setback with front yard parking.



As such, the applicant must either relocate the new parking spaces or obtain a variance from the ZBA. The revised submittal indicates that they will seek a variance, though we suggest alternatives be discussed prior to doing so.

For instance, there appears to be sufficient area to accommodate one-way circulation and angled parking in the side yard.

2. **Building Design and Materials.** No exterior changes are proposed to the existing building.
3. **Pedestrian Circulation.** Section 12.05 requires a 5-foot wide concrete sidewalk along Grand River. The site plan includes the required sidewalk, as well as a connection to the front of the building.
4. **Vehicular Circulation.** The site currently has two driveways to/from Grand River Avenue with no changes proposed.

The applicant must address any comments provided by the Township Engineer and/or the Brighton Area Fire Authority with respect to vehicular circulation.

5. **Parking.** The calculations on Sheet SP note that 6 parking spaces are needed for the proposal. The plan includes 6 parking spaces – 3 at the front of the site, including a barrier-free space, and 3 at the rear.

Access to the 3 spaces at the rear of the site is blocked by gates. We request the applicant explain how these spaces will be accessed or that they be identified as employee parking.

The 3 spaces at the rear of the site include bumper blocks; however, Section 14.06.01 prohibits the use of bumper blocks except where deemed necessary by the Planning Commission.

6. **Exterior Lighting.** The building currently has 4 wall mounted light fixtures and 2 new fixtures are proposed on the west side of the building. Based on the photographs included in the submittal, the existing fixtures do not meet current Ordinance standards.

The Commission may wish to require new/modified fixtures that meet current standards.

7. **Landscaping.** The landscape plan has been reviewed for compliance with the standards of Section 12.02, as follows:

Standard	Required	Proposed	Notes
Front yard greenbelt	20' width 4 canopy trees 2.5' hedgerow OR 3' masonry wall to screen parking spaces	24' width 30 shrubs	Deficient by 4 canopy trees and hedgerow/wall to screen parking spaces

The plan includes several shrubs and decorative grasses around the building and along the rear lot line; however, there are 9 shrubs along the front of the building that are not identified.

There are also 7 mature evergreen trees along the west side lot line that will be preserved as part of the project.

The Commission has the authority to waive or modify landscaping requirements, per Section 12.02.13.

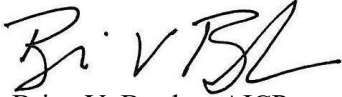
8. **Waste Receptacle/Enclosure.** The revised submittal states that refuse will be transferred to the existing dumpster on the adjacent property (which the applicant also owns).

- 9. Additional Considerations.** Similar to other properties along this portion of Grand River, the site contains a nonconforming pole sign. We encourage removal of this sign as part of the project.

Should you have any questions concerning this matter, please do not hesitate to contact our office.

Respectfully,

**SAFEBUILT**

A handwritten signature in black ink, appearing to read "Bri. V. Borden". The signature is stylized and cursive.

Brian V. Borden, AICP  
Michigan Planning Manager





February 23, 2024

Ms. Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

**Re: Wonderland Marine Temporary Showroom  
Site Plan Review No. 2**

Dear Ms. Ruthig:

Tetra Tech conducted a second review of the proposed Wonderland Marine West Temporary Showroom and Sales office site plan last dated February 19, 2024. The plan was prepared by Desine Inc. on behalf of MITTS, LLC. The development is located on the south side of Grand River Avenue, approximately 900 feet west of the Grand River Avenue and Dorr Road intersection. The Petitioner is proposing to use the existing building on site and proposed improvements include sidewalk, new fence and gates, and expansion of the existing parking lot. We offer the following comments for your consideration:

#### **GENERAL**

1. The existing parking lot does not include concrete curb and gutter as required by Genoa Township's Zoning Ordinance. The Township may wish to require the addition of curb and gutter as part of this project.
2. Bumper blocks are being proposed on the rear parking spaces, but Genoa Township's Zoning Ordinance does not allow bumper blocks unless the Planning Commission deems them necessary. It does not appear that the bumper blocks are necessary where proposed.
3. The Petitioner is proposing a temporary access drive to the property to the east, which will be removed before either parcel is sold in the future. A note should be added to the site plan explaining that the drive will be removed prior to sale of the property for documentation, since there will be no shared use agreement in place.

#### **DRAINAGE AND GRADING**

1. The proposed improvements will increase the total impervious surface of the site. It appears that the existing site does not include any storm sewer, and all storm flow from the parking lot is conveyed as sheet flow across the site towards the Grand River Avenue right-of-way. Although the additional impervious surface and drainage pattern are not ideal, there does not appear to be a feasible alternative for stormwater management for the site.

We recommend the petitioner address the above comments to the Township's satisfaction prior to approval. Please call or email if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads 'Shelby Byrne'.

Shelby Byrne, P.E.  
Project Engineer



# BRIGHTON AREA FIRE AUTHORITY

615 W. Grand River Ave.  
Brighton, MI 48116  
o: 810-229-6640 f: 810-229-1619

March 1, 2024

Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

RE: Wonderland Marine Temporary Showroom & Sales Center  
5776 E. Grand River  
Genoa Twp., MI

Dear Amy,

The Brighton Area Fire Department has reviewed the above-mentioned site plan. The plans were received for review on February 21, 2024 and the drawings are dated December 18, 2023 with latest revisions dated February 19, 2024. The project is based on the re-occupancy of an approximately 7,000 square foot, existing non separated mixed-use structure that will be renovated to be an open showroom/warehouse for boat sales. The use will be temporary during a project to construct a new facility on the neighboring property. The plan review is based on the requirements of the International Fire Code (IFC) 2021 edition.

**All previous comments regarding access have been addressed. Use and vehicle storage will be verified at final occupancy inspection. The fire authority has no issues with the temporary use of the building as requested.**

Additional comments will be given during the building plan review process (specific to the building plans and occupancy). The applicant is reminded that the fire authority must review the fire protection systems submittals (sprinkler & alarm) prior to permit issuance by the Building Department and that the authority will also review the building plans for life safety requirements in conjunction with the Building Department.

If you have any questions about the comments on this plan review please contact me at 810-229-6640.

Cordially,

A handwritten signature in black ink, appearing to read "R. Boisvert".

Rick Boisvert, CFPS  
Fire Marshal

cc: Amy Ruthig [amy@genoa.org](mailto:amy@genoa.org)



**5776 EAST GRAND RIVER  
Genoa Township, Michigan  
Site Plan Application**

**IMPACT ASSESSMENT**

**Owner:**

MITTS, L.L.C.  
5796 East Grand River  
Howell, Michigan 48843

**Prepared by:**

DESINE INC.  
2183 Pless Drive  
Brighton, Michigan 48114

**A. INTRODUCTION (Sec. 18.07.01)**

This impact assessment has been prepared pursuant to Article 18 – SITE PLAN REVIEW of the Zoning Ordinance for the Township of Genoa, Livingston County, Michigan. This assessment addresses the impact of the proposed renovation of the site for use as the Wonderland Marine West temporary showroom and sales office building on the surrounding community and the economic condition and social environment of the Township.

This Impact Assessment has been prepared under the direction of Wayne Perry, P.E., DESINE INC., 2183 Pless Drive, Brighton, Michigan 48114. Mr. Perry is a licensed Civil Engineer, providing professional engineering services in Livingston County since 1988 with experience in private and municipal development including projects within Genoa Township and Livingston County.

**B. SITE LOCATION / DESCRIPTION (Sec. 18.07.02)**

The site is an existing parcel containing 0.74 acres of property, bordered on the North by Grand River Avenue, on the East by Wonderland Marine West, with Crystal Gardens banquet center to the South and West, as shown on Figure 1. Properties North of Grand River Avenue are zoned “Lakeshore Resort Residential” (LRR) district, to the East, West and South is zoned General Commercial (GCD).

The site is developed and contains an existing 7,124 square foot building with a bituminous driveway/parking surrounding the building. Wonderland Marine West is proposing to renovate the building and site to use as a temporary showroom, sales center and new boat display during the removal and reconstruction of their facility on the adjacent property to the East. The Site Plan depicts renovation of the site to include the addition of parking spaces conforming to the Township Zoning Ordinance, the addition of a barrier free parking space, an outdoor boat sales display area, and fencing with gates to secure the site. Improvements to the site will also include additional landscaping.

**C. IMPACT ON NATURAL FEATURES (Sec. 18.07.03)**

Existing soils on the property are Wawasee loam. These soils are well drained soils found in till plains and moraines, with slopes of 2%-18%. Surface runoff is medium, permeability is moderately low and the soil erosion hazard is light. The Soils Map, shown in Figure 3, shows the locations of specific soil types as classified.

Soil classifications are prepared by the United States Department of Agriculture, Soil Conservation Service, and “Soil Survey of Livingston County”. On-site soils consist of the following:

**WAWASEE LOAM (MoB):** WAWASEE LOAMS are typically well drained soils found in till plains and moraines, with slopes of 2%-6%. Surface runoff is medium, permeability is moderately low and the soil erosion hazard is light.

The property is currently fully developed and paved. Existing topography of the site is



generally flat. Surface water drainage from the site is generally in a Northerly direction.

The proposed site improvements will not require any significant changes in grading of the property to construct the new parking spaces. Existing grades at the property lines will not be modified. The limits of disturbance are depicted as shaded areas on the grading plan.

Surface drainage characteristics on the property will not be significantly impacted by the proposed construction. Construction of the proposed parking spaces will not significantly change the permeable area on the property. The proposed changes and modifications to the surface drainage conditions will not have a negative impact on local aquifer characteristics or groundwater recharge capacity. Surface water runoff from the property will not have a significant impact on adjacent properties due to the proposed renovation.

Landscaping is proposed for the site to reduce the visual impact of the existing building and property. All proposed landscaping areas and plantings have been designed to improve the aesthetics of the property. Within the developed portion of the site, areas not otherwise covered, shall have lawn or other vegetative surface cover established.

No wildlife habitats currently exist on the property.

**D. IMPACT ON STORM WATER MANAGEMENT (Sec. 18.07.04)**

The property currently discharges surface water runoff to an existing storm sewer system along Grand River Avenue. Site grades mesh with existing grades on adjoining properties. No adverse impact to adjacent parcels is anticipated due to construction of the proposed parking spaces.

Soil erosion and sedimentation are controlled by the Soil Erosion Control Act No. 347 of the Public Acts of 1972, as amended and is administered by the Livingston County Drain Commissioner. Silt fencing will be installed around a majority of the site during construction. The Contractor shall comply with all regulations including control during and after construction.

Impact on adjoining properties due to the construction of this site will be minimized by implementing soil erosion control methods. No adverse impact to adjacent properties due to surface water runoff will be created as a result of the proposed improvements.

**E. IMPACT ON SURROUNDING LAND USES (Sec. 18.07.05)**

No adverse impact to adjacent properties is anticipated due to the renovation of the existing building, parking and site improvements.

Ambient noise levels on and around the property are largely generated by vehicular traffic on Grand River Avenue. Daily activities within the proposed buildings are not anticipated to create an increase in the sound level in the area.

All site lighting is existing building mounted fixtures.

The proposed use of the property does not create any significant emissions of smoke,

airborne solids, odors, gases, vibrations, noise or glare discernable and substantially annoying or injurious to person and/or property beyond the lot lines. No significant change in air pollution is anticipated.

The Contractor shall be responsible for initiating and maintaining adequate dust control measures during and after construction until the project site is fully stabilized and a vegetative cover established. Dust control measures used during construction may consist of site watering, mulching of completed areas, installation of windbreak fencing, and application of chemical dust control materials. The site will comply with the performance standards contained in Section 13.05 of the Township Zoning Ordinance.

Soil erosion control measures such as silt fence, geotextile silt sack filters and construction track mats will be used during construction to control siltation and sedimentation from entering the storm water system and have an adverse impact on adjacent properties.

**F. IMPACT ON PUBLIC FACILITIES AND SERVICES (Sec. 18.07.06)**

The Livingston County Sheriff and Michigan State Police will provide Police protection. Public safety services required to accommodate the proposed use are anticipated to be minor.

The Brighton Area Fire Department as a part of an existing governmental agreement will provide fire protection service. Existing fire hydrants are located along Grand River Avenue. The building address will be located at the front of the proposed building. No significant change in fire protection services are anticipated as a result of the proposed renovation of the property.

The proposed plan modifications will not create any direct adverse impact on the public schools.

**G. IMPACT ON PUBLIC UTILITIES (Sec 18.07.07)**

The property is presently within municipal sewer & water. Water service is available along Grand River. Capacity is available within the existing water system to provide adequate service to this site.

Capacity is available within the existing sanitary sewer system to provide adequate service for the site.

The site is currently serviced by electric, gas, phone and cable systems located along Grand River Avenue.

Delivery services are generally limited to parcel trucks, such as UPS, and similar single axle vehicles. These delivery service providers use available street parking temporarily while dropping off deliveries. Delivery of new boats will continue to be at the existing adjacent Wonderland Marine West property.



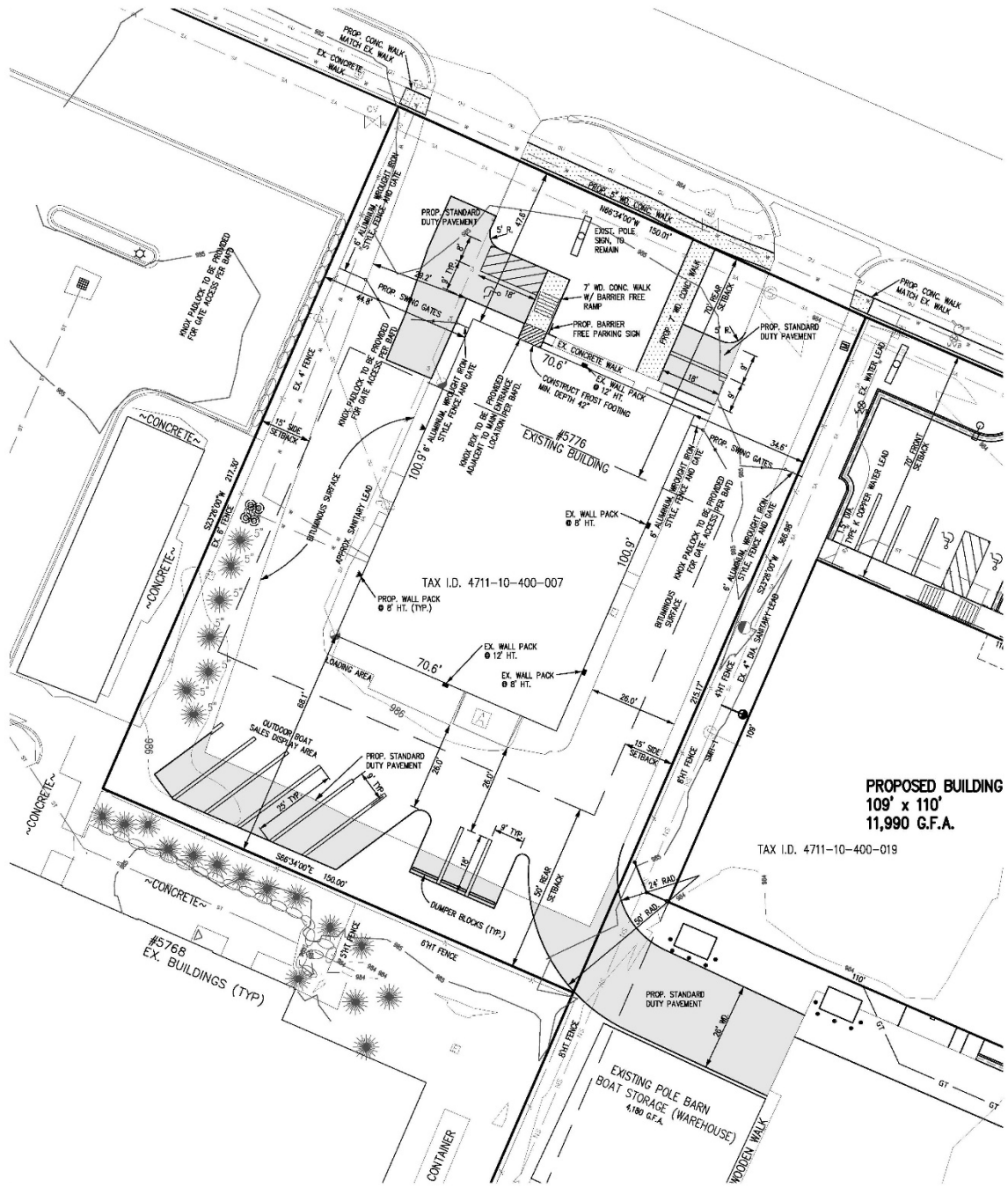
- 
- H. STORAGE AND HANDLING OF ANY HAZARDOUS MATERIALS (Sec. 18.07.08)**  
The showroom and sales center use within the existing building will not use, store, generate and/or discharge potentially polluting materials. Small quantities of material such as cleaning products and chemicals may be stored. No adverse effect is expected due to hazardous materials on-site.
- I. TRAFFIC IMPACT STUDY (Sec. 18.07.09)**  
No change in traffic use to the site is anticipated by the renovation of the existing building for use as a temporary showroom and sales center building. No adverse impact on pedestrian traffic in the area is anticipated as a result of developing the proposed project.
- J. HISTORIC AND CULTURAL RESOURCES (Sec. 18.07.10)**  
The existing building on the property does not have any major historic significance on a local, regional or state level.
- K. SPECIAL PROVISIONS**  
No special provisions or requirements are currently proposed for this facility.

**FIGURE 1**





**FIGURE 2**



**SITE IMPROVEMENTS**  
**NOT TO SCALE**

**FIGURE 3**

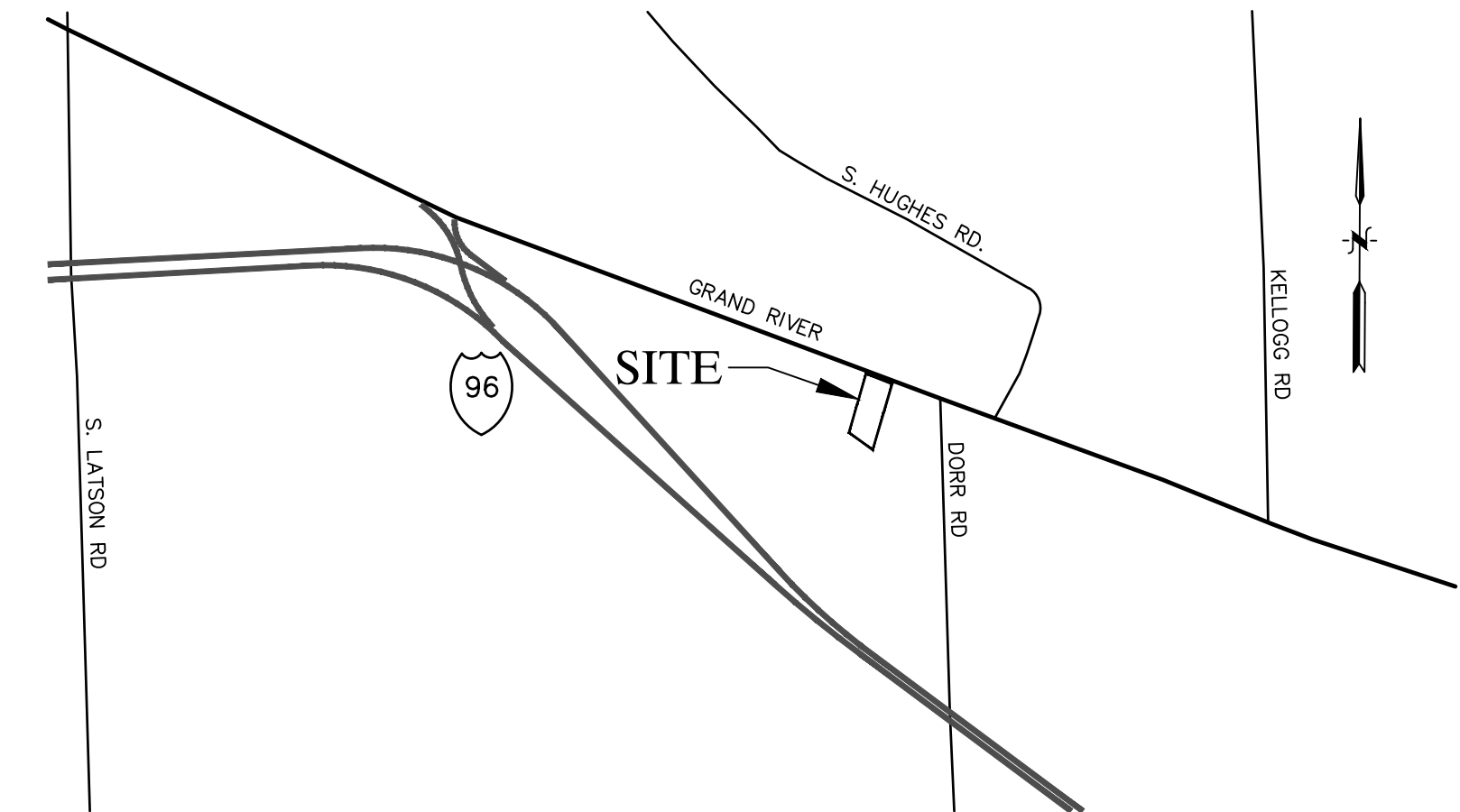


**SOILS MAP**  
**(NOT TO SCALE)**



# PROPOSED SITE PLAN FOR 5776 E. GRAND RIVER WONDERLAND MARINE WEST TEMPORARY SHOWROOM AND SALES OFFICE

A PART OF THE SE 1/4 OF SECTION 10, T 2 N, R 5 E,  
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN



**LOCATION MAP**  
SCALE: 1in. = 2000ft.



## SHEET INDEX

- EX** EXISTING CONDITIONS & DEMOLITION PLAN
- SP** SITE PLAN
- GR** GRADING PLAN
- LA1** LANDSCAPE PLAN
- LA2** LANDSCAPE NOTES & DETAILS
- DT** GENERAL NOTES & DETAILS
- E** BUILDING PHOTOGRAPHS
  
- FLOOR PLAN**

## LEGAL DESCRIPTION

Reference: Warranty Deed, 2023R-013314  
Part of the Southeast 1/4 of Section 10, Town 2 North, Range 5 East,  
Genoa Township, Livingston County, Michigan, described as follows:  
Beginning on the Southerly Right of Way line of Grand River Road at a point  
800 feet N 2 degrees 08 minutes East and 879 feet North 66 degrees 34  
minutes West from the Southeast corner of said section 10; thence North 66  
degrees 34 minutes West 150 feet along said Highway Right of Way; Thence  
South 23 degrees 26 minutes West 217.8 feet; thence south 66 degrees 34  
minutes East 150 feet; thence North 23 degrees 26 minutes East 217.8 feet  
to the point of beginning.  
Tax ID No.: 4711-10-400-007  
Also known as: 5776 E. Grand River, Howell, Michigan 48843

Refer to the current policy for title insurance for proof of ownership and all  
encumbrances affecting title to the described above parcel.

## BENCHMARKS

DATUM BASED ON NGS OPUS SOLUTION REPORT,  
DATED MARCH 28, 2022 AT 11:26 AM.  
PREVIOUS DATUM FROM MARCH 1999 HAS A  
DIFFERENCE OF -0.76'.

BENCHMARK #201  
ARROW ON HYDRANT, LOCATED ON THE  
SOUTHERLY SIDE OF GRAND RIVER, NEAR THE  
NORTHWESTERLY CORNER OF #5796 PARCEL.  
ELEVATION = 986.63 (NAVD 88)

BENCHMARK #202  
SOUTHEASTERLY CORNER OF CONCRETE PAD,  
LOCATED ON THE EASTERLY SIDE OF #5796  
BUILDING.  
ELEVATION = 983.53 (NAVD 88)

**OWNER/DEVELOPER**  
**MITTS LLC**  
5796 E. GRAND RIVER  
HOWELL, MICHIGAN 48843  
(517) 548-5122

**CIVIL ENGINEER/LAND SURVEYOR**  
**DESINE INC.**  
2183 PLESS DRIVE  
BRIGHTON, MI. 48114  
(810) 227-9533



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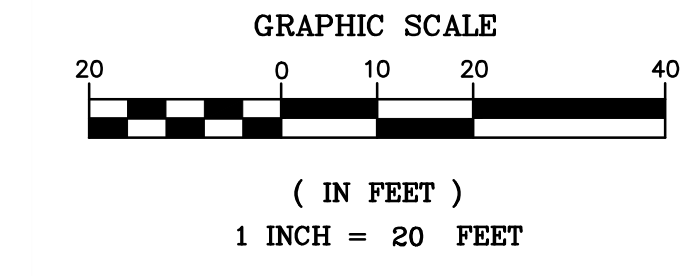
(810) 227-9533  
**CIVIL ENGINEERS  
LAND SURVEYORS**  
2183 PLESS DRIVE  
BRIGHTON, MICHIGAN 48114

REVISED	SCALE: N/A
12-18-23	PROJECT No.: 214052
02-19-24	DWG NAME: 4052 COV
	PRINT: FEB. 19, 2024



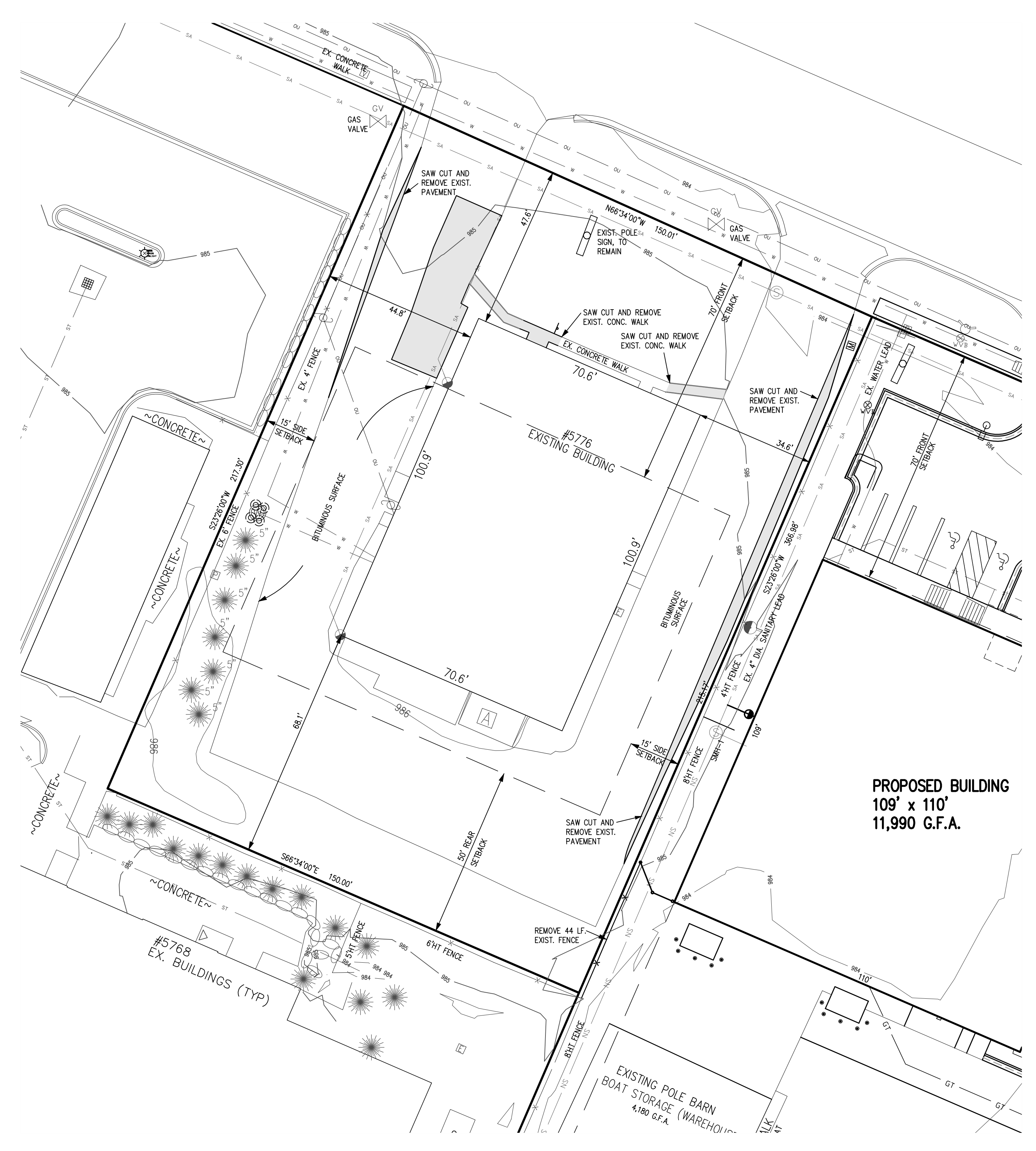
**LEGEND**

- = PARCEL BOUNDARY LINE
- = SETBACK LINE
- = WELL WATER
- = BOLLARD
- = STOP SIGN / PEDESTRIAN CROSSING SIGN
- = SIGN / MONUMENT SIGN
- = HANDICAP PARKING DESIGNATION
- = EX. WALL PACK / OVERHEAD LIGHT
- = LIGHT BASE
- = UTILITY METERS & BOXES (ELECTRIC METER, GAS METER, WATER METER, PHONE BOX, CATV BOX, MAIL BOX, UTIL. BOX)
- = UTILITY POLE W/GUY WIRE
- = OVERHEAD UTILITY LINES (ELECTRIC/PHONE/CABLE)
- = U/G UTILITY LINES (PHONE/FIBER OPTIC/ELECTRIC/CABLE TV/MISC UTILITIES)
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- = CONCRETE CURB (UNLESS OTHERWISE STATED)
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- = SANITARY SEWER PIPE
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- = ROOF DRAIN
- = STORM WATER MANHOLE W/IDENTIFIER
- = CATCH BASIN W/IDENTIFIER
- = FLARED END SECTION
- = STORM WATER DRAINAGE PIPE
- = HYDRANT
- = WATER SHUT OFF
- = WATER VALVE BOX
- = WATER MAIN
- = GAS SHUT OFF
- = U/G GAS
- = GEOTHERMAL EXCHANGE WELL
- = GEOTHERMAL PIPE
- = 1' CONTOUR
- = 5' CONTOUR
- = PAVEMENT REMOVAL AREA



**DEMOLITION NOTES:**

1. The demolition specifications of the Local Municipality are a part of this work. Refer to the General Notes on the project plans for additional requirements.
2. Contractor shall contact the 811 Underground Public Utility Locating System or other appropriate local underground utility locating Agency, a minimum of three (3) working days prior to performing demolition work. Existing utility information on the project plans may be from information disclosed to this firm by the Utility Companies, Local, County or State Agencies, and/or various other sources. No guarantee is given as to the completeness or accuracy thereof. Prior to construction, locations and depths of all existing utilities (in possible conflict with the proposed improvements) shall be verified in the field.
3. Contractor shall contact the appropriate Agencies to coordinate disconnect of the electric, gas, phone, cable and other public utilities as necessary prior to performing demolition work.
4. Contractor shall contact the appropriate Agencies to coordinate removal and/or relocation of any underground and/or overhead public utility lines as necessary prior to performing demolition work.
5. Contractor shall recycle and/or dispose of all demolition material and debris in accordance with the appropriate Local, County, State and Federal regulations.
6. All bituminous and concrete pavement that is to be removed shall be saw cut at the limits of removal to provide for a clean straight edge for future abutment.
7. All existing irrigation lines that are to be removed shall be terminated at the limits of demolition or as necessary to allow for construction of the proposed site improvements. Ends of pipe shall be capped and the location of marked for future connection.
8. All existing water main and sanitary sewer that is to be removed shall be terminated at the limits of demolition or as indicated on the project plans. Temporary plugs shall be installed in the ends of pipe in accordance with the appropriate Agency and the locations of marked for future connection. Permanent plugs shall be installed in the ends of pipe in accordance with the appropriate Agency. The Contractor shall record the location of all permanent plugs and provide the location information to the appropriate Agency.
9. All existing storm sewer that is to be removed shall be terminated at the limits of demolition or as indicated on the project plans. Temporary plugs shall be installed in the ends of pipe in accordance with the appropriate Agency and the locations of marked for future connection. Permanent bulkheads shall be installed in the ends of pipe and/or openings in terminating structures in accordance with the appropriate Agency. The Contractor shall record the location of all permanent bulkheads and provide the location information to the appropriate Agency.
10. All existing light sources to be removed shall have their power cables removed up to the power source or properly terminated for future connection at the limits of demolition or as necessary to allow for construction of the proposed site improvements. Removal and termination of power cables shall be performed in accordance with local electric codes.
11. All existing utility meters that are to be removed shall be properly removed to allow for reuse. Any existing utility meters that are not to be reused as a part of this project shall be returned to the appropriate Agency.
12. All trenches and/or excavations resulting from the demolition of underground utilities, building foundations, etc., that are located within the 1 on 1 influence zone of proposed structures, paved areas and/or other areas subject to vehicular traffic shall be backfilled with MDOT Class III granular material (or better) to the proposed subgrade elevation. Backfill shall be placed using the controlled density method (12" maximum lifts, compacted to 95% maximum unit weight, Modified Proctor).



**PROPOSED BUILDING**  
 109' x 110'  
 11,990 G.F.A.

**BENCHMARK**  
 DATUM BASED ON NGS OPUS SOLUTION REPORT, DATED MARCH 28, 2022 AT 11:26 AM. PREVIOUS DATUM FROM MARCH 1999 HAS A DIFFERENCE OF -0.76'.  
 BENCHMARK #201  
 ARROW ON HYDRANT, LOCATED ON THE SOUTHERLY SIDE OF GRAND RIVER, NEAR THE NORTHWESTERLY CORNER OF #5796 PARCEL. ELEVATION = 986.63 (NAVD 88)  
 BENCHMARK #202  
 SOUTHEASTERLY CORNER OF CONCRETE PAD, LOCATED ON THE EASTERLY SIDE OF #5796 BUILDING. ELEVATION = 983.53 (NAVD 88)

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**CIVIL ENGINEERS**  
**LAND SURVEYORS**  
 2183 PLESS DRIVE  
 BRIGHTON, MICHIGAN 48114

DESIGN: JHG	REVISION #	DATE	REVISION-DESCRIPTION	REVISION #	DATE	REVISION-DESCRIPTION
DRAFT: JHG						
CHECK: WMP						

**5776 E. GRAND RIVER**

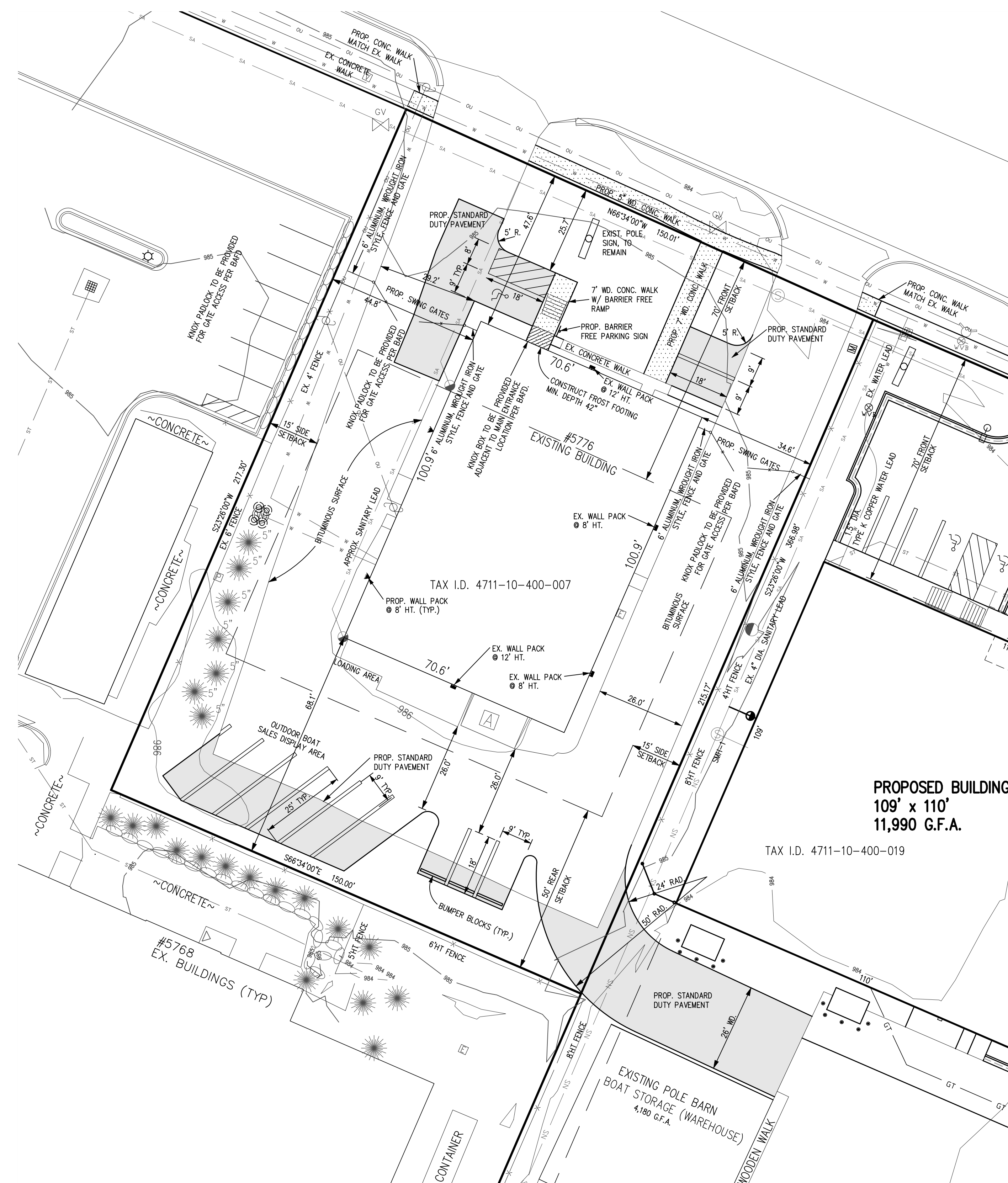
**EXISTING CONDITIONS AND DEMOLITION PLAN**

CLIENT: MITTS LLC  
 5796 E. GRAND RIVER  
 HOWELL, MICHIGAN, 48843  
 517-548-5122

SCALE: 1in. = 20ft.  
 PROJECT No.: 214052  
 DWG NAME: 4052 EX  
 ISSUED: **DEC. 18, 2023**

**EX**





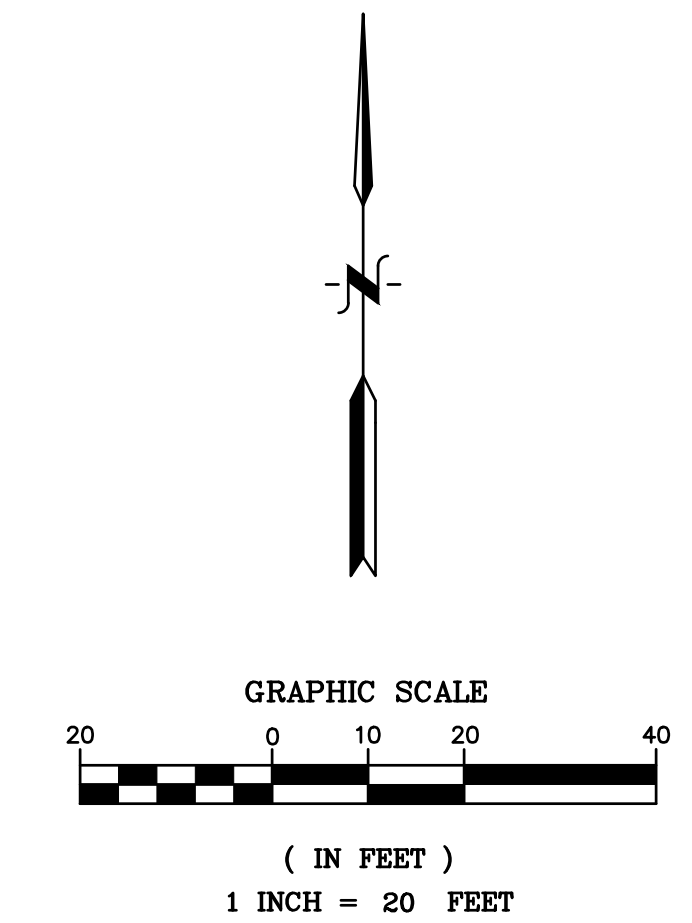
**PROPOSED BUILDING**  
 109' x 110'  
 11,990 G.F.A.

TAX I.D. 4711-10-400-019

TAX I.D. 4711-10-400-007

**LEGEND**

- = PARCEL BOUNDARY LINE
- = SETBACK LINE
- (W) = WELL WATER
- (B) = BOLLARD
- (STOP) = STOP SIGN / PEDESTRIAN CROSSING SIGN
- (S) = SIGN / MONUMENT SIGN
- (H) = HANDICAP PARKING DESIGNATION
- (E) = EX. WALL PACK / OVERHEAD LIGHT
- (L) = LIGHT BASE
- (E, G, W, P, M, T, C, U) = UTILITY METERS & BOXES (ELECTRIC METER, GAS METER, WATER METER, PHONE BOX, CATV BOX, MAIL BOX, UTIL. BOX)
- (U) = UTILITY POLE W/GUY WIRE
- (E, P, U, C, T, M, S) = OVERHEAD UTILITY LINES (ELECTRIC/PHONE/CABLE)
- (U, G) = U/G UTILITY LINES (PHONE/FIBER OPTIC/ELECTRIC/CABLE TV/MISC UTILITIES)
- (---) = EDGE OF BRUSH LINE
- (D) = DECIDUOUS TREE W/IDENTIFIER
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- (F) = FLARED END SECTION
- (S) = STORM WATER DRAINAGE PIPE
- (H) = HYDRANT
- (W) = WATER SHUT OFF
- (V) = WATER VALVE BOX
- (M) = WATER MAIN
- (G) = GAS SHUT OFF
- (G) = U/G GAS
- (GT) = GEOTHERMAL EXCHANGE WELL
- (GT) = GEOTHERMAL PIPE
- (---) = 1' CONTOUR
- (---) = 5' CONTOUR
- (---) = STANDARD DUTY PAVEMENT
- (---) = CONCRETE SIDEWALK



**SITE CHARACTERISTICS**

PARCEL ID: 4711-10-400-007  
 ZONED: GC - GENERAL COMMERCIAL  
 REQUIRED PROVIDED  
 AREA: 1.0 AC. 0.74 AC.  
 WIDTH: 150' 150.01'  
 SETBACKS:  
 FRONT 70' 47.6'  
 SIDE 15' 34.6'  
 REAR 50' 68.1'  
 BUILDING COVERAGE AREA: 35% MAX. 22.0%  
 IMPERVIOUS COVERAGE AREA: 75% MAX. 72.5%

**PARKING REQUIREMENTS**

Recreational vehicle, boat, mobile home and similar sales 1.0 space per 800 sq.ft. gross leasable floor area, plus 2.0 spaces per each vehicle sales service bay  
 Boat storage (warehouse), 1.0 space per 1,500 sq.ft. gross leasable floor area  
 A. Gross leasable floor area (sales) = 1,528 sq. ft.  
 Parking req'd 1,528 sq.ft. X 1.0space/800 sq.ft. = 2 spaces  
 B. Gross leasable floor area (warehouse) = 5,303 sq. ft.  
 Parking req'd 5,303 sq.ft. X 1.0space/1,500 sq.ft. = 4 spaces  
 TOTAL REQUIRED SPACES = 6 spaces  
 PARKING SPACES PROVIDED = 6 spaces  
 OUTDOOR BOAT SALES DISPLAY SPACES = 6 SPACES

**COVERAGE CALCULATION**

EXISTING IMPERVIOUS AREA: 21,446 SQ.FT. 66.1%  
 PROPOSED IMPERVIOUS AREA: 23,819 SQ.FT. 72.5%

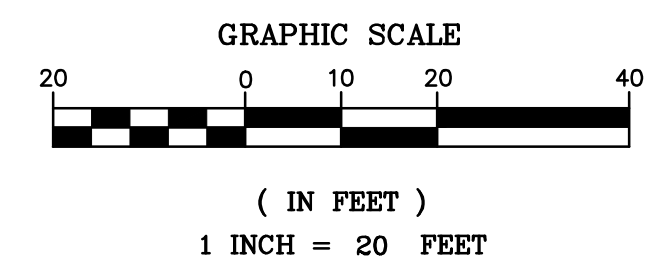
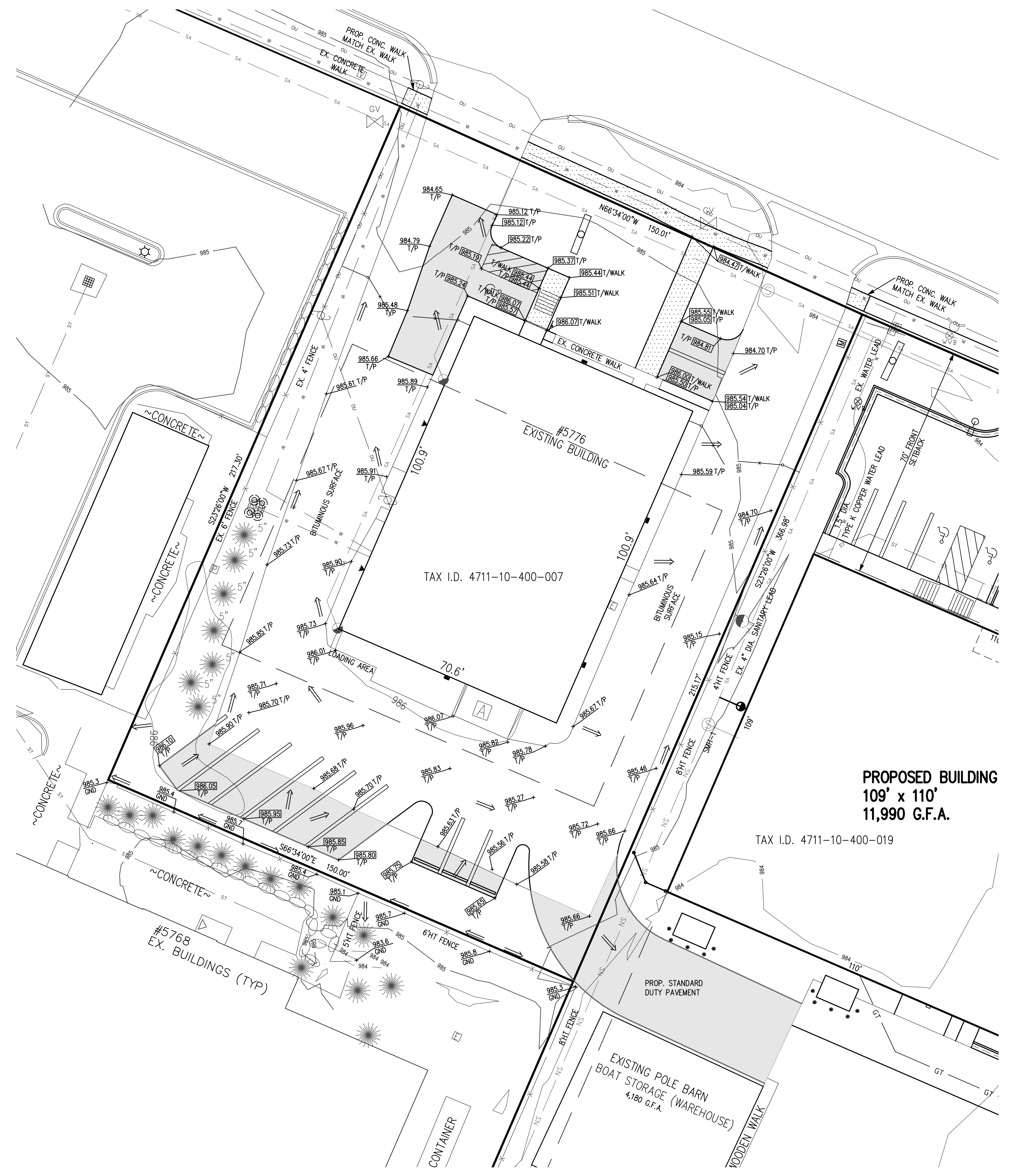
**BENCHMARK**  
 DATUM BASED ON NGS OPUS SOLUTION REPORT, DATED MARCH 28, 2022 AT 11:26 AM. PREVIOUS DATUM FROM MARCH 1999 HAS A DIFFERENCE OF -0.76'.  
 BENCHMARK #201  
 ARROW ON HYDRANT, LOCATED ON THE SOUTHERLY SIDE OF GRAND RIVER, NEAR THE NORTHWESTERLY CORNER OF #5796 PARCEL. ELEVATION = 986.63 (NAVD 88)  
 BENCHMARK #202  
 SOUTHEASTERLY CORNER OF CONCRETE PAD, LOCATED ON THE EASTERLY SIDE OF #5796 BUILDING. ELEVATION = 983.53 (NAVD 88)

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 CIVIL ENGINEERS  
 LAND SURVEYORS  
 2183 PLESS DRIVE  
 BRIGHTON, MICHIGAN 48114

DESIGN: JHG	REVISION #	DATE	REVISION-DESCRIPTION	REVISION #	DATE	REVISION-DESCRIPTION	5776 GRAND RIVER	SITE PLAN	CLIENT:	SCALE: 1in. = 20ft.
DRAFT: JHG	1	02/19/24	REVISED PER REVIEW COMMENTS						MITTS LLC	PROJECT No.: 214052
CHECK: WMP									5796 E. GRAND RIVER HOWELL, MICHIGAN, 48843 517-548-5122	DWG NAME: 4052 SP
										ISSUED: FEB. 19, 2024
								SP		





- LEGEND**
- = PARCEL BOUNDARY LINE
  - = SETBACK LINE
  - = WELL WATER
  - = BOLLARD
  - = STOP SIGN / PEDESTRIAN CROSSING SIGN
  - = SIGN / MONUMENT SIGN
  - = HANDICAP PARKING DESIGNATION
  - = EX. WALL PACK / OVERHEAD LIGHT
  - = LIGHT BASE
  - = UTILITY METERS & BOXES (ELECTRIC METER, GAS METER, WATER METER, PHONE BOX, CATV BOX, MAIL BOX, UTIL. BOX)
  - = UTILITY POLE W/GUY WIRE
  - = OVERHEAD UTILITY LINES (ELECTRIC/PHONE/CABLE)
  - = U/G UTILITY LINES (PHONE/FIBER OPTIC/ELECTRIC/CABLE TV/MISC UTILITIES)
  - = EDGE OF BRUSH LINE
  - = DECIDUOUS TREE W/IDENTIFIER
  - = CONIFEROUS TREE W/IDENTIFIER
  - = BUSH / SHRUB
  - = BOULDER
  - = FENCE (CHAIN LINK UNLESS OTHERWISE STATED)
  - = EDGE OF GRAVEL
  - = CONCRETE CURB (UNLESS OTHERWISE STATED)
  - = EDGE OF WATER
  - = SANITARY SEWER MANHOLE W/IDENTIFIER
  - = SANITARY SEWER PIPE
  - = CLEAN OUT
  - = ROOF DRAIN
  - = STORM WATER MANHOLE W/IDENTIFIER
  - = CATCH BASIN W/IDENTIFIER
  - = FLARED END SECTION
  - = STORM WATER DRAINAGE PIPE
  - = HYDRANT
  - = WATER SHUT OFF
  - = WATER VALVE BOX
  - = WATER MAIN
  - = GAS SHUT OFF
  - = U/G GAS
  - = GEOTHERMAL EXCHANGE WELL
  - = GEOTHERMAL PIPE
  - = 1' CONTOUR
  - = 5' CONTOUR
  - = STANDARD DUTY PAVEMENT
  - = CONCRETE PAVEMENT
  - = CONCRETE SIDEWALK

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DESIGN: JHG	REVISION #	DATE	REVISION-DESCRIPTION	REVISION #	DATE	REVISION-DESCRIPTION
DRAFT: JHG						
CHECK: WMP						

5776 GRAND RIVER

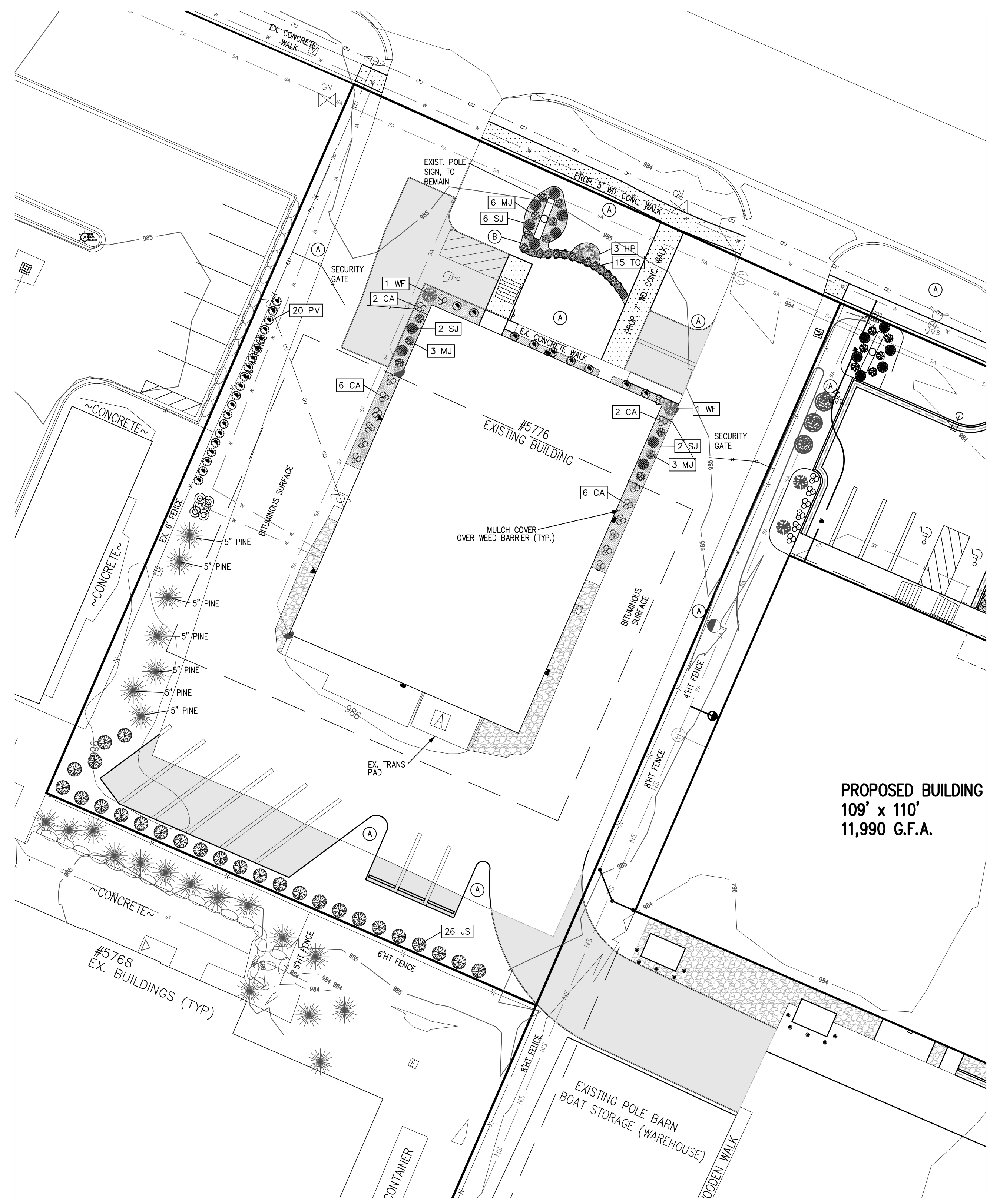
GRADING PLAN

CLIENT:  
 MITTS LLC  
 5796 E. GRAND RIVER  
 HOWELL, MICHIGAN, 48843  
 517-548-5122

SCALE: 1in. = 20ft.  
 PROJECT No.: 214052  
 DWG NAME: 4052 GR  
 ISSUED: DEC. 18, 2023

**GR**





**LEGEND**

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- ⊙ = HYDRANT
- ⊙ = WATER SHUT OFF
- ⊙ = WATER VALVE BOX
- ⊙ = WATER MAIN
- ⊙ = GAS SHUT OFF
- ⊙ = U/G GAS
- = 1' CONTOUR
- = 5' CONTOUR
- ▨ = MULCH COVER OVER WEED BARRIER
- ▨ = STANDARD DUTY PAVEMENT
- ▨ = CONCRETE SIDEWALK
- ▨ = WASHED STONE COVER OVER WEED BARRIER

**GRAPHIC SCALE**

( IN FEET )  
1 INCH = 20 FEET

**LANDSCAPE CALCULATION:**

**STREET FRONTAGE GREENBELT**  
20' WIDTH  
1 CANOPY TREE PER 40 LF.  
150 LF./40 = 3.75, 4 TREES REQUIRED, 2 PROVIDED

**PARKING AREA LANDSCAPE**  
1 CANOPY TREE & 100 sq.ft. PER 10 SPACES  
12 SPACES/10 = 1.2, 2 TREES REQUIRED, 0 PROVIDED  
120 sq.ft. REQUIRED, 263 sq.ft. PROVIDED

**PLANTING SCHEDULE**

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE
12	MJ	JUNIPERUS SCOPULORUM 'MEDORA'	MEDORA JUNIPER	3' HT.
10	SJ	SPIRAEA J. 'SHIROBANA'	SHIROBANA SPIRAEA	24" HT.
15	TO	THUJA O. WOODWARDI	WOODWARD GLOBE ARBORVITAE	30" HT.
2	WF	WEIGELA F. 'WINE & ROSES'	WINE & ROSES WEIGELA	30" HT.
3	HP	HYDRANGEA P. 'LITTLE QUICK FIRE'	LITTLE QUICK FIRE HYDRANGEA	30" HT.
16	CA	CALAMAGROSTIS A. 'KARL FOSTER'	KARL FOSTER FEATHER REED GRASS	2 GALL.
20	PV	PANICUM V. 'HEAVY METAL'	HEAVY METAL SWITCH GRASS	3 GALL.
26	JS	JUNIPERUS SCOPULORUM 'MOONGLOW'	MOONGLOW JUNIPER	30" HT.

**NOTE KEY**

A TOPSOIL, SEED AND MULCH DISTURBED AREAS PER LCDC STANDARDS  
B METAL EDGING BETWEEN LAWN AND LANDSCAPE BED

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CHECK: WMP						

5776 E. GRAND RIVER

LANDSCAPE PLAN

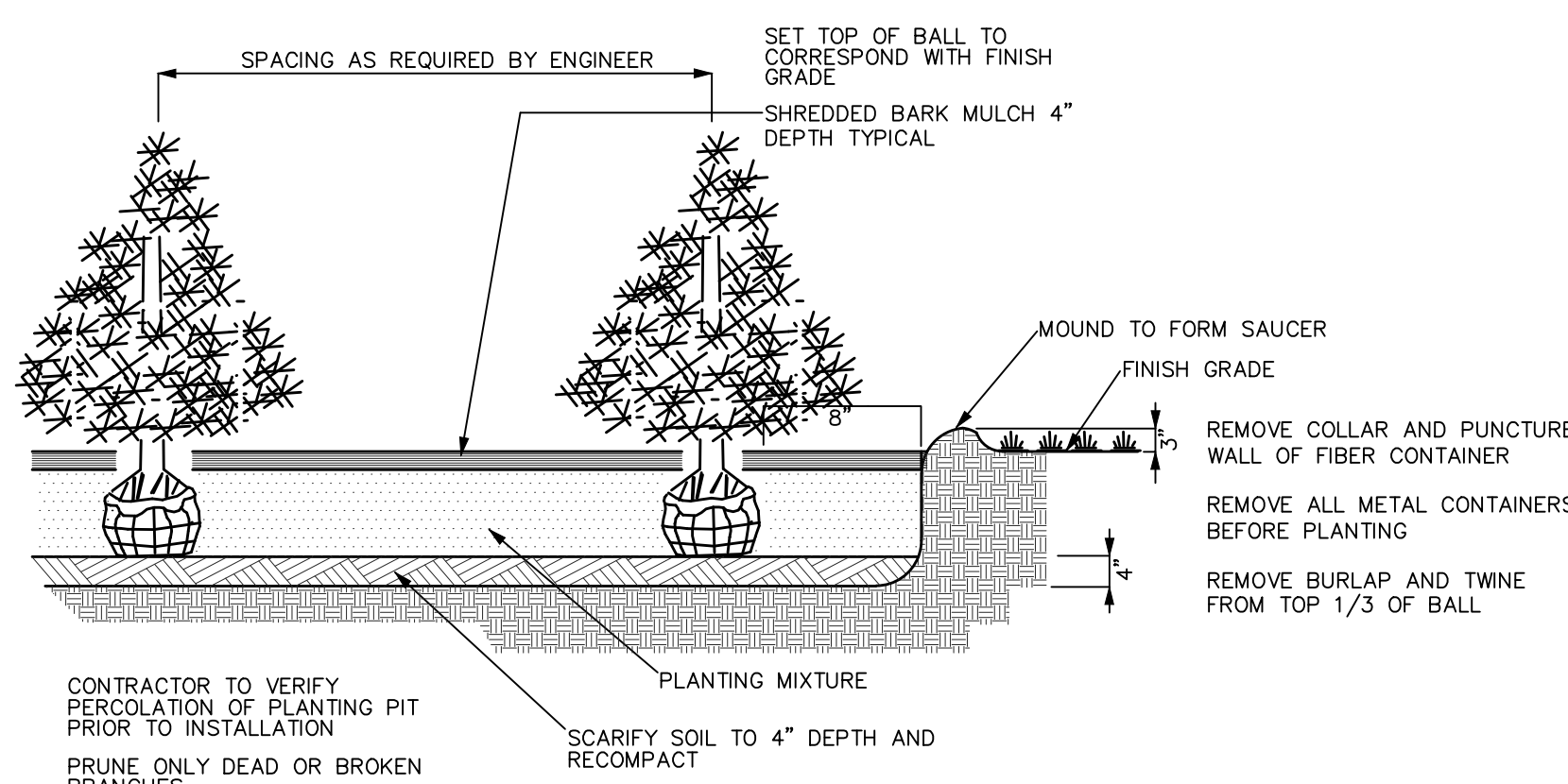
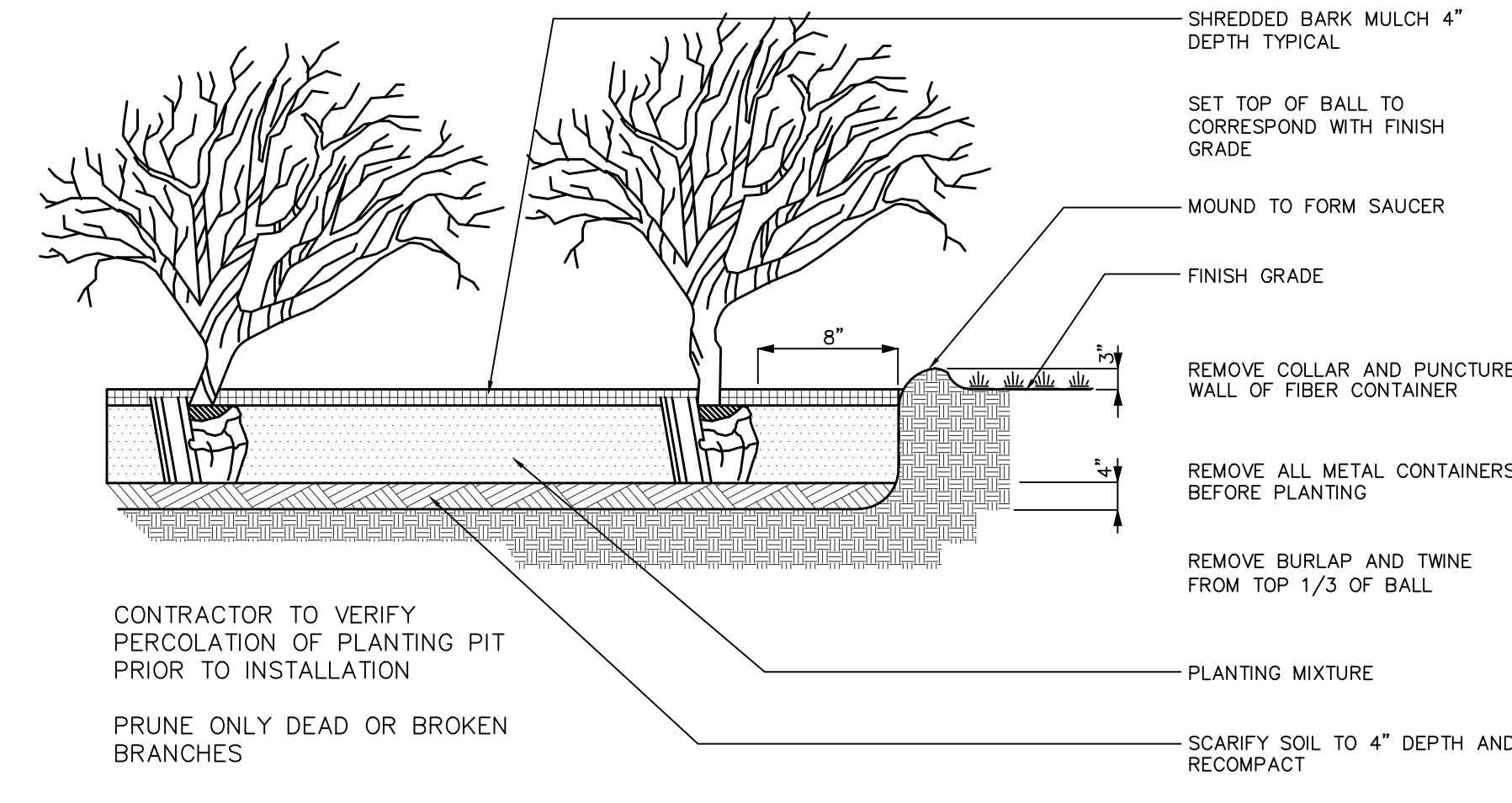
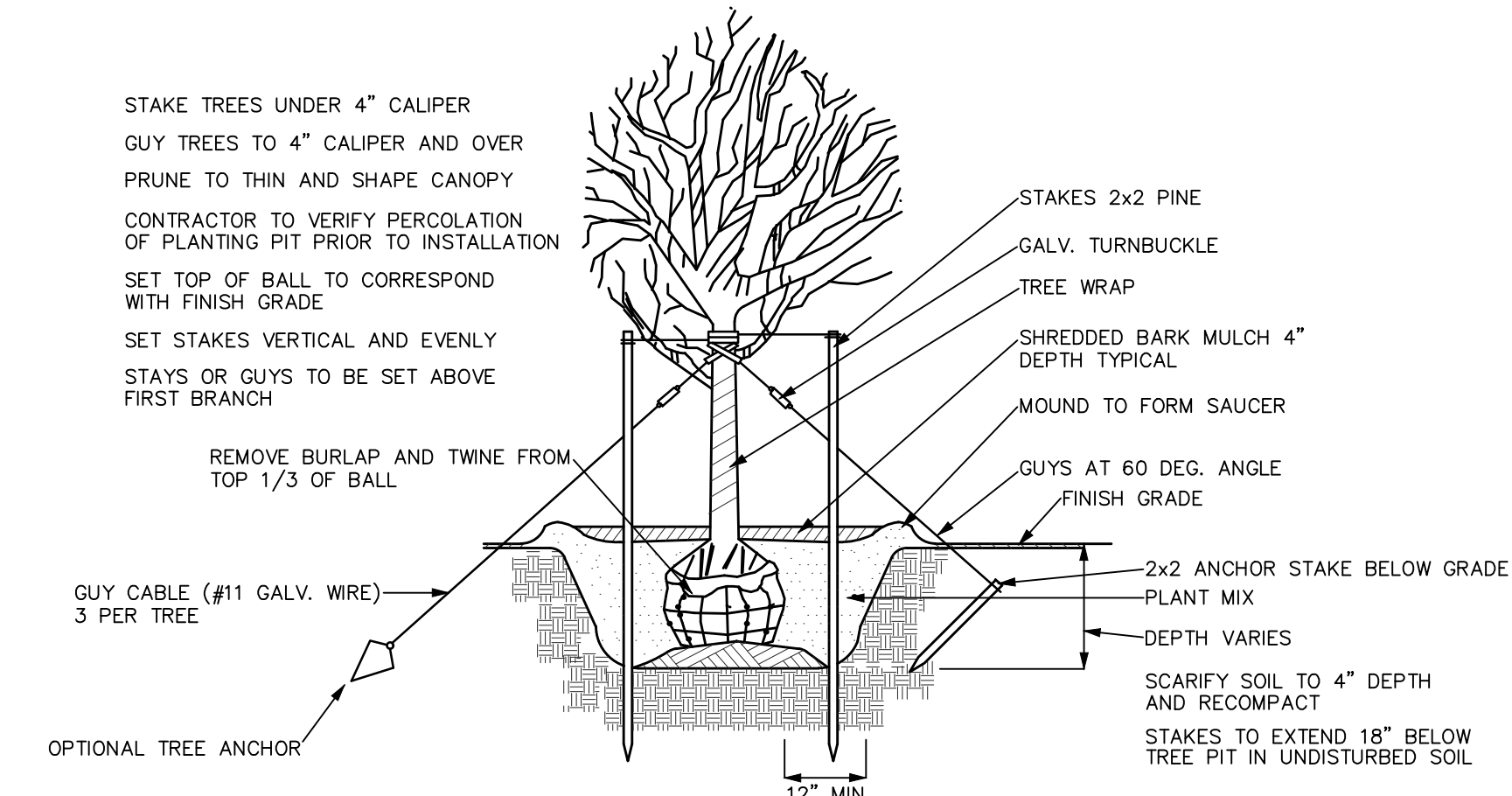
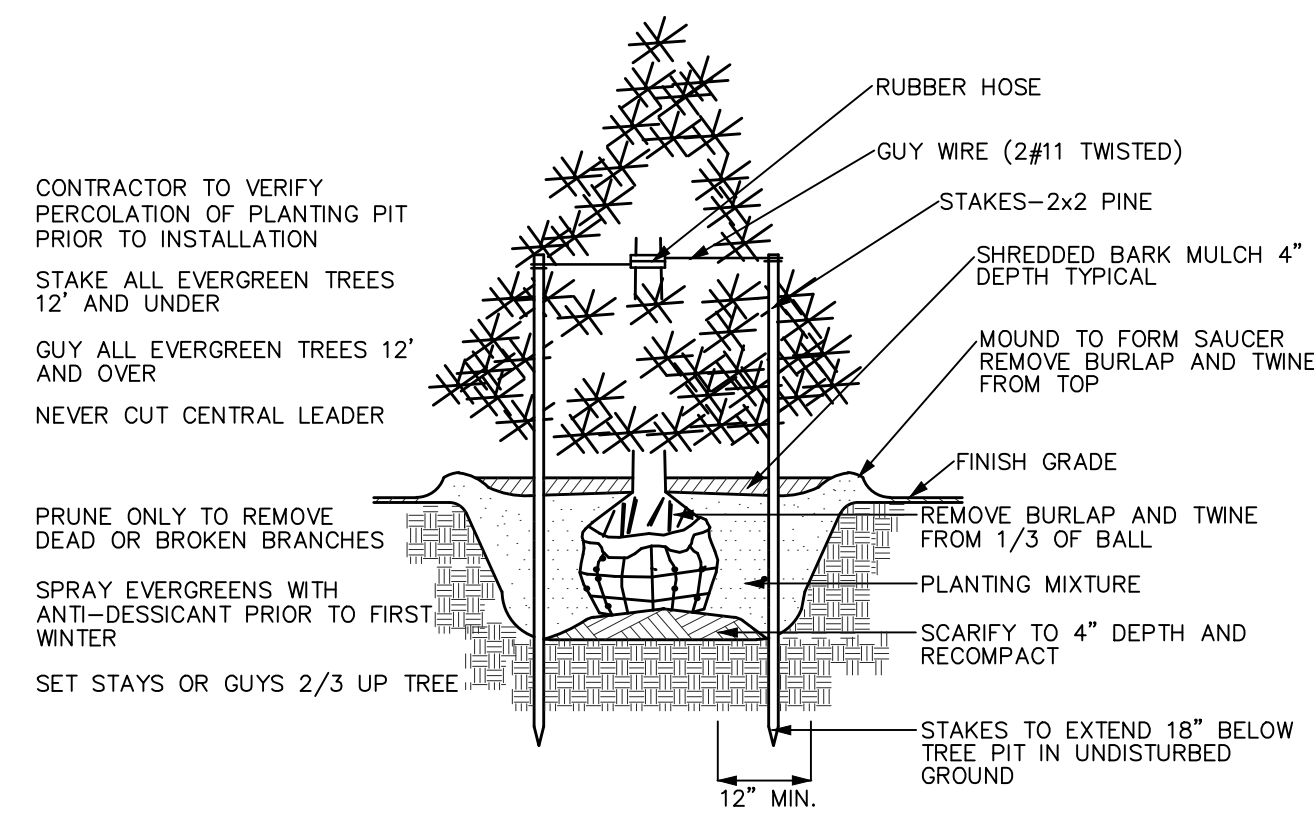
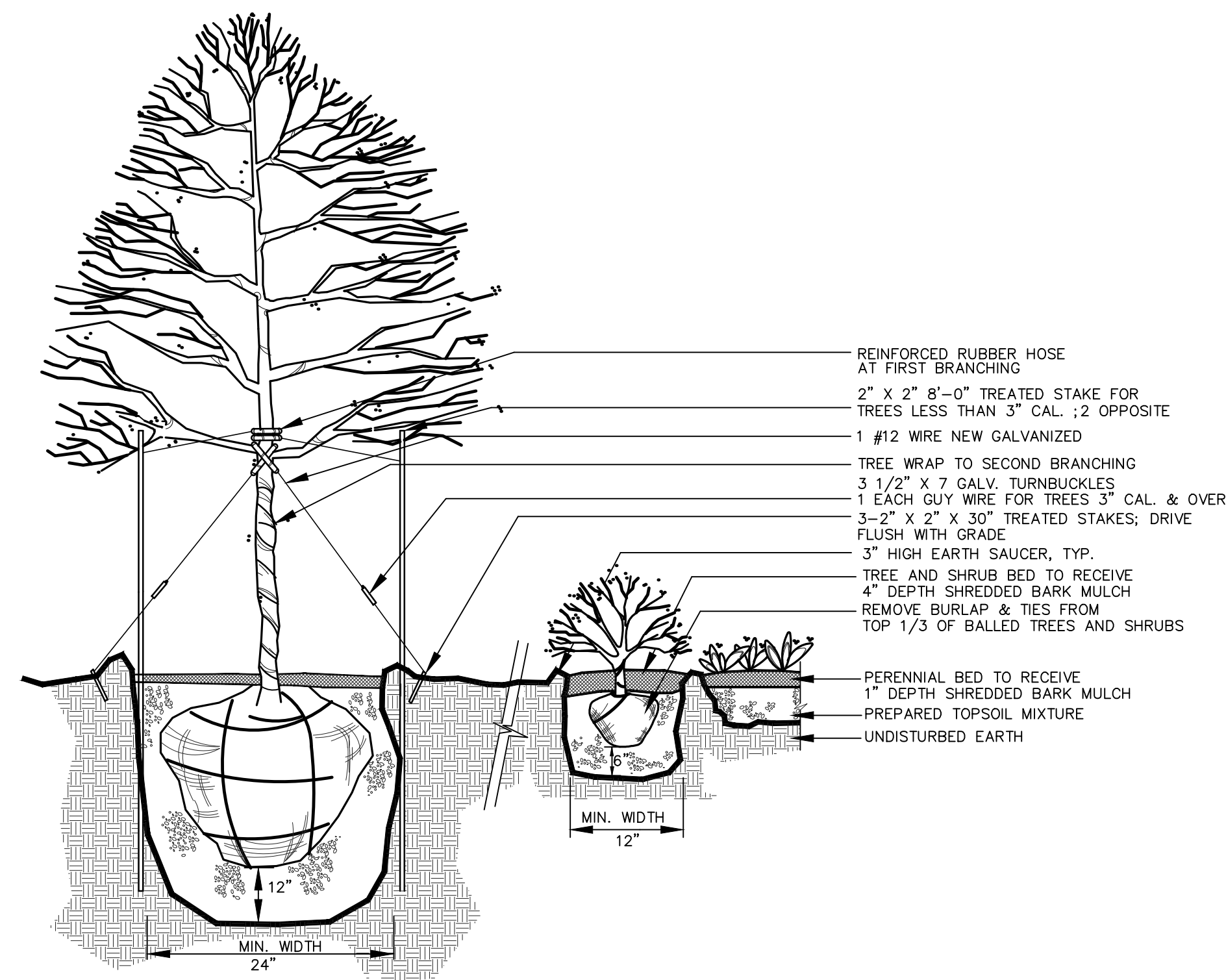
CLIENT:  
MITTS LLC  
  
5796 E. GRAND RIVER  
HOWELL, MICHIGAN, 48843  
517-548-5122

SCALE: 1in. = 20ft.  
PROJECT No.: 214052  
DWG NAME: 4052 LA  
ISSUED: FEB. 19, 2024

LA1



- LANDSCAPING NOTES:**
- All minimum planting sizes specified on the Project Plans shall be at the time of planting.
  - All landscape materials shall be as specified on the Project Plans or approved equal. Substitutions shall not be made without prior written approval from the Project Engineer and receipt of the Owner's Authorization.
  - All plant material shall be free of disease and insects and shall conform to the American Standard of Nursery Stock of the American Association of Nurserymen.
  - All landscape plantings shall be planted and maintained in a healthy condition and shall be guaranteed by the Landscape Contractor and/or Supplier for a minimum period of 1 year from the time of planting. Any plantings that die or become diseased during the guarantee period shall be removed and replaced by the Landscape Contractor and/or Supplier at no cost to the Owner.
  - Excavations for container or balled plantings shall be no deeper than the root ball or container and shall be at least twice the diameter of the root ball or container.
  - Excavations for bare root plantings shall be no deeper than the longest roots and shall be at least twice the diameter of the root spread.
  - The sides of planting excavations in heavy and/or wet soils shall be scarified with a fork, pick or shovel to eliminate glazing.
  - Landscape planting backfill shall consist of a prepared mixture of peat moss, composted manure and topsoil or suitable excavated native soil material mixed with the appropriate soil conditioners that are compatible with the native soil and plant species. The type and mixture ratio of soil conditioners shall be in accordance with the Landscape Supplier's recommendations.
  - The Landscape Contractor shall stake and reinforce all trees to prevent wind damage. The Landscape Contractor shall remove all tree reinforcement and stakes upon expiration of the guarantee period.
  - Perennials shall be planted on a 3" minimum bed of prepared peat moss, composted manure and topsoil mixture.
  - Ground cover within landscape beds shall be decorative stone. Decorative stone shall be 2" to 4" diameter washed river rock placed 4" deep.
  - Ground cover within landscape beds shall be placed over a landscape fabric weed barrier. Landscape fabric shall be non-woven, 4 oz. per sq. yd. minimum weight, with UV protection. Landscape fabric shall be installed in strict accordance with the Manufacturer's specifications and recommendations. Landscape fabric shall not be installed over or within 12 inches of perennial plantings.
  - Lawn areas shall be established with 3" minimum depth of prepared topsoil and hydroseeded. The Landscape Contractor shall guarantee all lawn areas for a minimum period of 1 year from time of seeding. All lawn areas that do not take root or die during the guarantee period shall be re-hydroseeded as appropriate by the Landscape Contractor at no cost to the Owner. All lawn areas that become diseased during the guarantee period shall be removed and re-hydroseeded as appropriate by the Landscape Contractor at no cost to the Owner.
  - Topsoil shall be a dark, organic, natural surface soil free of clay lumps, peat, muck, subsoil, noxious weeds and other foreign material such as roots, sticks and rocks over 1/2" diameter. Topsoil shall not be frozen or muddy. All earthen areas to receive topsoil shall be finish graded and properly trimmed. Topsoil shall be spread on the prepared areas to a depth of 3 inches. After spreading, any large clods and lumps of topsoil shall be broken up and pulverized. Stones and rocks over 1/2" in diameter, roots, litter and all foreign matter shall be raked up and disposed of by the Landscape Contractor. Seed and mulch shall be placed within 5 days of topsoil placement.
  - Seed mixture for lawn areas shall consist of 10% Kentucky Blue Grass, 20% Perennial Rye Grass, 30% Hard Fescue and 40% Creeping Red Fescue. Hydroseed shall be placed within 5 days of topsoil placement and shall be placed to provide complete and uniform coverage. Fertilizer shall be placed at 80 pounds per acre, hydro mulch at 1,200 pounds per acre and water at 500 gallons per acre unless otherwise specified by the Seed Distributor/Manufacturer. All over spray areas shall be properly cleaned and restored at no expense to the contract.
  - Seed and mulch may be substituted for hydroseed when authorized by the Owner. Seed mixtures shall meet the requirements for lawn areas as outlined above. Seed shall be uniformly applied at a rate of 220 lbs per acre unless otherwise recommended by the seed Distributor/Manufacturer. Seed mixture shall be fertilized. Fertilizer shall be uniformly applied at 240 pounds per acre of chemical fertilizer nutrients in equal portions (10-10-10) of Nitrogen, Phosphoric Acid and Potash.
  - All seeded areas with a slope less than 1:4 shall be stabilized with straw mulch placed at 2 tons per acre unless otherwise recommended by the seed Distributor/Manufacturer. Erosion control blankets shall be substituted for straw mulch in roadway greenbelts, lawn areas adjacent to heavy traffic, lawn areas subject to high winds, slopes of 1:4 or greater and within ditches, swales and other areas exposed to concentrated overland storm water flow. Erosion control blankets shall consist of 100% straw fiber matrix with photodegradable polypropylene netting and have a 12-month minimum longevity rating. Erosion control blankets shall be pinned with biodegradable pins and shall be installed in accordance with the Manufacturer's recommendations.
  - The Landscape Contractor shall be responsible for watering non-irrigated plantings and sod during dry weather conditions throughout the guarantee period as necessary to promote growth and establishment.



DESIGN: WMP	REVISION #	DATE	REVISION-DESCRIPTION	REVISION #	DATE	REVISION-DESCRIPTION
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5776 E. GRAND RIVER

LANDSCAPE NOTES & DETAILS

CLIENT: MITTS LLC  
5796 E. GRAND RIVER  
HOWELL, MICHIGAN 48843  
517-548-5122

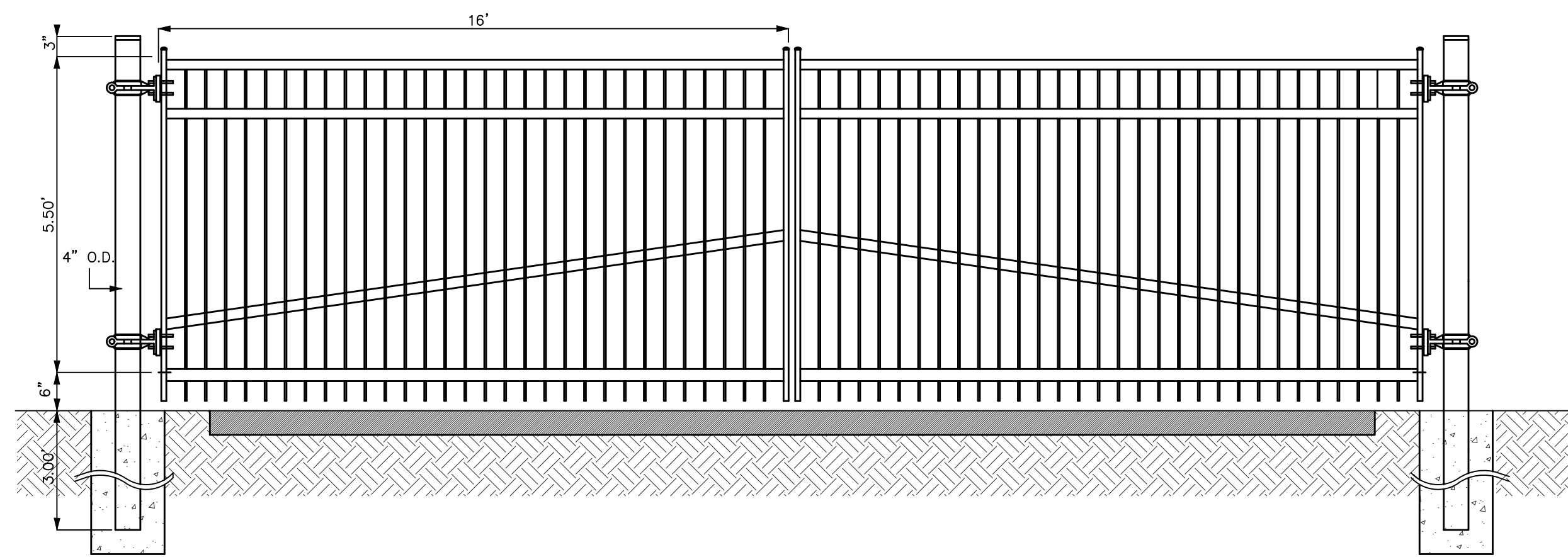
SCALE:  
PROJECT No.: 214052  
DWG NAME: 4052 LA  
ISSUED: DEC. 18, 2023

LA2

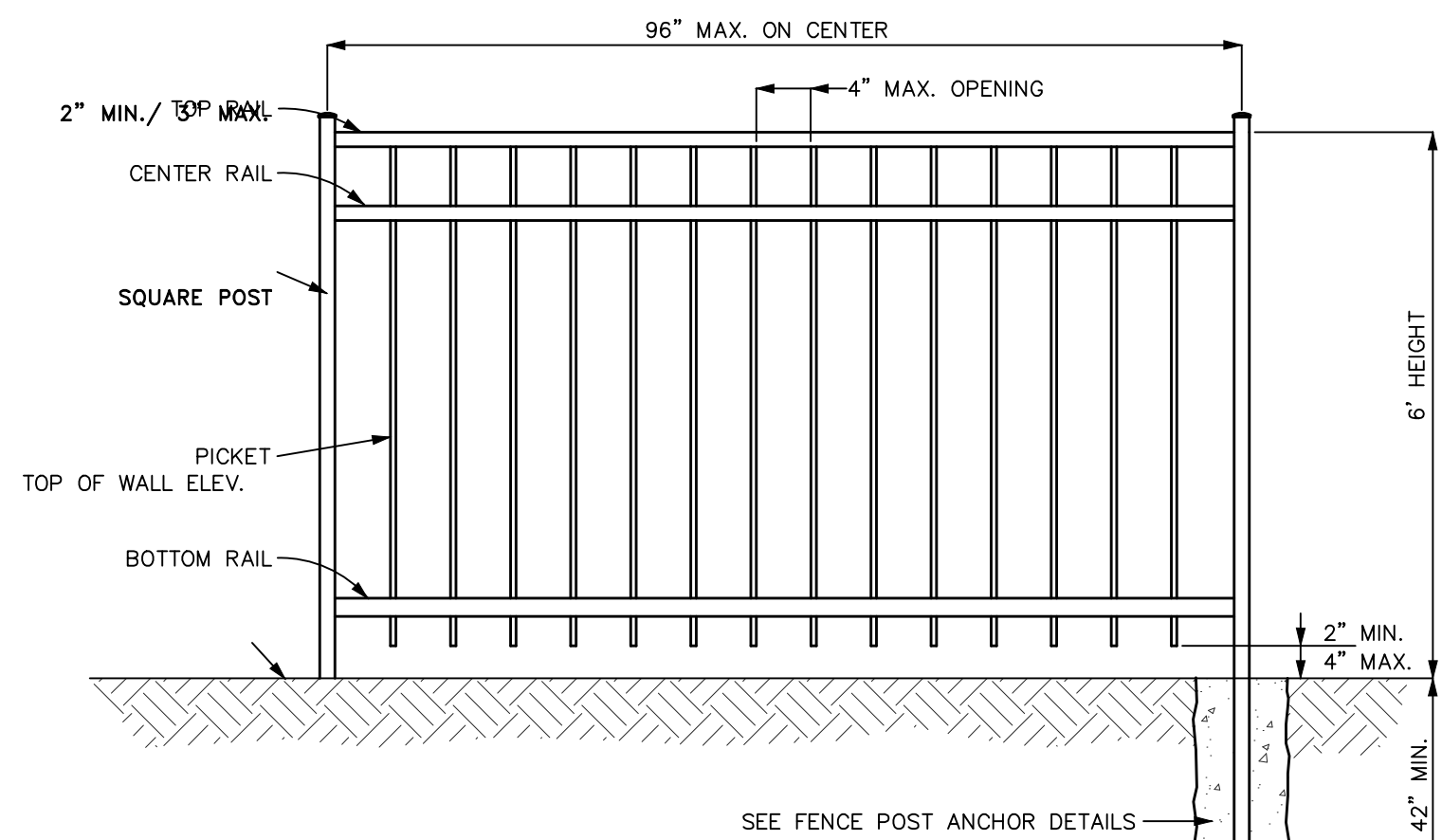
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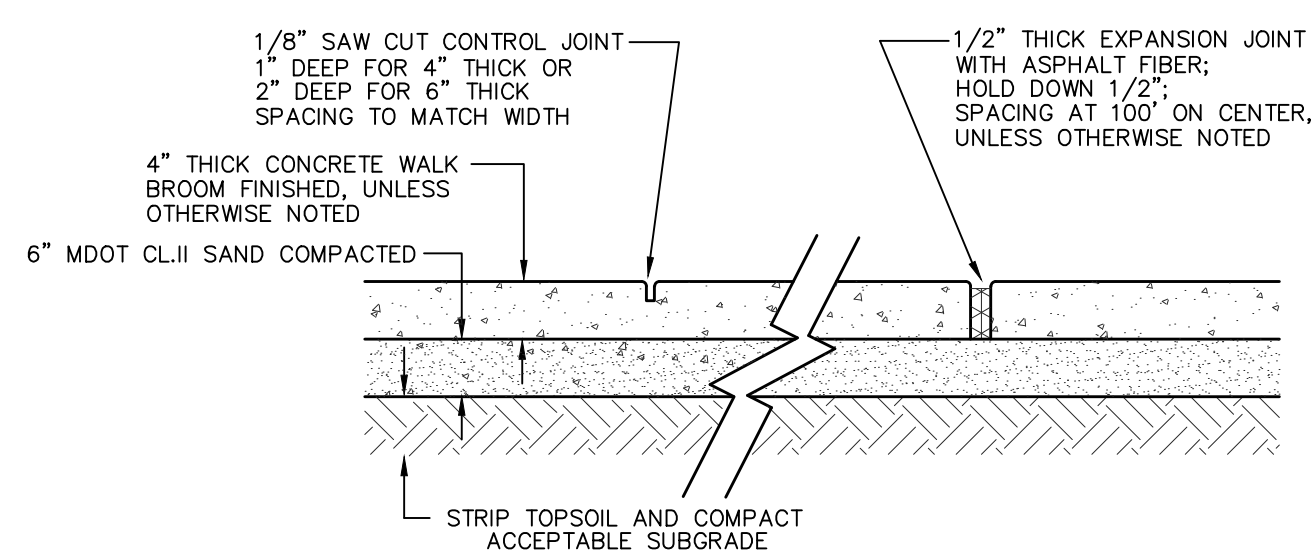


**GATE DETAIL**  
NOT TO SCALE



**ORNAMENTAL FENCE DETAIL**  
NOT TO SCALE

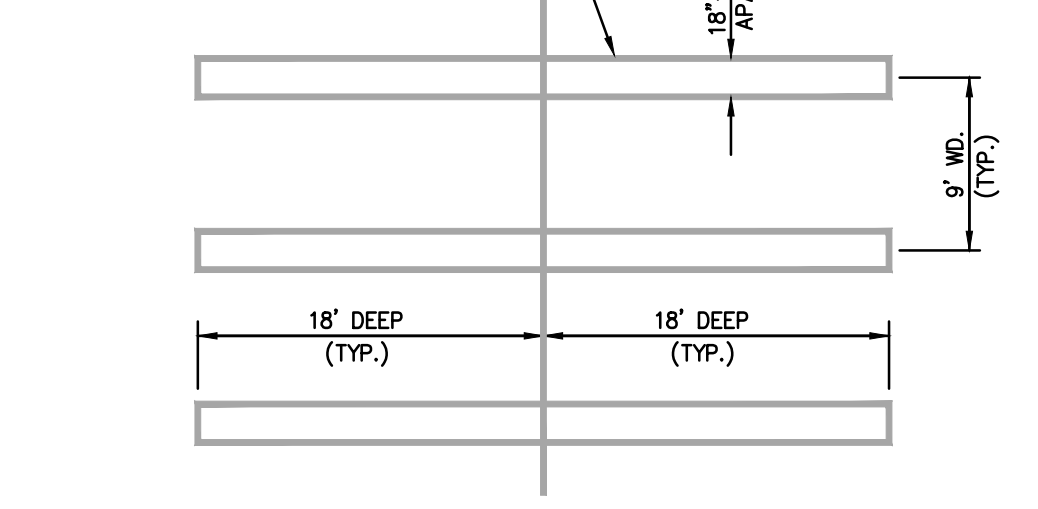
- FENCE NOTES:**
- The fence shall be a decorative commercial grade 3-rail aluminum fence with square posts, rectangular rails and square pickets.
  - The fence finish shall be black powder coat or E-coat applied by the fence Manufacturer.
  - All hardware shall either stainless steel or hot dipped galvanized with a black finish matching the fence components.
  - The fence shall be maintenance free and shall be provided with a Manufacturer's warranty that covers the structural components and the finish of the fence for a period of not less than 20 years.
  - The fence shall be assembled and installed in accordance with the Manufacturer's Specifications including proper coating and/or refinishing of drilled components.



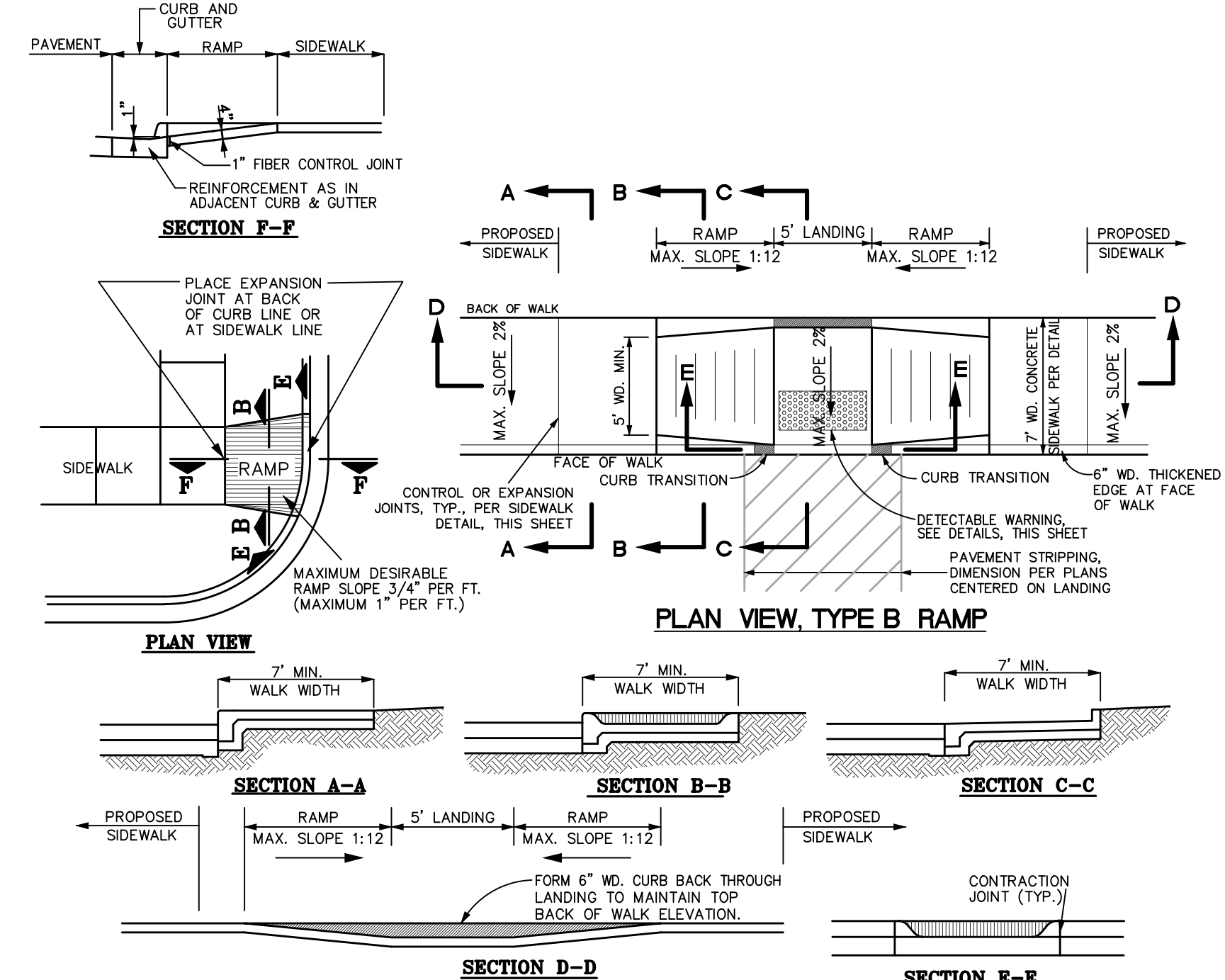
**SIDEWALK CROSS SECTION**  
NOT TO SCALE

- NOTES:**
- SEE PLAN FOR WIDTH OF SIDEWALK.
  - PROVIDE CONCRETE TYPE PER LOCAL CODE. (3500 PSI AIR ENTRAINED)

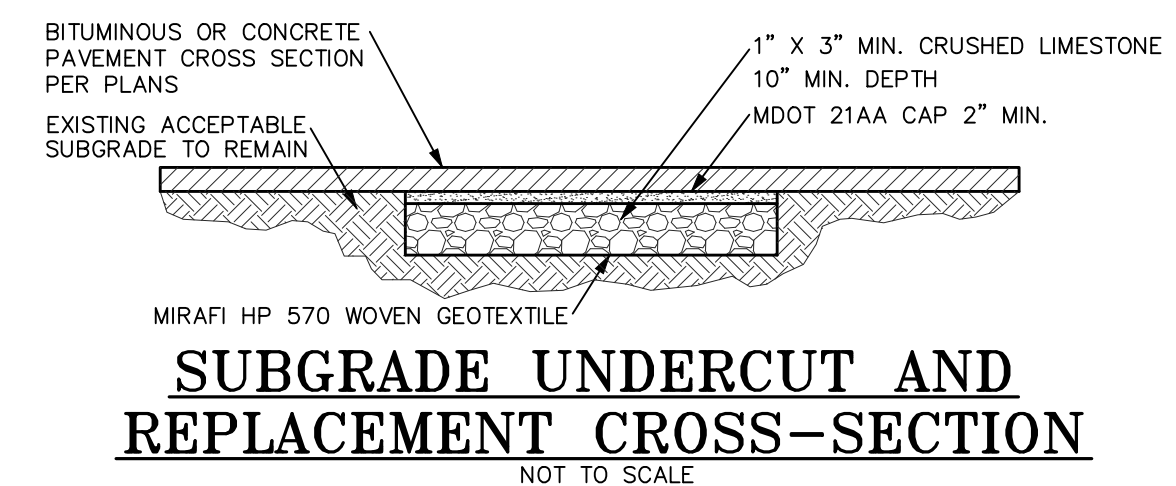
- NOTES:**
- SEE SHEET C2.0 FOR BARRIER FREE PARKING SPACE DIMENSIONS.
  - STANDARD SPACES SHALL USE WHITE PAINT, BARRIER FREE SPACES SHALL USE BLUE PAINT.



**PARKING SPACE STRIPING DETAIL**  
NOT TO SCALE



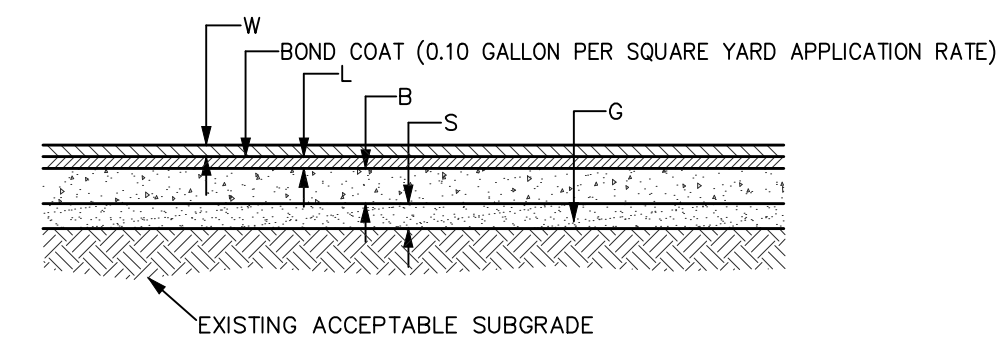
**BARRIER FREE RAMP AND DETECTABLE WARNING DETAILS**  
NOT TO SCALE



**SUBGRADE UNDERCUT AND REPLACEMENT CROSS-SECTION**  
NOT TO SCALE

**PAVEMENT SUBGRADE UNDERCUT NOTES:**

- Areas of pavement subgrade that do not pass a proof roll inspection shall be undercut when directed by the Material Testing Engineer and/or Project Engineer. All undercut work shall be witnessed and field measured by the Material Testing Engineer and/or Project Engineer. Copies of the field notes depicting the field measurements of the undercut areas shall be provided to the General Contractor and/or Earthwork Subcontractor and Owner.
- Undercut areas shall be excavated to a depth of 12 inches below the proposed subgrade elevation using an Excavator or Backhoe with a Smooth Edged Ditching Bucket so as not to scarify the underlying soils. Undercut areas shall remain free of all construction traffic and equipment to avoid rutting and/or tracking of the underlying soils.
- Mirafi HP 570 Woven Geotextile Fabric (or approved equal) shall be placed over all undercut areas per the Manufacturer's specifications. Overlap all seams a minimum of 12 inches unless specified otherwise by the Manufacturer.
- Backfill the undercut areas with 1 inch x 3 inch minimum size crushed angular limestone and cap with 21AA crushed angular limestone up to the proposed subgrade elevation. Crushed concrete material shall NOT be substituted for crushed limestone material. The backfill material shall be spread with a Wide Track Dozer to minimize loading on the underlying soils. Static roll the backfill material with a large smooth drum roller.
- Construct the appropriate Bituminous or Concrete Pavement Cross Section over the undercut areas per the Project Plans.



**STANDARD DUTY BITUMINOUS PAVEMENT CROSS SECTION**  
NOT TO SCALE

KEY	DESCRIPTION	MATERIAL SPECIFICATION	MINIMUM COMPACTED THICKNESS
W	WEARING COURSE	MDOT 36A	1.5"
L	LEVELING COURSE	MDOT 13A	1.5"
B	AGGREGATE BASE	MDOT 21AA	8"
S	GRANULAR SUBBASE	MDOT CLASS II	6"
G	GEOGRID	N/A	N/A

**BITUMINOUS PAVEMENT NOTES:**

- The construction specifications of the appropriate Local Municipality are a part of this work. Refer to the General Notes, Road and/or Parking Lot Construction Notes and Typical Road and/or Pavement Cross Section details on the project plans for additional requirements.
- Unsuitable soils found within the 1 on 1 influence zone of the pavement, such as muck, peat, topsoil, marl, silt or other unstable materials shall be excavated and replaced up to the proposed subgrade elevation with MDOT Class III granular material compacted to 95% maximum unit weight, modified proctor.
- Contractor shall proof roll prepared subgrade as directed by Engineer. Unacceptable areas of subgrade shall be undercut and replaced as directed by Engineer.

**GENERAL NOTES:**

- Contractor shall perform the work in accordance with the requirements of the appropriate Local, County and State Agencies and all other Government and Regulatory Agencies with jurisdiction over the project. Contractor shall notify the appropriate Agencies in advance of each stage of work in accordance with each Agency's requirements.
- Contractor shall comply with all permit, insurance, licensing and inspection requirements associated with the work. Prior to construction, Contractor and Owner/Developer shall determine who is responsible for obtaining each required permit. Contractor shall verify that the each required permit has been obtained prior to commencement of the stage of work associated with the required permit(s).
- Contractor shall furnish liability insurance and property damage insurance to save harmless the Owner, Developer, Architect, Engineer, Surveyor and Government Agencies for any accident occurring during the construction period. Refer to the appropriate Local, County and State Agencies for additional requirements. Copies of insurance certifications shall be made available to the Owner/Developer.
- Contractor shall conduct and perform work in a safe and competent manner. Contractor shall perform all necessary measures to provide for traffic and pedestrian safety from the start of work and through substantial completion. Contractor shall determine procedures and provide safety equipment such as traffic controls, warning devices, temporary pavement markings and signs as needed. Contractor shall comply with the safety standards of the State Department of Labor, the occupational health standards of the State Department of Health and safety regulations of the appropriate Local, County, State and Federal Agencies. Refer to the safety specifications of the appropriate Regulatory Agencies. The Contractor shall designate a qualified employee with complete job site authority over the work and safety precautions; said designated employee shall be on site at all times during the work.
- Contractor shall coordinate scheduling of all work in the proper sequence, including work by Subcontractors. Additional costs due to improper planning by Contractor or work done out of sequence as determined by standard acceptable construction practices, shall be Contractor's responsibility.
- Contractor shall contact the 811 Underground Public Utility Locating System or other appropriate local underground utility locating Agency, a minimum of three (3) working days prior to construction. Existing utility information on the project plans may be from information disclosed to this firm by the Utility Companies, Local, County or State Agencies, and/or various other sources. No guarantee is given as to the completeness or accuracy thereof. Prior to construction, locations and depths of all existing utilities (in possible conflict with the proposed improvements) shall be verified in the field.
- Contractor shall coordinate scheduling a Pre-Construction Meeting with Engineer prior to commencement of work.
- The Local Municipality, County and/or State in which the project is located may require an Engineer's Certification of construction of the proposed site improvements. Contractor shall verify the certification requirements with Engineer prior to commencement of work. Contractor shall coordinate construction staking, testing, documentation submittal and observation with the appropriate Agency, Surveyor and/or Engineer as required for Engineer's Certification and Government Agency Acceptance. All materials used and work done shall meet or exceed the requirements of certification and acceptance, the contract documents and the material specifications noted on the project plans. Any materials used or work done that does not meet said requirements, contract documents and/or specifications shall be replaced and/or redone at Contractor's expense. The Owner/Developer may wait for test results, certifications and/or Agency reviews prior to accepting work.
- Engineer may provide subsurface soil evaluation results, if available, to Contractor upon request. Subsurface soil evaluation results, soils maps and/or any other documentation does NOT guarantee existing soil conditions or that sufficient, acceptable on-site granular material is available for use as structural fill, pipe bedding, pipe backfill, road subbase or use as any other granular material specified on the project plans. On-site granular material that meets or exceeds the material specifications noted on the project plans may be used as structural fill, pipe bedding, pipe backfill and/or road subbase material. On-site granular material shall be stockpiled and tested as acceptable to the appropriate Agency and/or Engineer prior to use.
- During the performance of their work, Contractor shall be solely responsible for determining soil conditions and appropriate construction methods based on the actual field conditions. Contractor shall furnish, install and maintain sheeting, shoring, bracing and/or other tools and equipment and/or construction techniques as needed for the safety and protection of the workers, pedestrians and vehicular traffic and for protection of adjacent structures and site improvements.
- Contractor shall install temporary and permanent soil erosion and sedimentation control devices at the appropriate stages of construction in accordance with the appropriate regulatory Agencies. Refer to Soil Erosion and Sedimentation Control Plans and Notes on the project plans.
- Structural fill shall be placed as specified on the project plans and within the 1 on 1 influence zone of all structures, paved areas and other areas subject to vehicular traffic. Structural fill shall be placed using the controlled density method (12 inch maximum lifts, compacted to 95% maximum unit weight, modified proctor). Fill material shall meet or exceed the specifications noted on the project plans or as directed by Engineer when not specified on the project plans.
- All existing monuments, property corners, ground control and benchmarks shall be protected and preserved; and if disturbed by Contractor, shall be restored at Contractor's expense. Contractor shall notify Surveyor of any conflicts between existing monuments, property corners, ground control and/or benchmarks and the proposed site improvements.
- Contractor shall notify Owner/Developer and Engineer immediately upon encountering any field conditions, which are inconsistent with the project plans and/or specifications.
- When noted on the project plans for demolition and/or removal, Contractor shall remove existing structures, building and debris and recycle and/or dispose of in accordance with Local, County, State and Federal regulations.
- Contractor shall remove excess construction materials and debris from site and perform restoration in accordance with the project plans and specifications. Disposing of excess materials and debris shall be performed in accordance with Local, County, State and Federal regulations.
- Construction access to the site shall be located as acceptable to the Owner/Developer and to the appropriate Local, County and/or State Agency with jurisdiction over the road(s) providing access to the site. Construction access shall be maintained and cleaned in accordance with the appropriate Local, County and/or State Agencies and as directed by Owner/Developer and/or Engineer.
- Contractor shall take necessary precautions to protect all site improvements from heavy equipment and construction procedures. Damage resulting from Contractor actions shall be repaired at Contractor's expense.

DESIGN: WMP	REVISION #	DATE	REVISION-DESCRIPTION	REVISION #	DATE	REVISION-DESCRIPTION
DRAFT: JHG						
CHECK: WMP						

5776 E. GRAND RIVER

SITE & PAVEMENT  
NOTES AND DETAILS

CLIENT:  
MITTS LLC  
5796 E. GRAND RIVER  
HOWELL, MICHIGAN 48843  
517-548-5122

SCALE: N/A  
PROJECT No.: 214052  
DWG NAME: 4052 DT  
ISSUED: DEC.18, 2023

DT





NORTH BUILDING ELEVATION

NOT TO SCALE



SOUTH BUILDING ELEVATION

NOT TO SCALE



WEST BUILDING ELEVATION  
NORTH END

NOT TO SCALE



WEST BUILDING ELEVATION  
SOUTH END

NOT TO SCALE



EAST BUILDING ELEVATION  
SOUTH END

NOT TO SCALE



EAST BUILDING ELEVATION  
NORTH END

NOT TO SCALE

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2183 PLESS DRIVE  
BRIGHTON, MICHIGAN 48114

DESIGN: JHG	REVISION #	DATE	REVISION-DESCRIPTION	REVISION #	DATE	REVISION-DESCRIPTION
DRAFT: JHG						
CHECK: WMP						

5776 E. GRAND RIVER

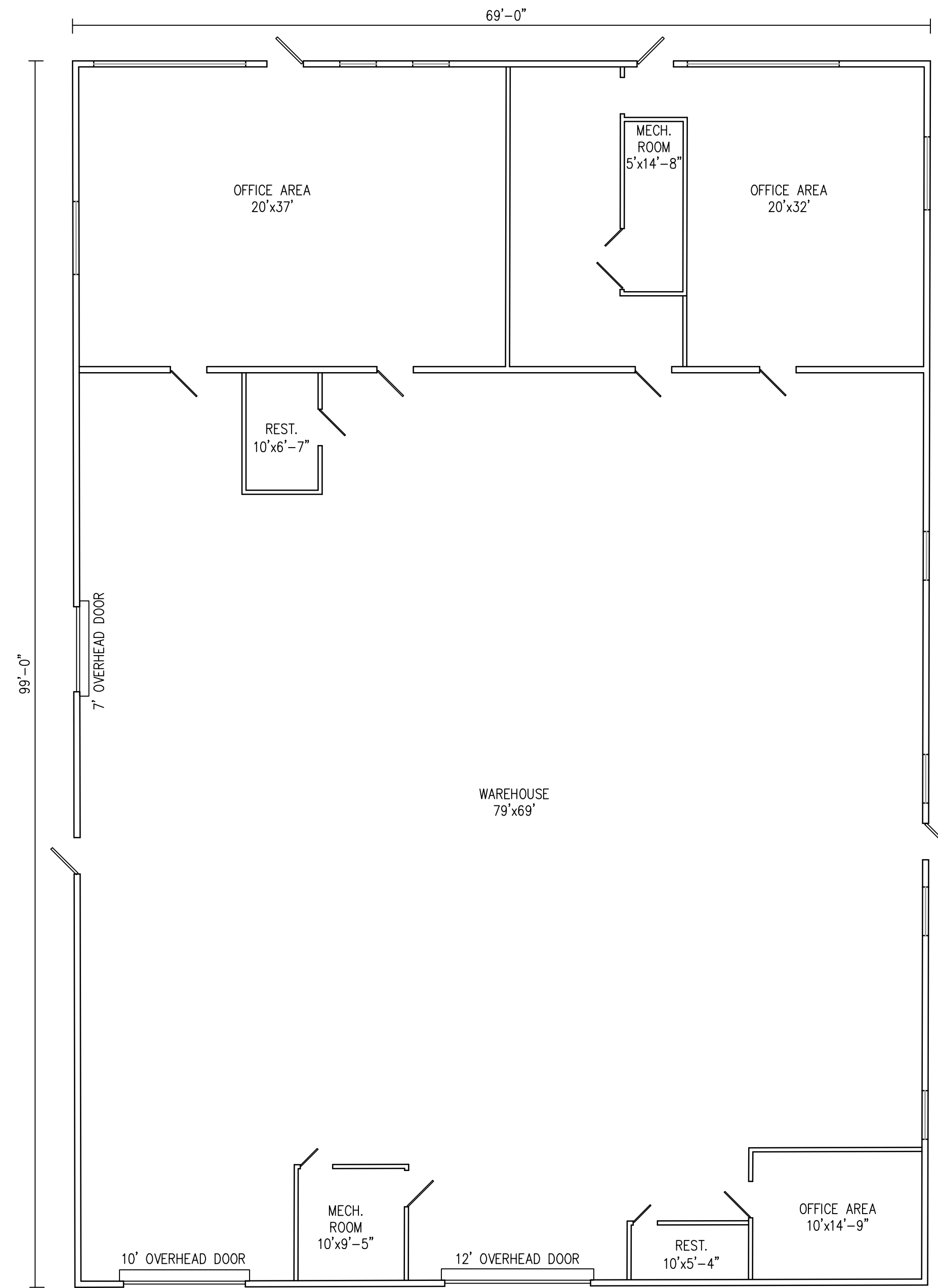
BUILDING PHOTOGRAPHS

CLIENT:  
MITTS LLC  
5796 E. GRAND RIVER  
HOWELL, MICHIGAN, 48843  
517-548-5122

SCALE: NOT TO SCALE  
PROJECT No.: 214052  
DWG NAME: 4052 ELEV  
ISSUED: DEC. 18, 2023

E





**ARCHITECTURAL FLOOR PLAN**

SCALE: 1/8" = 1'-0"



**GENOA CHARTER TOWNSHIP**  
**Application for Site Plan Review**

**TO THE GENOA TOWNSHIP PLANNING COMMISSION AND TOWNSHIP BOARD:**

APPLICANT NAME & ADDRESS: Schafer Constuction - 150 N. First St, STE 100, Brighton, MI 48393  
*If applicant is not the owner, a letter of Authorization from Property Owner is needed.*

OWNER'S NAME & ADDRESS: Aaron Amuchasteguiajcsv, LLC - 8816 Mendocino Drive, Austin, TX 76735

SITE ADDRESS: 2630 Grand River Ave PARCEL #(s): 4711-06-200-061

APPLICANT PHONE: ( 810 ) 220-0296 OWNER PHONE: ( 805 ) 904-8369

OWNER EMAIL: \_\_\_\_\_

LOCATION AND BRIEF DESCRIPTION OF SITE: The site is located at 2630 E. Grand River Ave. along the south side of Grand River Ave, east of Chilson Road in Genoa Twp.

The site is currently used as an indoor self-storage facility.

BRIEF STATEMENT OF PROPOSED USE: The proposed use of this project is to utilize the existing pavement on the southeast side of the property as an outdoor RV/Camper storage lot.

THE FOLLOWING BUILDINGS ARE PROPOSED: No Buildings are proposed.

**I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.**

BY: Luke Wenger, Greentech Engineering

ADDRESS: 51147 Pontiac Trail, Wixom, MI 48393

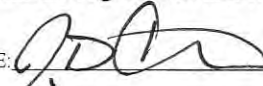


**Contact Information** - Review Letters and Correspondence shall be forwarded to the following:

1.) Luke Wenger of Greentech Engineering at luke@greentechengineering.net  
Name Business Affiliation E-mail Address

**FEE EXCEEDANCE AGREEMENT**

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE:  DATE: 11/29/23  
PRINT NAME: JOE CHIDESTER PHONE: 810-923-8540  
ADDRESS: 150 N. FIRST ST STE100 BRIGHTON, MI 48116



# GENOA CHARTER TOWNSHIP

## Special Land Use Application

This application **must** be accompanied by a site plan review application and the associated submittal requirements. (The Zoning Official may allow a less detailed sketch plan for a change in use.)

APPLICANT NAME & ADDRESS: Schafer Construction - 150 N. First St, STE 100, Brighton, MI 48393

*Submit a letter of Authorization from Property Owner if application is signed by Acting Agent.*

APPLICANT PHONE: ( 810 ) 220-0296 EMAIL: jchidester@schaferconstruction.net

OWNER NAME & ADDRESS: Aaron Amuchasteguiacsv, LLC - 8816 Mendocino Drive, Austin, TX 76735

SITE ADDRESS: 2630 Grand River Ave PARCEL #(s): 4711-06-200-061

OWNER PHONE: ( 805 ) 904-8369 EMAIL: \_\_\_\_\_

### Location and brief description of site and surroundings:

The site is located at 2630 E. Grand River Ave. along the south side of Grand River Ave, east of Chilson Road in Genoa Twp.

To the west, and east of the property are a commercial plaza and commercial carpet/flooring business respectively. To the south of the property is a tree line buffer between the building and residential homes.

### Proposed Use:

The proposed use of this project is to utilize the existing pavement on the southeast side of the property as an outdoor RV/Camper storage lot. The on-site building is currently used as an indoor self-storage facility.

### Describe how your request meets the Zoning Ordinance General Review Standards (section 19.03):

- a. Describe how the use will be compatible and in accordance with the goals, objectives, and policies of the Genoa Township Comprehensive Plan and subarea plans, and will promote the Statement of Purpose of the zoning district in which the use is proposed.

The property is zoned as IND (Industrial). The proposed use is compatible with the zoning district because the site will accommodate light industrial operations in the form of outdoor storage that will not affect any of the surrounding districts in a detrimental way.

The proposed outdoor storage will compliment and improve the operations of the current on-site building used for indoor self-storage.

- b. Describe how the use will be designed, constructed, operated, and maintained to be compatible with, and not significantly alter, the existing or intended character of the general vicinity.

There is an existing pavement area located on the southeast side of the property where the outdoor RV/Camper storage is proposed.

The improvements for this project will consist of adding striping to designate parking areas and adding entrance and exit mechanics via gates and fencing around the perimeter. The improvements will optimize the use of this lot without any significant alterations.

- c. How will the use be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage structures, water and sewage facilities, refuse disposal and schools?

There are no proposed utilities for this project. The outdoor storage area will be accessed via the existing drive from Grand River Ave.



d. Will the use involve any uses, activities, processes, or materials potentially detrimental to the natural environment, public health, safety, or welfare by reason of excessive production of traffic, noise, vibration, smoke, fumes, odors, glare, or other such nuisance? If so, how will the impacts be mitigated?

No. There will be very low daily traffic production from this use and the noise production from the outdoor storage of parked RVs and Campers will be negligible.

e. Does the use have specific criteria as listed in the Zoning Ordinance (sections 3.03.02, 7.02.02, & 8.02.02)? If so, describe how the criteria are met.

The outdoor storage is located on a parcel greater than 3 acres. The perimeter of the outdoor storage area will be fenced in with a gated entrance/exit. The use will be limited to storage only. The applicant is requesting a variance for parking located closer than twenty-five feet from any non-residential zoning district.

I HEREBY CERTIFY THAT ALL INFORMATION AND DATA ATTACHED TO AND MADE PART OF THIS APPLICATION ARE TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I AGREE TO DESIGN, CONSTRUCT AND OPERATE, AND MAINTAIN THESE PREMISES AND THE BUILDINGS, STRUCTURES, AND FACILITIES WHICH ARE GOVERNED BY THIS PERMIT IN ACCORDANCE WITH THE STATED REQUIREMENTS OF THE GENOA TOWNSHIP ZONING ORDINANCE, AND SUCH ADDITIONAL LIMITS AND SAFEGUARDS AS MAY BE MADE A PART OF THIS PERMIT.

THE UNDERSIGNED \_\_\_\_\_ STATES THAT THEY ARE THE FREE OWNER OF THE PROPERTY OF PROPERTIES DESCRIBED ABOVE AND MAKES APPLICATION FOR THIS SPECIAL LAND USE PERMIT.

BY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

**Contact Information** - Review Letters and Correspondence shall be forwarded to the following:

Luke Wenger of Greentech Engineering at luke@greentechengineering.net  
Name Business Affiliation Email

**FEE EXCEEDANCE AGREEMENT**

As stated on the site plan review fee schedule, all site plans are allocated two (2) consultant reviews and one (1) Planning Commission meeting. If additional reviews or meetings are necessary, the applicant will be required to pay the actual incurred costs for the additional reviews. If applicable, additional review fee payment will be required concurrent with submittal to the Township Board. By signing below, applicant indicates agreement and full understanding of this policy.

SIGNATURE:  DATE: 11/29/23

PRINT NAME: JOE CHIDESTER PHONE: 810-923-8540



March 5, 2024

Planning Commission  
Genoa Township  
2911 Dorr Road  
Brighton, Michigan 48116

<b>Attention:</b>	Amy Ruthig, Planning Director
<b>Subject:</b>	Grand River Self Storage – Special Land Use and Site Plan Review #2
<b>Location:</b>	2630 Grand River Avenue –south side of Grand River, east of Chilson Road
<b>Zoning:</b>	GCD General Commercial District

Dear Commissioners:

At the Township’s request, we have reviewed the revised submittal from Schafer Construction for outdoor RV/camper storage for the property at 2630 Grand River Avenue (site plan dated 1/23/24).

**A. Summary**

**1. Special Land Uses (Section 19.03):**

- a. The special land use standards of Section 19.03 are generally met.
- b. In order to make favorable findings related to compatibility and impacts, the conditions of Section 7.02.02(d) must be met to the Commission’s satisfaction.
- c. The applicant must address any comments provided by the Township Engineer or Brighton Area Fire Authority regarding public facilities and services.

**2. Outdoor Commercial Storage (Section 7.02.02(d)):**

- a. If deemed necessary, the Commission may require improvements to the paved surfacing of the outdoor storage area.
- b. The plan does not fully provide the required buffer zones; however, the Planning Commission has the authority to waive or modify these requirements.
- c. We suggest the chain link fencing utilize a screen fabric, instead of privacy slats (if the Commission is amenable to this option).

**3. Site Plan Review:**

- a. The applicant must coordinate refuse removal since the waste receptacle is behind a security gate.
- b. The applicant must address any comments provided by the Township Engineer and/or the Brighton Area Fire Authority (particularly with respect to the security gate).

**B. Proposal/Process**

The applicant proposes development of an outdoor storage yard for RVs/campers as part of the existing climate-controlled indoor commercial storage facility (approved in 2022).

Table 7.02 allows outdoor commercial sales, display or storage with special land use approval in the GCD. The request is also subject to the use conditions of Section 7.02.02(d).

Procedurally, the Planning Commission is to review the special land use, site plan, and Environmental Impact Assessment, and put forth recommendations to the Township Board following a public hearing.





*Aerial view of site and surroundings (looking north)*

### **C. Special Land Use Review**

Section 19.03 of the Zoning Ordinance identifies the review criteria for Special Land Use applications as follows:

- 1. Master Plan.** The Township Master Plan identifies the subject site as Mixed Use – West Grand River. The Plan includes the following commentary on this category:

*This area is envisioned for a higher intensity of commercial and residential uses than the East Grand River District. Currently developed with general commercial and office along Grand River, this area is intended to continue to promote these uses that are supported by area and regional residents as well as pass-by traffic along Grand River Avenue, including interchange traffic from I-96.*

As an accessory component to the existing climate-controlled indoor commercial storage use, the proposal is generally consistent with the Master Plan and Future Land Use Map.

- 2. Compatibility.** This area of Grand River contains a variety of land uses, including commercial, service and office. The subject site also abuts residential to the south.

Protection of the residential area is the primary concern under this criterion.

The use conditions of Section 7.02.02(d), which include setback and screening requirements, are intended to help mitigate potential off-site impacts of the outdoor storage area.

Provided these conditions are met to the Commission's satisfaction, the proposal is expected to be compatible with the existing and intended character of the area.

- 3. Public Facilities and Services.** As a previously developed site along Grand River Avenue, we anticipate that necessary public facilities and services are in place.

With that being said, the applicant must address any comments provided by the Township Engineer and/or Brighton Area Fire Authority related to this criterion.

- 4. Impacts.** Similar to comments under criterion #2 above, the use conditions for outdoor commercial storage must be met to the Commission's satisfaction.

- 5. Mitigation.** If additional concerns arise as part of the review process, the Township may require additional efforts to mitigate potential adverse impacts.

**D. Conditions (Outdoor Commercial Storage)**

Outdoor commercial sales, display or storage is subject to the use requirements of Section 7.02.02(d), as follows:

- 1. Minimum lot area shall be one (1) acre.**

The subject site contains 3.67 acres of area.

- 2. Any stockpiles of soils, fertilizer or similar loosely packaged materials shall be sufficiently covered or contained to prevent dust or blowing of materials.**

The proposal is for outdoor storage of recreational vehicles (RVs and campers) and does not include stockpiles or loosely packaged materials.

- 3. All outdoor storage areas shall be paved with a permanent, durable and dustless surface and shall be graded and drained to dispose stormwater without negatively impact adjacent property. The Township Board, following a recommendation of the Planning Commission and the Township Engineer, may approve a gravel surface for all or part of the display or storage area for low intensity activities, upon a finding that neighboring properties and the environment will not be negatively impacted.**

The proposed outdoor storage area is paved as it was previously used as a parking lot.

As discussed during review of the climate controlled indoor storage business, the site's pavement was in relatively poor condition and in need of improvement.

If this area remains in poor condition, the Commission may require improvement as part of this project.

- 4. No outdoor storage shall be permitted in any required yard (setback) of buildings for the district in which the commercial outdoor display, sales or storage use is located. Any approved outdoor sales or display within a parking lot shall meet the required parking lot setback; provided the Planning Commission may require additional landscaping screening or ornamental fencing.**

The revised site plan demonstrates compliance with this requirement.

- 5. The site shall include a building of at least five hundred (500) feet of gross floor area for office use in conjunction with the use.**

The site contains an existing building with 43,555 square feet of gross floor area. As previously noted, the building is used for climate-controlled indoor commercial storage (approved in 2022).

- 6. All loading and truck maneuvering shall be accommodated on-site.**

Aside from any patrons that utilize the existing cross-access with the adjacent properties to the north and west, this standard is met.



- 7. All outdoor storage area property lines adjacent to a residential district shall provide a buffer zone A as described in Section 12.02. A buffer zone B shall be provided on all other sides. The Planning Commission may approve a six (6) foot high screen wall or fence, or a four (4) foot high landscaped berm as an alternative.**

A buffer zone A is required along the rear lot line, while buffer zone Bs are required along the east and north side of the storage area.

The rear yard provides the width required for a buffer zone A and landscaping is provided via existing mature vegetation, but the wall/berm is not provided.

The remaining sides include existing mature vegetation, but do not meet the width or wall/berm requirements.

With that being said, the entire outdoor storage area is enclosed with 6-foot tall chain link fencing with privacy slats. In our experience, privacy slats often fall quickly into disrepair and should generally be avoided. If the Commission is amenable, we suggest that an alternative material be used, such as a screening fabric.

The Planning Commission has the authority to waive or modify landscaping requirements based on the standards of Section 12.02.13.

- 8. The height of all material and equipment stored in an outdoor storage area shall not exceed the height of any landscape screening, wall or fence. Boats and recreational vehicles may exceed the height of the fence provided that they are setback from the fence a distance equal to their height. Storage of materials up to the height of the adjacent building wall may be permitted in the rear yard if it is illustrated on the site plan, the rear yard does not abut a residential district, will not be visible from an expressway and such storage is confined to within twenty (20) feet of the building.**

The revised submittal notes that the combination of existing landscaping, fencing and setback will provide sufficient screening for RV's and boats.

#### **E. Site Plan Review**

- 1. Dimensional Requirements.** No changes are proposed that impact the dimensional requirements of the GCD.
- 2. Building Design and Materials.** No building changes are proposed as part of this project.

Modifications were approved as part of the climate-controlled indoor commercial storage project in 2022.

- 3. Pedestrian Circulation.** A performance guarantee for bike path construction was required as part of the 2022 project approval.
- 4. Vehicular Circulation.** No alterations are proposed to existing site circulation; however, the applicant must address any comments provided by the Township Engineer and/or the Brighton Area Fire Authority (particularly with respect to the security gate).
- 5. Exterior Lighting.** The revised lighting plan includes 5 light poles and 3 wall mounted fixtures.

Based on the detail sheets provided, the proposed fixtures are downward directed LED, as required.

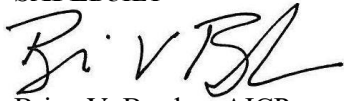
Pole heights and photometric readings (both on-site and along property lines) comply with Ordinance standards.

- 6. Waste Receptacle.** The 2022 project included approval of a compliant waste receptacle and enclosure in the rear yard.

Since the receptacle will now be located behind a security gate, the applicant must coordinate arrangement with their refuse removal provider.

Should you have any questions concerning this matter, please do not hesitate to contact our office.

Respectfully,  
**SAFE BUILT**

A handwritten signature in black ink, appearing to read "Bri V Borden". The signature is stylized and written in a cursive-like font.

Brian V. Borden, AICP  
Michigan Planning Manager





February 22, 2024

Ms. Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

**Re: Copper Safe Outdoor Storage  
Site Plan Review No. 2**

Dear Ms. Ruthig:

Tetra Tech conducted a second review of the proposed Copper Safe Outdoor Storage site plan last dated February 16, 2024. The plan was prepared by Greentech Engineering, Inc. on behalf of Shafer Construction. The development is located on the south side of Grand River Avenue, east of Chilson Road. A site plan for indoor storage at the site was approved in fall 2022, and the Petitioner is now proposing to expand with outdoor storage in the southeast parking lot. Proposed improvements include new fence and parking striping.

The revised plans have addressed our previous comments, including adding a pavement cross section and showing the existing parking lot and storm sewer accurately, therefore we have no further engineering related concern with the proposed site plan.

Please call or email if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads 'Shelby Byrnes'.

Shelby Byrnes, P.E.  
Project Engineer



# BRIGHTON AREA FIRE AUTHORITY

615 W. Grand River Ave.  
Brighton, MI 48116  
o: 810-229-6640 f: 810-229-1619

---

March 1, 2024

Amy Ruthig  
Genoa Township  
2911 Dorr Road  
Brighton, MI 48116

RE: Copper Safe Outdoor Storage  
2630 Grand River  
Genoa Twp., MI

Dear Amy,

The Brighton Area Fire Department has reviewed the above-mentioned site plan. The plans were received for review on February 20, 2023 and the drawings are dated November 29, 2023 with recent revisions dated February 16, 2024. The project is based on an existing 4.24-acre parcel with an existing 48,858 square foot S-1 self storage structure. The proposal is to add additional outdoor storage lot to the East side of the structure. The plan review is based on the requirements of the International Fire Code (IFC) 2021 edition.

**All previous comments regarding access throughout the proposed outdoor storage area have been complied with or acknowledged by the applicant on the most recent submittal.**

If you have any questions about the comments on this plan review please contact me at 810-229-6640.

Cordially,

A handwritten signature in black ink, appearing to read "R. Boisvert".

Rick Boisvert, CFPS  
Fire Marshal



Received 2-16-24

# Impact Assessment for

**Grand River Self Storage**

**2650 Grand River**

**Howell, MI 48843**

**Prepared by:**



Date:

**November 29, 2023**

## **Grand River Self Storage**

### **Impact Assessment Statement**

#### **Preparer (18.07.01)**

This Impact Assessment was prepared under the direction of Daniel LeClair, PE. PS and GreenTech Engineering, Inc. 51147 W Pontiac Trail, Wixom, MI 48393. Mr. LeClair is a licensed Civil Engineer and Land Surveyor and is a professional engineering consultant offering services throughout all of Michigan and the Midwest since 1993. GreenTech Engineering offers consulting services to private land development clients including residential, commercial and industrial projects.

#### **Location (18.07.02)**

The site is located at 2630 Grand River Avenue which is located along the south side of Grand River Avenue east of Chilson Road. The site includes a 43,555 square foot building that is currently being used as an indoor self-storage facility. The parcel identification number for this site is 4711-06-200-061. See exhibit 'A' attached for a location map. The site is adjoining a shopping center on the west, a retail store and car dealership to the east, and single family residential to the south.

#### **Impact on natural features (18.07.03)**

The subject site has been previously developed including the existing 43,555 square foot building along with parking lots located along the northerly and easterly portion of the site. The proposed re-use of the parking lot to the east of the building is contemplating very limited re-configuration of the existing site. There is an existing wooded natural area along the southerly portion of the site that will remain unchanged as part of this development.

**Soils:** The native soils on the subject property consist of loamy sands as indicated on the USDA soils map attached as Exhibit 'B'. The rear (southerly) portion of the site appears to remain in it's native state, however the surface soils have been altered as part of the previous development of the property.

**Topography:** The existing site topography consists of two separate drainage areas. The area north (front) of the existing building surface slopes downward in a northwesterly direction, while the area east of the building slopes downward in a southerly direction. The area immediately south of the building slopes downward toward a drop off in the rear yard near the southerly property line. The proposed development plan will utilize the existing asphalt area on the east, but does not include any re-grading of the parking lot. The remainder of the site remains unchanged as part of this development proposal.

A wetland study was not performed as part of this application as there are no changes to the site other than the minor modification to the existing paved areas.

#### **Impact on stormwater management (18.07.04)**

The existing site drainage patterns consists of two separate drainage areas. The area north (front) of the existing building surface slopes downward in a northwesterly direction, while the area east of the building slopes downward in a southerly direction. The area immediately south of the building slopes downward toward a drop off in the rear yard near the southerly property line.



The proposed development plan does not include any changes to the existing pavement other than the removal and pavement repair of two islands located in the easterly parking lot. The remainder of the site remains unchanged as part of this development proposal.

With a no change in the impervious area, we anticipate no negative impact to the existing stormwater management system from the proposed development.

**Impact on surrounding land uses (18.07.05)**

*Description of Proposed Uses:* The existing parking lot along the easterly side of the building will be fenced in. No permanent foundation, grade changes and/or repaving of the existing easterly parking area will be required.

*Hours of Operation:* The hours of operation will include will include office hours from 8 am until 8 pm Monday through Friday and 8 am until 5 pm on Saturday and Sundays. Access to the exterior RV/Camper storage areas will be 24 hours to customers with valid access codes.

*Phasing:* The proposed improvements will be constructed in one phase.

In summary, the optimization of the existing easterly asphalt lot on this site will increase the usability and services provided to people in the community. It will include an on-site office attendant who will also act as an on-site caretaker in addition to the new fencing around the easterly parking lot. It is anticipated that the new use will turn a vacant asphalt lot into a usable location for people needing a place to store an RV or Camper. See Exhibit 'C' for images of the existing site.

**Impact on public facilities and services (18.07.06)**

The proposed re-development of the subject site is anticipated to reduce the impact to the public facilities and services. We anticipate one to two full time employees during the business day along with random customer visits to the site. The traffic impact to the adjoining streets and neighborhood is anticipated to have a low impact due to the use of the site.

**Impact on public utilities (18.07.07)**

The proposed lot will not have any effect on public utilities as no utilities are proposed for this project.

**Storage and handling of hazardous materials (18.07.08)**

Per the terms of the rental contracts, no hazardous materials will be allowed to be stored or handled on site. There are no known underground tanks on the subject property.

**Traffic Impact Study (18.07.09)**

Based on review of the institute of Transportation Engineers Trip Generation Manual and related studies and reports, a detailed traffic impact study is not warranted. Typical days, as noted above, will generate fewer than 30 visitors throughout the course of the day, falling far below the 100 directional trips during the peak hour of traffic.

**Historic and Cultural Resources (18.07.10)**

The existing building does not have any historic or cultural significance, and is less than 50 years old.

**Special Provision (18.07.11)**

There are no deed restrictions, protective covenants, master deed or association bylaws encumbering the subject property.

**List of Sources (18.07.12)**

The sources utilized in preparing report include personal knowledge of the subject property by the applicant/owner, aerial photography and partial topographic survey as prepared by GreenTech Engineering, and the Genoa Township ordinance.



# EXHIBIT 'A'



LOCATION MAP



# EXHIBIT 'B'

Livingston County, Michigan (MI093)			
Livingston County, Michigan (MI093)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FrB	Fox-Boyer complex, 2 to 6 percent slopes	0.5	11.9%
MoB	Wawasee loam, 2 to 6 percent slopes	4.0	88.1%
<b>Totals for Area of Interest</b>		<b>4.5</b>	<b>100.0%</b>



SOILS MAP



# EXHIBIT 'C'





**BENCHMARKS:**

**SITE BM #1**  
RAILROAD SPIKE, SOUTH FACE OF UTILITY POLE ALONG THE EAST PROPERTY LINE OF #2630 E. GRAND RIVER AVENUE, 192± SOUTHWEST OF THE NORTHEAST PROPERTY CORNER. ELEVATION: 963.72 N.A.V.D.88

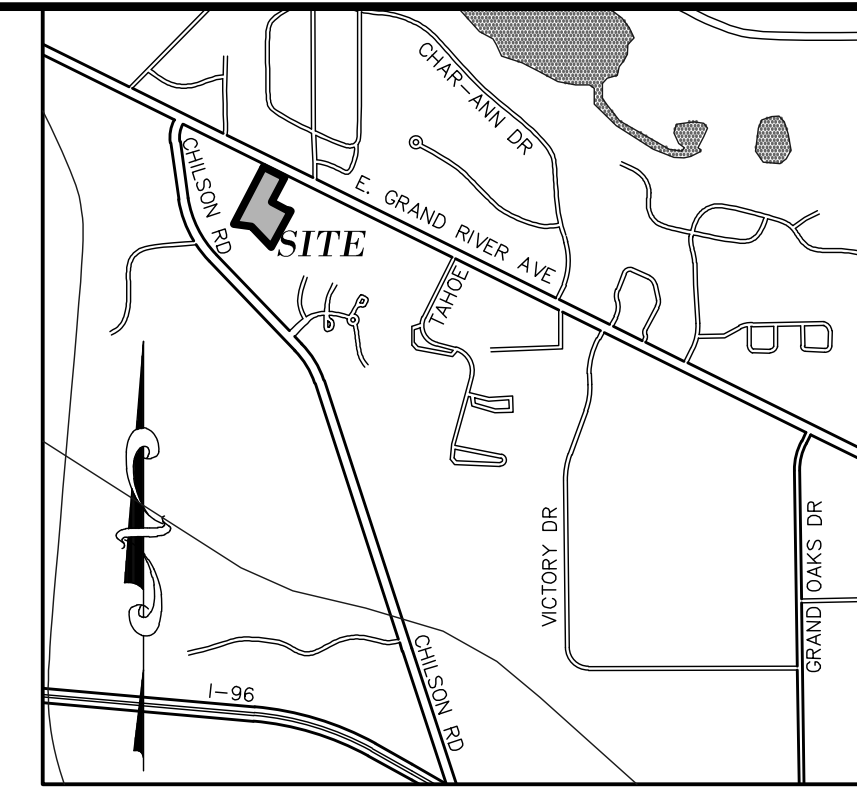
# SITE PLANS

for

# GRAND RIVER SELF STORAGE

# OUTDOOR STORAGE

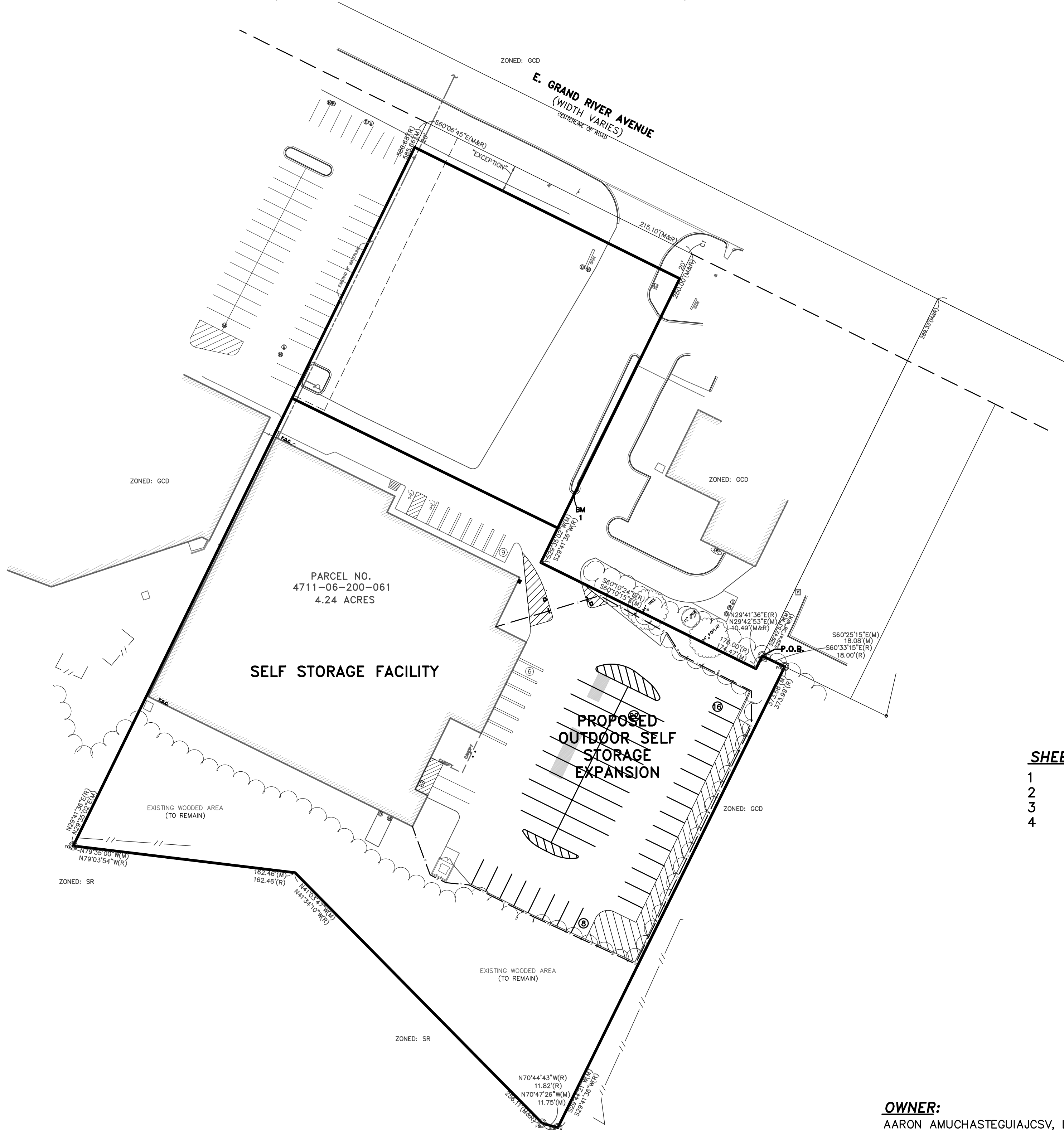
2630 GRAND RIVER AVENUE  
GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN



RESIDENTIAL  
Site Commission  
for Preliminary  
Final Plans  
COMMERCIAL  
Site Planning  
Site Preparation  
Industrial & Multi-Unit  
Land Surveying  
SURVEYING  
Boundary Surveys  
Topographic Surveys  
Precise Sights  
Construction Staking

**GREENTECH**  
ENGINEERING, INC.  
CIVIL ENGINEERS & LAND SURVEYORS

51147 Pontiac Trail, Wixom, MI 48393  
Phone: (248) 668-0700 Fax: (248) 668-0701



**GENERAL NOTES:**

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF GENOA TOWNSHIP.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND/OR OBTAIN ANY INFORMATION NECESSARY REGARDING THE PRESENCE OF UNDERGROUND UTILITIES WHICH MIGHT AFFECT THIS JOB.
3. CONTRACTOR TO OBTAIN ALL REQUIRED APPROVALS AND PERMITS PRIOR TO THE START OF CONSTRUCTION.

**DESCRIPTION: PARCEL #4711-06-200-061 (BY OTHERS)**

PART OF THE NORTHEAST 1/4 OF SECTION 6, T2N-R5E, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE EAST 1/4 CORNER OF SAID SECTION 6; THENCE N02°17'07"E 594.63 FEET TO THE CENTERLINE OF GRAND RIVER AVENUE THENCE N60°39'00"W ALONG SAID CENTERLINE 2381.67 FEET; THENCE CONTINUING ALONG SAID CENTERLINE N60°06'45"W 224.71 FEET; THENCE S29°41'36"W 289.33 FEET TO THE POINT OF BEGINNING; THENCE S60°33'15"E 18.00 FEET; THENCE S29°41'36"W 373.99 FEET; THENCE N70°44'43"W 11.82 FEET; THENCE N41°34'10"W 256.11 FEET; THENCE N79°03'54"W 162.46 FEET; THENCE N29°41'36"E 586.58 FEET TO THE SOUTHERLY RIGHT-OF-WAY OF GRAND RIVER AVENUE; THENCE ALONG SAID RIGHT-OF-WAY S60°06'45"E 211.40 FEET; THENCE CONTINUING ALONG RIGHT-OF-WAY ALONG THE ARC OF A CURVE LEFT CHORD BEARING S60°06'50"E 3.60 FEET; THENCE S29°41'36"W 250.00 FEET; THENCE S60°10'24"E 175.00 FEET; THENCE N29°41'36"E 10.49 FEET TO THE POINT OF BEGINNING, CONTAINING 4.24 ACRES, MORE OR LESS, AND SUBJECT TO ANY EASEMENTS OR RESTRICTIONS OF RECORD, SPLIT FROM 019 EXCEPTING THE NORTHEASTERLY 20 FEET AND PARALLEL TO GRAND RIVER, AS DEEDED TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION CORR 3/2014.

**NOTICE:**

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

**NOTE:**

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.

**SHEET INDEX:**

- 1 COVER SHEET
  - 2 DIMENSION & PAVING PLAN
  - 3 EXISTING CONDITIONS & DEMOLITION PLAN
  - 4 CIRCULATION PLAN
- PHOTOMETRIC PLAN

**OWNER:**

AARON AMUCHASTEGUIAJCSV, LLC  
8616 MENDOCINO DRIVE  
AUSTIN, TX 78735  
PHONE: (805)-904-8369

**APPLICANT:**

SCHAFER CONSTRUCTION  
102 E. GRAND RIVER AVE  
BRIGHTON, MI 48393  
CONTACT: MATT VETTER  
PHONE: (810) 220-0296

**ENGINEER/SURVEYOR:**

GREENTECH ENGINEERING, INC.  
51147 PONTIAC TRAIL  
WIXOM, MI 48393  
CONTACT: DAN LECLAIR, P.E.  
(248) 668-0700

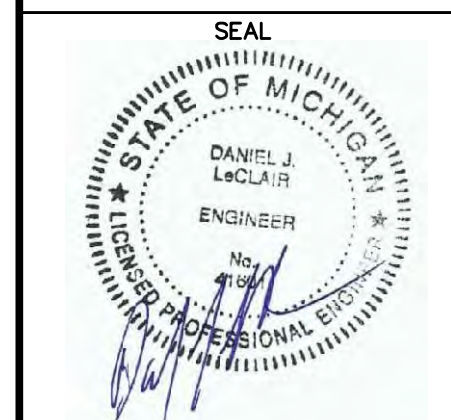


CLIENT: SCHAFER CONSTRUCTION

**COVER SHEET**

2630 GRAND RIVER AVE - PARCEL NO 4711-06-200-061  
SECTION: 6 TOWNSHIP: 2 N RANGE: 5 E  
CHARTER TOWNSHIP OF GENOA  
LIVINGSTON COUNTY  
MICHIGAN

REVISED
2024-1-23 PER REVIEW
2024-2-16 PER REVIEW

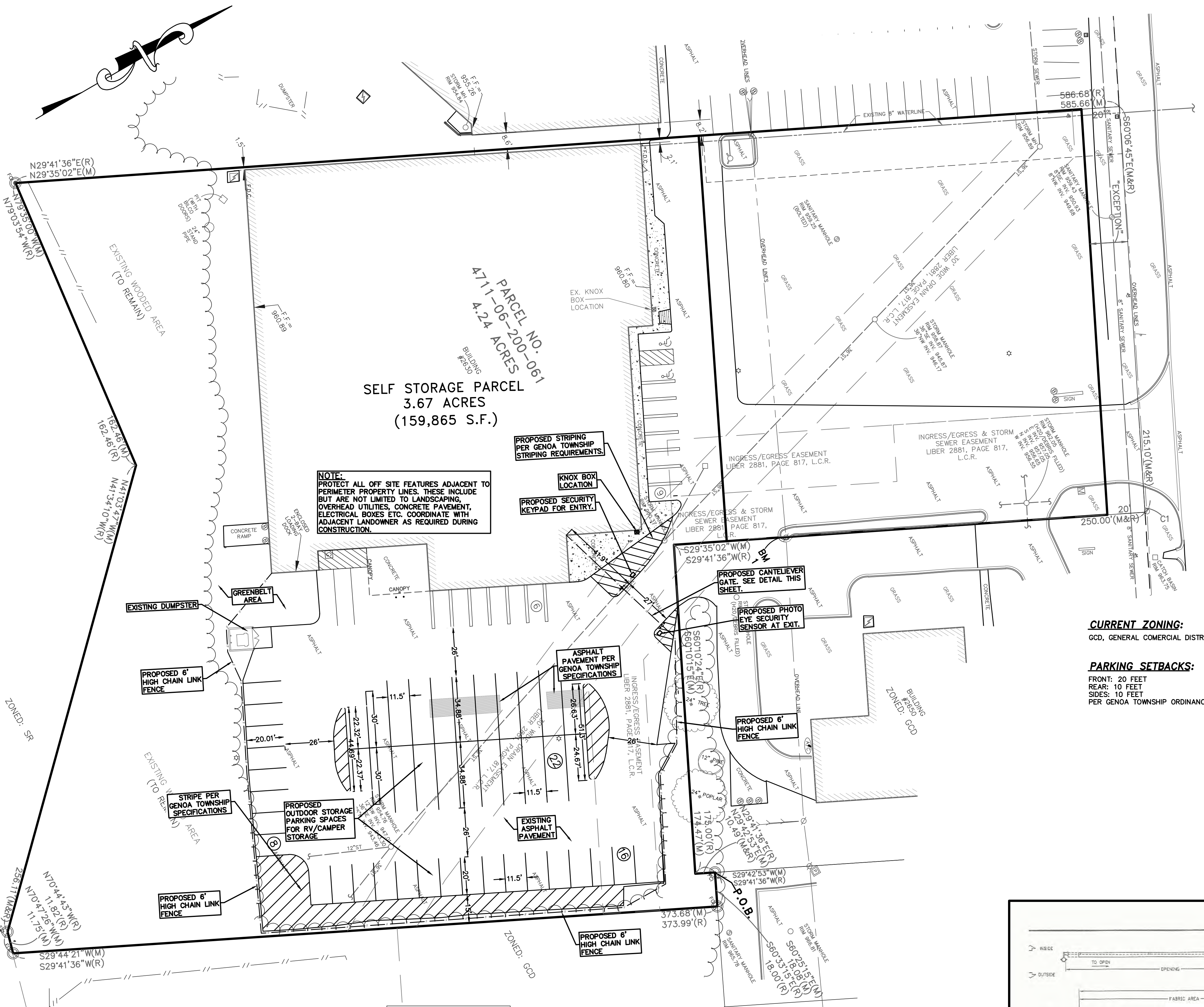
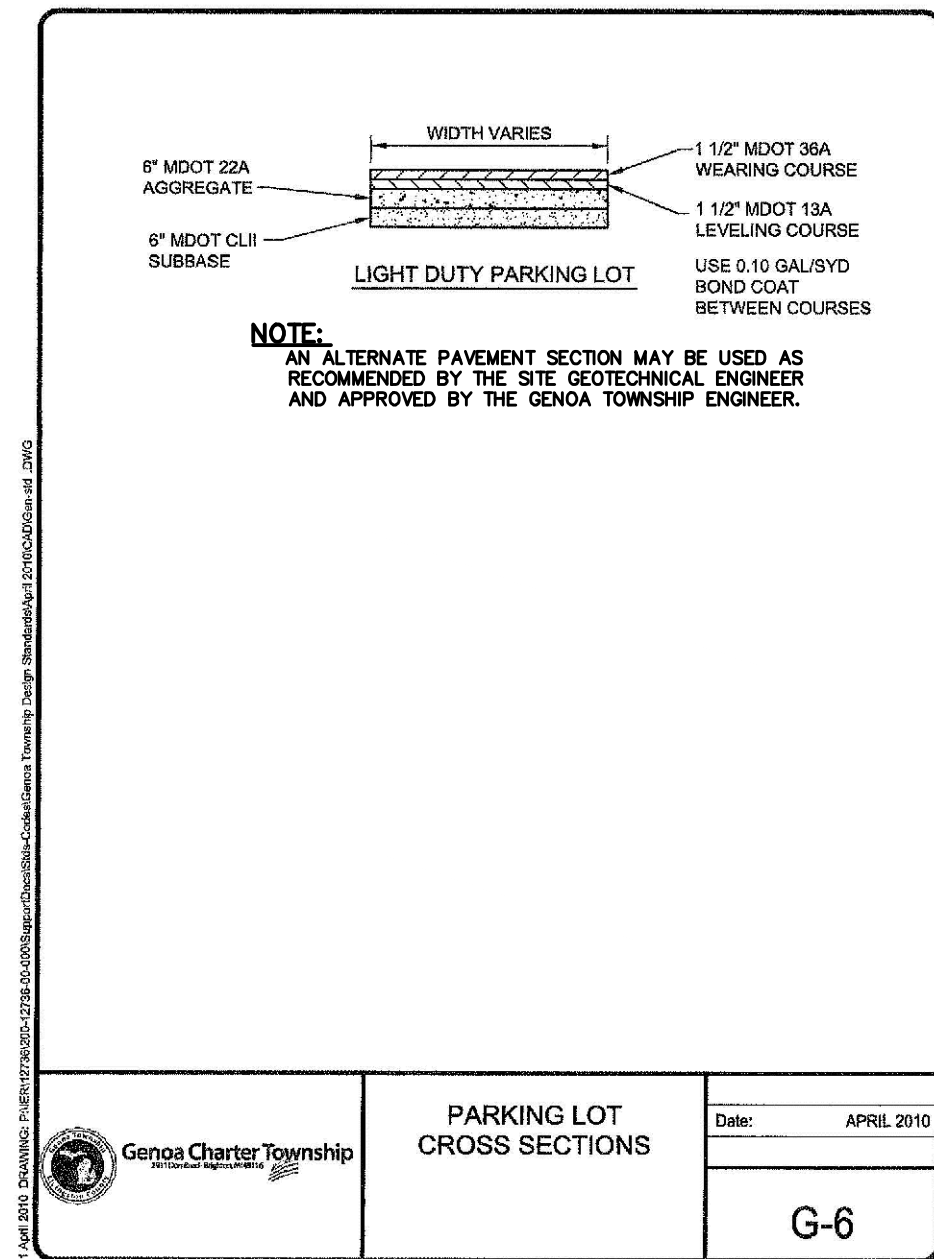


DATE: 11-29-2023
DRAWN BY: RMS
CHECKED BY: DJL
FBK: ---
CHF: MM
SCALE: HOR 1"=50 FT. VER 1"= -- FT.
1 21-315



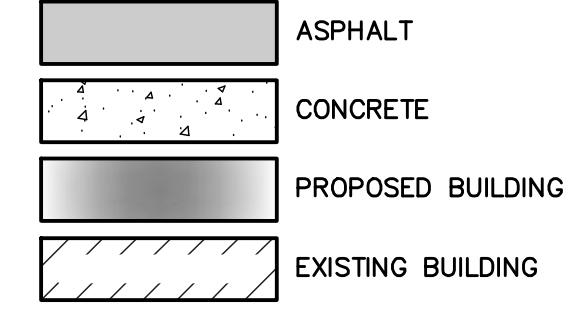
**GENERAL NOTES:**

- 1) ALL CONSTRUCTION SHALL BE CONFORMING TO THE CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY GENOA TOWNSHIP AND LIVINGSTON COUNTY.
- 2) ALL SIDEWALK, RAMPS, AND LANDINGS, MUST MEET THE AMERICAN WITH DISABILITIES ACT (ADA) REQUIREMENTS.
- 3) THE CONTRACTOR SHALL PAY FOR, OBTAIN AND COMPLY WITH ALL PERMITS NECESSARY FROM PUBLIC AGENCIES INCLUDING BUT NOT LIMITED TO GENOA TOWNSHIP, LIVINGSTON COUNTY.
- 4) ALL PAVEMENT, DRIVEWAYS, SHOULDERS, LANDSCAPING, DRAINAGE PIPES, MAILBOXES, SIGNS, ETC. DAMAGED DURING CONSTRUCTION SHALL BE RESTORED BY THE CONTRACTOR TO EQUAL OR BETTER CONDITION.
- 5) EXISTING MONUMENTS AND PROPERTY CORNERS SHALL BE PRESERVED AND PROTECTED, AND RESTORED IF DISTURBED, AT CONTRACTORS EXPENSE.
- 6) NO WORK WITHIN THE GRAND RIVER BOULEVARD RIGHT-OF-WAY SHALL TAKE PLACE.
- 7) THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN, PRIOR TO CONSTRUCTION.
- 8) IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND/OR OBTAIN ANY INFORMATION NECESSARY REGARDING THE PRESENCE OF UNDERGROUND UTILITIES WHICH MIGHT AFFECT THIS JOB.
- 9) STATE REQUIREMENTS FOR BARRIER FREE PARKING SPACES SUPERSEDE ANY TOWNSHIP REQUIREMENTS.
- 10) ALL DIMENSIONS SHOWN ARE TO EDGE OF PAVEMENT, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
- 11) ALL WORK SHALL BE COMPLETED IN ONE PHASE.
- 12) ALL LOADING AND UNLOADING SHALL TAKE PLACE DURING TYPICAL BUSINESS HOURS. NO LOADING OR UNLOADING SHALL TAKE PLACE OUTSIDE OF THE GATED AREAS.



ZONED: GCD  
**E. GRAND RIVER AVENUE**  
 (WIDTH VARIES)  
 CENTERLINE OF ROAD

**HATCH LEGEND**



**LIGHTING NOTE**

NO CHANGES TO THE EXISTING SITE LIGHTING ARE PROPOSED. PHOTOMETRIC PLAN ISSUED FOR REFERENCE ONLY.

**UTILITY NOTE**

NO CHANGES TO THE EXISTING SANITARY SEWER, STORM SEWER OR WATER MAIN INFRASTRUCTURE ARE ANTICIPATED AS PART OF THE PROPOSED DEVELOPMENT.

**SESC NOTE**

THERE IS NO PROPOSED EARTH CHANGE THAT WILL REQUIRE A SOIL EROSION CONTROL PERMIT FOR THIS PROJECT ACTIVITY.

**PAVEMENT NOTE**

NO PAVEMENT WILL BE REMOVED AS PART OF THIS PROPOSED ACTIVITY FOR THIS PROJECT. MINOR PAVEMENT ADDITIONS WITHIN EXISTING ISLAND REMOVAL AREAS WILL BE REQUIRED. SEE EXISTING CONDITIONS & DEMOLITION PLAN FOR LOCATION DETAILS.

**KNOX BOX NOTE**

KNOX BOX LOCATION TO BE COORDINATED WITH THE BRIGITON AREA FIRE AUTHORITY. THE KNOX BOX FOR THE REAR ACCESS GATE SHALL INCLUDE A KEY SWITCH FOR CONTROL & BYPASS OF THE ACCESS CONTROL OF THE GATE.

**LANDSCAPING NOTE**

THERE IS NO LANDSCAPING PLAN INCLUDED IN THE SUBMITTAL DUE TO THE PREVIOUS LANDSCAPING IMPROVEMENTS.

**SITE USE NOTE**

THE SITE WILL BE USED TO STORE RV'S AND BOATS THAT MUST HAVE A MAXIMUM HEIGHT OF 15' BASED ON THE SCREENING AND SETBACK DISTANCE.

**CURRENT ZONING:**  
 GCD, GENERAL COMMERCIAL DISTRICT

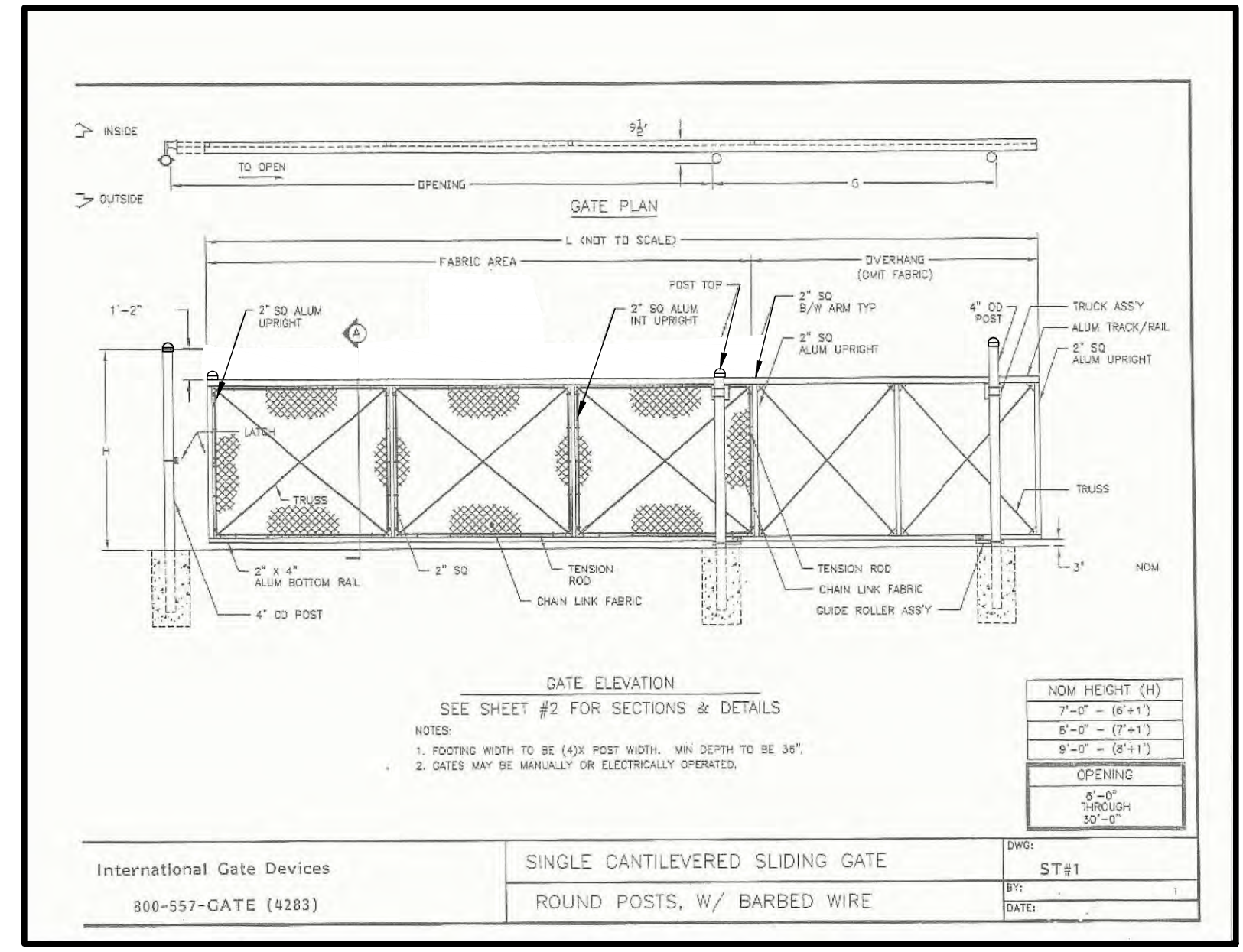
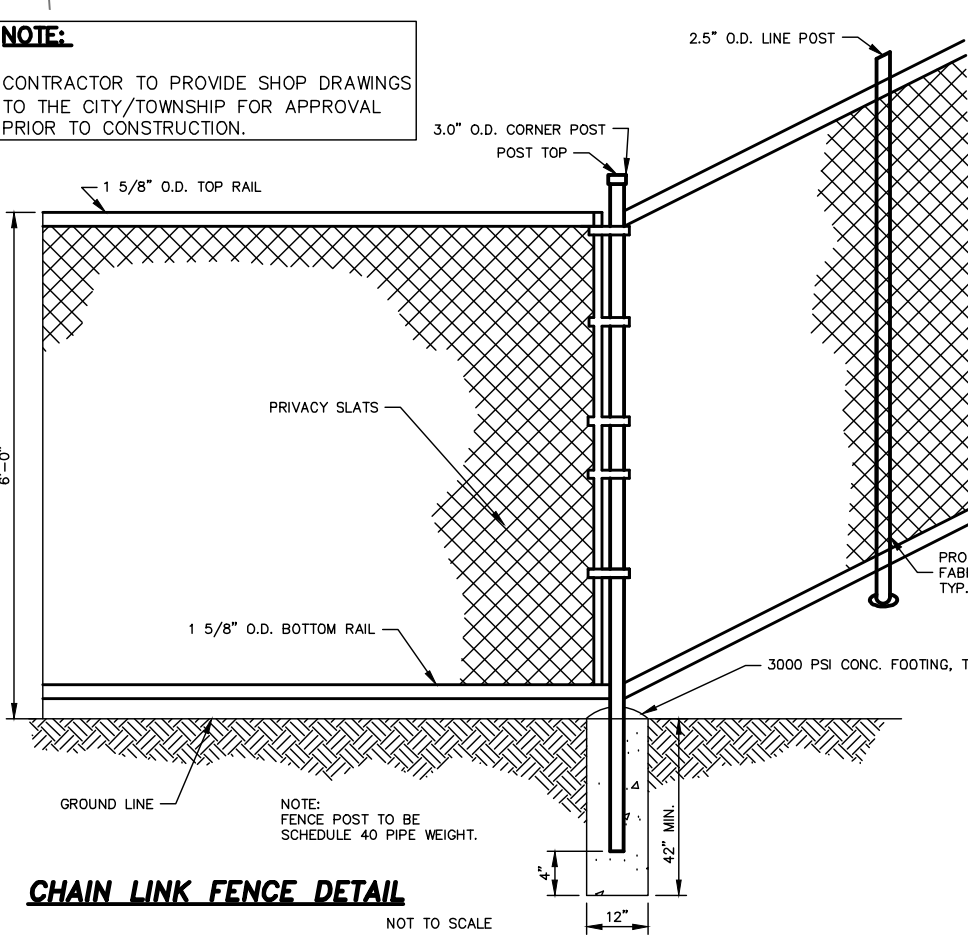
**PARKING SETBACKS:**  
 FRONT: 20 FEET  
 REAR: 10 FEET  
 SIDES: 10 FEET  
 PER GENOA TOWNSHIP ORDINANCE

**FLOOD HAZARD STATEMENT:**

THIS PROPERTY IS LOCATED WITHIN A FEMA DESIGNATED ZONE X FLOOD HAZARD AREA AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP) FOR MICHIGAN FLOOD INSURANCE RATE MAP (FIRM) #26093C0307D (COMMUNITY ID NO. 260843 - TOWNSHIP OF GENOA, MI) WITH AN EFFECTIVE DATE OF SEPTEMBER 17, 2008. THIS STATEMENT IS BASED ON THE RESULTS OF GRAPHIC PLOTTING ONTO THE ABOVE NAMED MAP AND PANEL WHICH IS THE CURRENT MAP FOR THE COMMUNITY IN WHICH THE PROPERTY IS LOCATED. ZONE "X" INDICATES AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

**NOTE:**

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.



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**811**  
 Know what's below  
 Call before you dig.

CLIENT: SCHAFFER CONSTRUCTION  
**DIMENSION & PAVING PLAN**  
 2630 GRAND RIVER AVE - PARCEL NO 4711-06-200-061  
 SECTION: 6 TOWNSHIP: 2 N RANGE: 5 E.  
 CHARTER TOWNSHIP OF GENOA LIVINGSTON COUNTY MICHIGAN

REVISED  
 2024-1-23 PER REVIEW  
 2024-2-16 PER REVIEW

DATE: 11-29-2023  
 DRAWN BY: RMS  
 CHECKED BY: DJL

SCALE: HOR 1"=30 FT.  
 VER 1"= 10 FT.

2  
 21-315



**BENCHMARKS:**

**SITE BM #1**  
RAILROAD SPIKE, SOUTH FACE OF UTILITY POLE ALONG THE EAST PROPERTY LINE OF #2630 E. GRAND RIVER AVENUE, 192'± SOUTHWEST OF THE NORTHEAST PROPERTY CORNER. ELEVATION: 963.72 N.A.V.D.88

**SURVEY LEGEND**

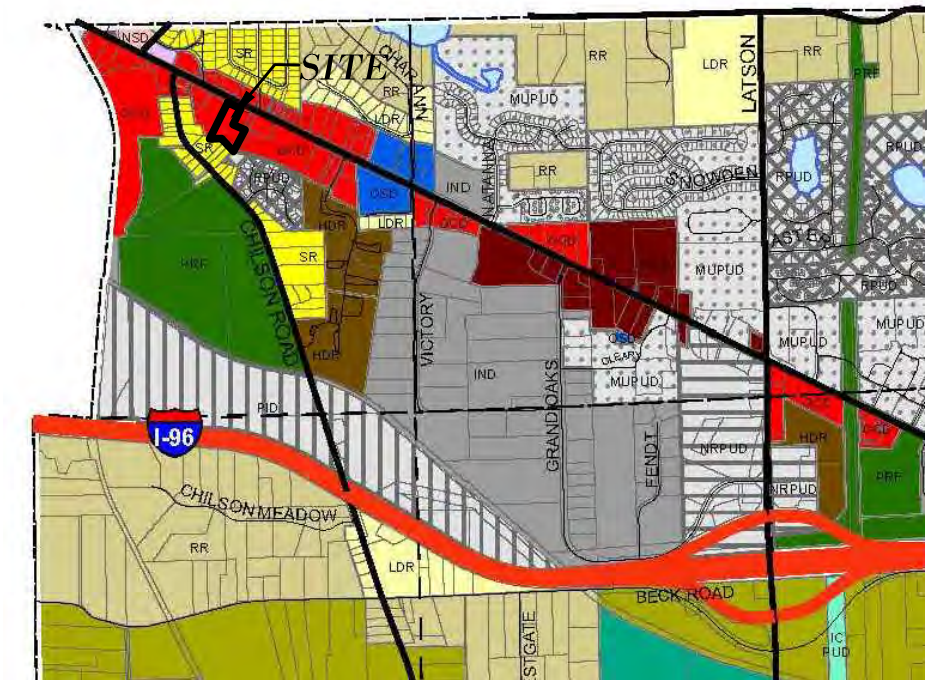
- EX. SECTION CORNER
- FIB/FCI/FIP/MON
- EX. MAILBOX
- EX. SOIL BORE
- EX. SIGN
- EX. FIBER MARKER
- EX. SANITARY MANHOLE
- EX. CATCH BASIN
- EX. STORM MANHOLE
- EX. HYDRANT
- EX. GATE VALVE & WELL
- EX. WATER SHUT-OFF
- EX. LIGHT POLE
- EX. UTILITY POLE
- EX. PEDISTAL
- EX. HAND HOLE
- EX. UTILITY FLAG
- EX. COMMUNICATIONS
- EX. SANITARY SEWER
- EX. GAS LINE
- EX. WATER MAIN
- EX. OVERHEAD UTILITIES
- EX. FENCE
- EX. SWALE
- WETLAND BOUNDARY
- 590- CONTOUR MAJOR
- 591- CONTOUR MINOR
- EX. ZONING
- EX. TREELINE
- EX. CONIFEROUS
- EX. DECIDUOUS

**FLOOD HAZARD STATEMENT:**

THIS PROPERTY IS LOCATED WITHIN A FEMA DESIGNATED ZONE X FLOOD HAZARD AREA AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP) FOR MICHIGAN FLOOD INSURANCE RATE MAP (FIRM) #2609303070 (COMMUNITY ID NO. 260843 - TOWNSHIP OF GENOA, MI) WITH AN EFFECTIVE DATE OF SEPTEMBER 17, 2008. THIS STATEMENT IS BASED ON THE RESULTS OF AERIAL PLOTTING ONTO THE ABOVE NAMED MAP AND PANEL, WHICH IS THE CURRENT MAP FOR THE COMMUNITY IN WHICH THE PROPERTY IS LOCATED. ZONE "X" INDICATES AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

**DEMOLITION LEGEND:**

- CURB REMOVAL
- ASPHALT REMOVAL
- CONCRETE PAVEMENT AND SIDEWALK/BRICK REMOVAL



**Zoning Map**  
Genoa Charter Township  
Livingston County, Michigan

- Legend**
- AG
  - CE
  - RR
  - LDR
  - SR
  - LRR
  - UR
  - MDR
  - HDR
  - RPUD
  - MHP
  - RC
  - GC
  - NS
  - OS
  - NRPUD
  - IND
  - PID
  - PRF
  - MUPUD
  - RDPUD
  - Town Center
  - CAPUD
  - ICPUD

**NOTE:**

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**NOTE:**  
PROTECT ALL OFF SITE FEATURES ADJACENT TO PERIMETER PROPERTY LINES. THESE INCLUDE BUT ARE NOT LIMITED TO LANDSCAPING, OVERHEAD UTILITIES, CONCRETE PAVEMENT, ELECTRICAL BOXES ETC. COORDINATE WITH ADJACENT LANDOWNER AS REQUIRED DURING CONSTRUCTION.

**CAUTION!!!**  
UNDERGROUND UTILITIES PRESENT WITHIN INFLUENCE OF WORK AREA. LOCATE AND PROTECT DURING CONSTRUCTION.

EXISTING TREES TO BE RELOCATED ON SITE

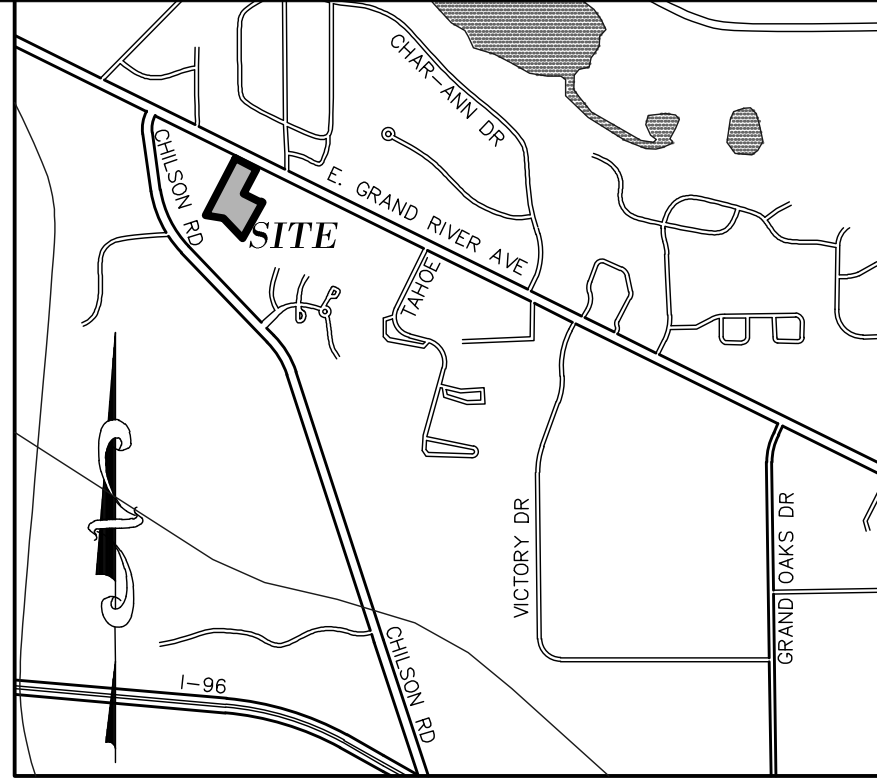
REMOVE EXISTING CURB & GUTTER

EXISTING PAVEMENT THIS AREA TO REMAIN

**DESCRIPTION: PARCEL #4711-06-200-061 (By OTHERS)**

PART OF THE NORTHEAST 1/4 OF SECTION 6, T2N-R5E, GENOA TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE EAST 1/4 CORNER OF SAID SECTION 6; THENCE N02°17'07"E 594.63 FEET TO THE CENTERLINE OF GRAND RIVER AVENUE THENCE N60°39'00"W ALONG SAID CENTERLINE 2381.67 FEET; THENCE CONTINUING ALONG SAID CENTERLINE N60°06'45"W 224.71 FEET; THENCE S29°41'36"W 289.33 FEET TO THE POINT OF BEGINNING; THENCE S60°33'15"E 18.00 FEET; THENCE S29°41'36"W 373.99 FEET; THENCE N70°44'43"W 11.82 FEET; THENCE N41°34'10"W 256.11 FEET; THENCE N79°03'54"W 162.46 FEET; THENCE N29°41'36"E 586.68 FEET TO THE SOUTHERLY RIGHT-OF-WAY OF GRAND RIVER AVENUE; THENCE ALONG SAID RIGHT-OF-WAY S60°06'45"E 211.40 FEET; THENCE CONTINUING ALONG RIGHT-OF-WAY ALONG THE ARC OF A CURVE LEFT CHORD BEARING S60°06'50"E 3.60 FEET; THENCE S29°41'36"W 250.00 FEET; THENCE S60°10'24"E 175.00 FEET; THENCE N29°41'36"E 10.49 FEET TO THE POINT OF BEGINNING, CONTAINING 4.24 ACRES, MORE OR LESS, AND SUBJECT TO ANY EASEMENTS OR RESTRICTIONS OF RECORD. SPLIT FROM D19 EXCEPTING THE NORTHEASTERLY 20 FEET AND PARALLEL TO GRAND RIVER, AS DEEDED TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION CORR 3/2014.

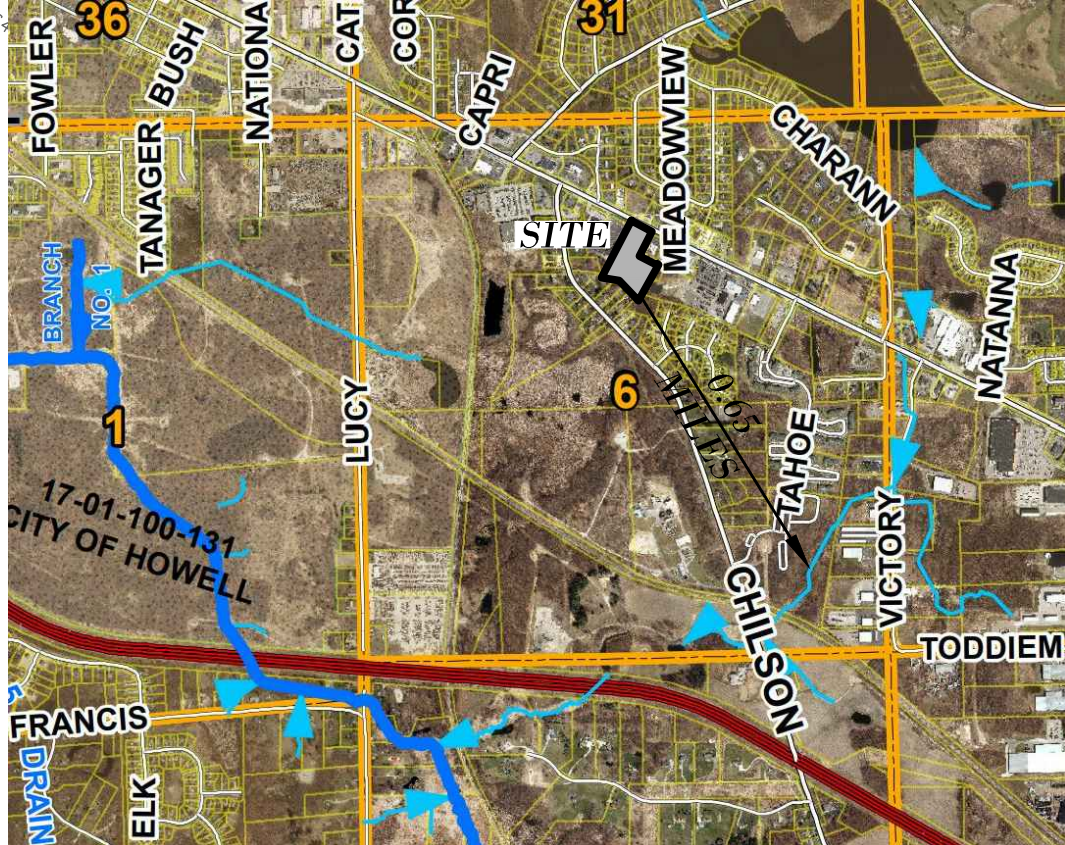
CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	3.60	85,993.70'	00°00'09"



**DEMOLITION NOTES:**

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:

- ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
- ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
- STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
- SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
- REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES FOUNDATIONS, FOOTINGS, FOUNDATION WALLS, FLOOR SLABS, UNDERGROUND UTILITIES, CONCRETE, ASPHALT, TREES, ETC.
- REFER TO LANDSCAPE PLANS FOR TREE PROTECTION DETAILS.
- THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15' OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) LATEST EDITION.
- THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANIES TO CONFIRM THAT UTILITY LEADS HAVE BEEN TAKEN OUT OF SERVICE PRIOR TO DEMOLITION, AS APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY MISS DIG, GENOA TOWNSHIP ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.



**TRIBUTARY MAP**



Livingston County, Michigan (MI093)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FrB	Fox-Boyer complex, 2 to 6 percent slopes	5.7	19.4%
Frc	Fox-Boyer complex, 6 to 12 percent slopes	2.6	8.9%
MoB	Wawasee loam, 2 to 6 percent slopes	20.6	70.0%
MoC	Wawasee loam, 6 to 12 percent slopes	0.5	1.8%
<b>Totals for Area of Interest</b>		<b>29.5</b>	<b>100.0%</b>

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CIVIL ENGINEERS & LAND SURVEYORS  
5114 E. Perlic Dr., Genoa, MI 48833  
Phone: (248) 668-0700 Fax: (248) 668-0701

**811**  
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**EXISTING CONDITIONS & DEMOLITION PLAN**  
2630 GRAND RIVER AVE - PARCEL NO 4711-06-200-061  
SECTION: 6 TOWNSHIP: 2 N RANGE: 5 E  
LIVINGSTON COUNTY MICHIGAN

CLIENT: SCHAFFER CONSTRUCTION

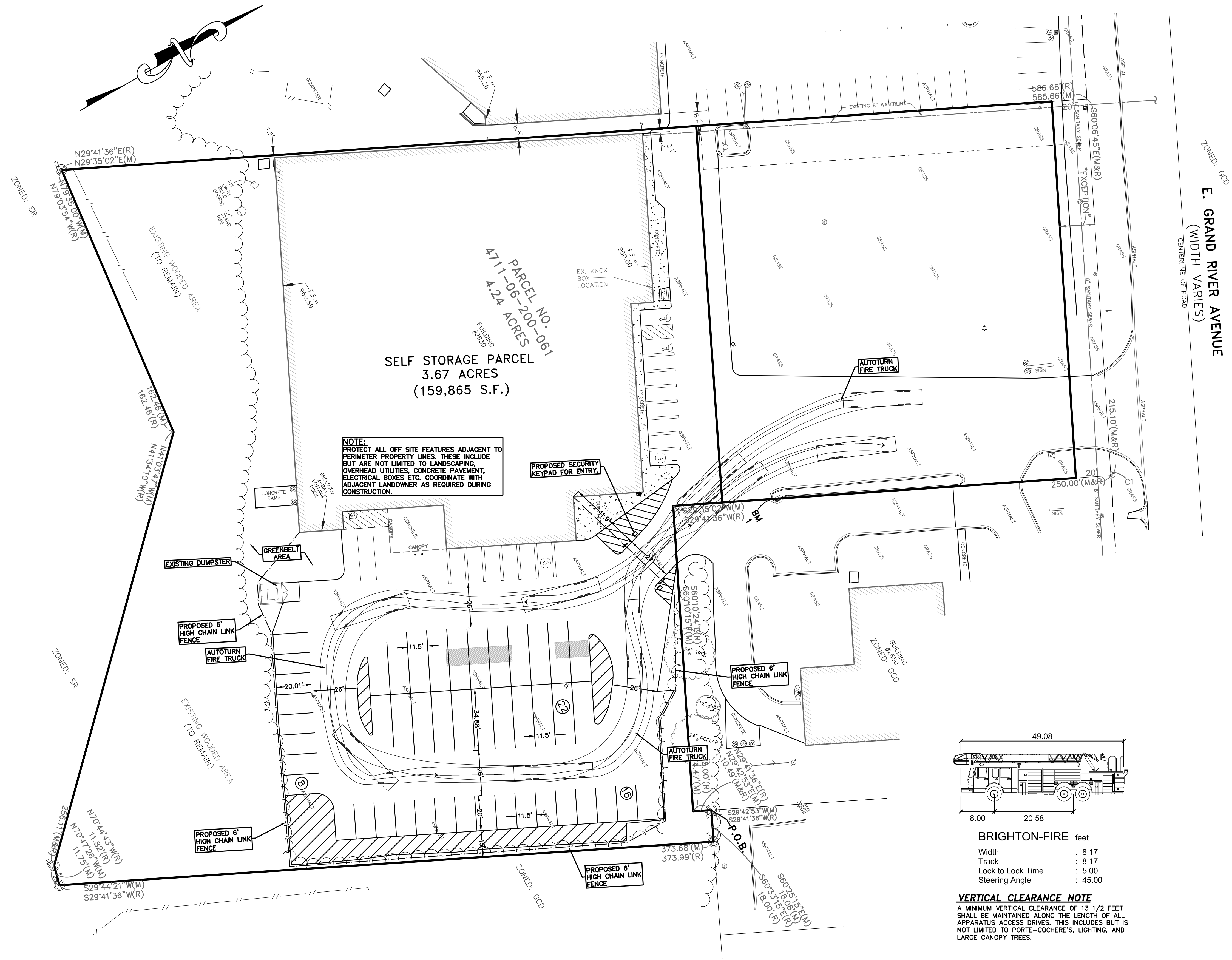
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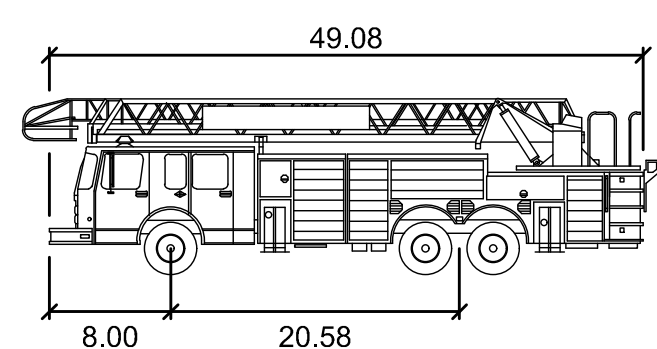
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3  
21-315





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**BRIGHTON-FIRE** feet  
 Width : 8.17  
 Track : 8.17  
 Lock to Lock Time : 5.00  
 Steering Angle : 45.00

**VERTICAL CLEARANCE NOTE**  
 A MINIMUM VERTICAL CLEARANCE OF 13 1/2 FEET SHALL BE MAINTAINED ALONG THE LENGTH OF ALL APPARATUS ACCESS DRIVES. THIS INCLUDES BUT IS NOT LIMITED TO PORTE-COCHERE'S, LIGHTING, AND LARGE CANOPY TREES.

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ZONED: GCD  
**E. GRAND RIVER AVENUE**  
 (WIDTH VARIES)  
 CENTRELINE OF ROAD

**GREENTECH**  
 ENGINEERING, INC.  
 CIVIL ENGINEERS & LAND SURVEYORS

RESIDENTIAL  
 COMMERCIAL  
 SURVEYING  
 CONSTRUCTION

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 Phone: (248) 668-0700 Fax: (248) 668-0701

**811**  
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CLIENT: SCHAFER CONSTRUCTION

**CIRCULATION PLAN**

2630 GRAND RIVER AVE - PARCEL NO 4711-06-200-061  
 SECTION: 6 TOWNSHIP: 2 N RANGE: 5 E.  
 CHARTER TOWNSHIP OF GENOA  
 LIVINGSTON COUNTY  
 MICHIGAN

REVISED  
 2024-1-23 PER REVIEW  
 2024-2-16 PER REVIEW

DATE: 11-29-2023  
 DRAWN BY: RMS  
 CHECKED BY: DJL

SCALE: HOR 1"=30 FT.  
 VER 1"= 4 FT.

4  
 21-315





**Specifications**

EPA: 1.01 ft<sup>2</sup>/watt  
 Length: 23 3/4"  
 Width: 13"  
 Height H1: 7-1/2"  
 Height H2: 3-1/2"  
 Weight (max): 27 lbs

**Introduction**

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 750W metal halide in pedestrian and area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

**Ordering Information** EXAMPLE: DSX1 LED P7 40K TSM MVOLT SPA NLTAIR2 PIRHN DBXBD

Series	SKU	LED Alternative	Fix Alternative	Mounting
DSX1 LED	Forward optics P1 P4 P7 P2 P3 P8	40K 4000K 50K 5000K	T15 Taper (short) TSM (symmetric) TSM Taper (medium) TSM Taper (wide) TSM Taper (short) TSM Taper (medium) TSM Taper (wide) TSM Taper (short) TSM Taper (medium) TSM Taper (wide)	MVOLT1 3000 3000 3000 3000 3000 3000 3000 3000 3000 3000

Option	Description	Value	Unit
SHIPPED INSTALLED	Shipped installed	DBXBD	Dark bronze
FINISH	Finish	PIRHN	Black
WARRANTY	Warranty	W1	1 Year

LITHONIA LIGHTING  
 One Lithonia Way • Conyers, Georgia 30012 • Phone: 1-800-255-5878 (7246)  
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**Specifications**

Front View Side View

Model	Height (ft)	Width (ft)	Depth (ft)	View Cutoff Lumens	Watts	Watt/ft <sup>2</sup>
WPX1	4.17 (12.81m)	11.1 (3.38m)	3.7 (1.13m)	4.17 (12.81m)	8.1 (23.8W)	6.1 (18.2lm/ft <sup>2</sup> )
WPX2	5.17 (15.81m)	12.5 (3.81m)	4.17 (12.81m)	4.17 (12.81m)	15.2 (45.6W)	6.2 (18.6lm/ft <sup>2</sup> )
WPX3	6.5 (19.81m)	13.8 (4.20m)	5.5 (1.67m)	4.17 (12.81m)	21.7 (65.1W)	11.0 (31.9lm/ft <sup>2</sup> )

**Introduction**

The WPX LED wall packs are energy-efficient, cost-effective, and aesthetically appealing solutions for both HID wall pack replacement and new construction opportunities. Available in three sizes, the WPX family delivers 1,550 to 9,200 lumens with a wide, uniform distribution.

The WPX full cut-off solutions fully cover the footprint of the HID glass wall packs that they replace, providing a neat installation and an upgraded appearance. Reliable IP66 construction and excellent LED lumen maintenance ensure a long service life. Photocell and emergency egress battery options make WPX ideal for every wall mounted lighting application.

**Ordering Information** EXAMPLE: WPX2 LED 40K MVOLT DBXBD

Series	Lumen	Color Temperature	Voltage	Options	Finish
WPX1 LED P1	1,550 Lumens, 10W	30K 3000K	MVOLT 120V / 277V	None	DBXBD Dark bronze
WPX1 LED P2	3,000 Lumens 20W	40K 4000K	347 347V	Emergency battery backup, EBC compliant, 40K (TSM)	DBXBD Black
WPX2 LED	6,000 Lumens 40W	50K 5000K		Emergency battery backup, EBC compliant, 10W, 20W (TSM)	None: For other options, consult factory.
WPX3 LED	9,200 Lumens 60W			FE (Photocell)	

Note: The lumen output and input power shown in the ordering table are average representations of all configuration options. Specific values are available on request.

**FEATURES & SPECIFICATIONS**

**FINISHED LUMEN**  
 The WPX LED wall packs are designed to provide a cost-effective, energy-efficient solution for the long-term replacement of outdoor wall packs. The WPX1, WPX2 and WPX3 are ideal for replacing up to 150W, 300W, and 400W HID luminaire respectively. WPX luminaire deliver a uniform wide distribution.

**CONSTRUCTION**  
 WPX feature a one-piece aluminum main body with optional thermal management that both enhances LED efficacy and extends component life. The luminaires are IP66-rated and sealed against moisture or environmental contaminants.

**ELECTRICAL**  
 Light-emitting diode configurations consist of high-efficiency LEDs and LED driver maintenance of up to 100,000 hours. Color temperature (CCT) options of 3000K, 4000K and 5000K are available. CCT of 5000K provides superior energy savings. Power factor > 0.95. All luminaires have a 5-year warranty with an optional 10-year warranty available for a limited time.

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**Schedule**

Symbol	Label	QTY	Manufacturer	Catalog Number	Lamp	LLF
P1	P1	3	Lithonia Lighting	DSX1 LED 40K MVOLT	LED	0.9
P2	P2	2	Lithonia Lighting	DSX1 LED 40K MVOLT	LED	0.9
W2	W2	3	Lithonia Lighting	WPX2 LED 40K Mvolt	LED	0.9

**Statistics**

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max
EAST PARKING LOT	+	1.0 fc	4.8 fc	0.1 fc	48.0:1	10.0:1	0.2:1
Grade @ 0'	+	0.3 fc	6.2 fc	0.0 fc	N/A	N/A	0.0:1
PARKING	+	0.8 fc	4.4 fc	0.0 fc	N/A	N/A	0.2:1
PROPERTY LINE	+	0.1 fc	0.7 fc	0.0 fc	N/A	N/A	0.1:1

**General Note**

1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.  
 2. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0"

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

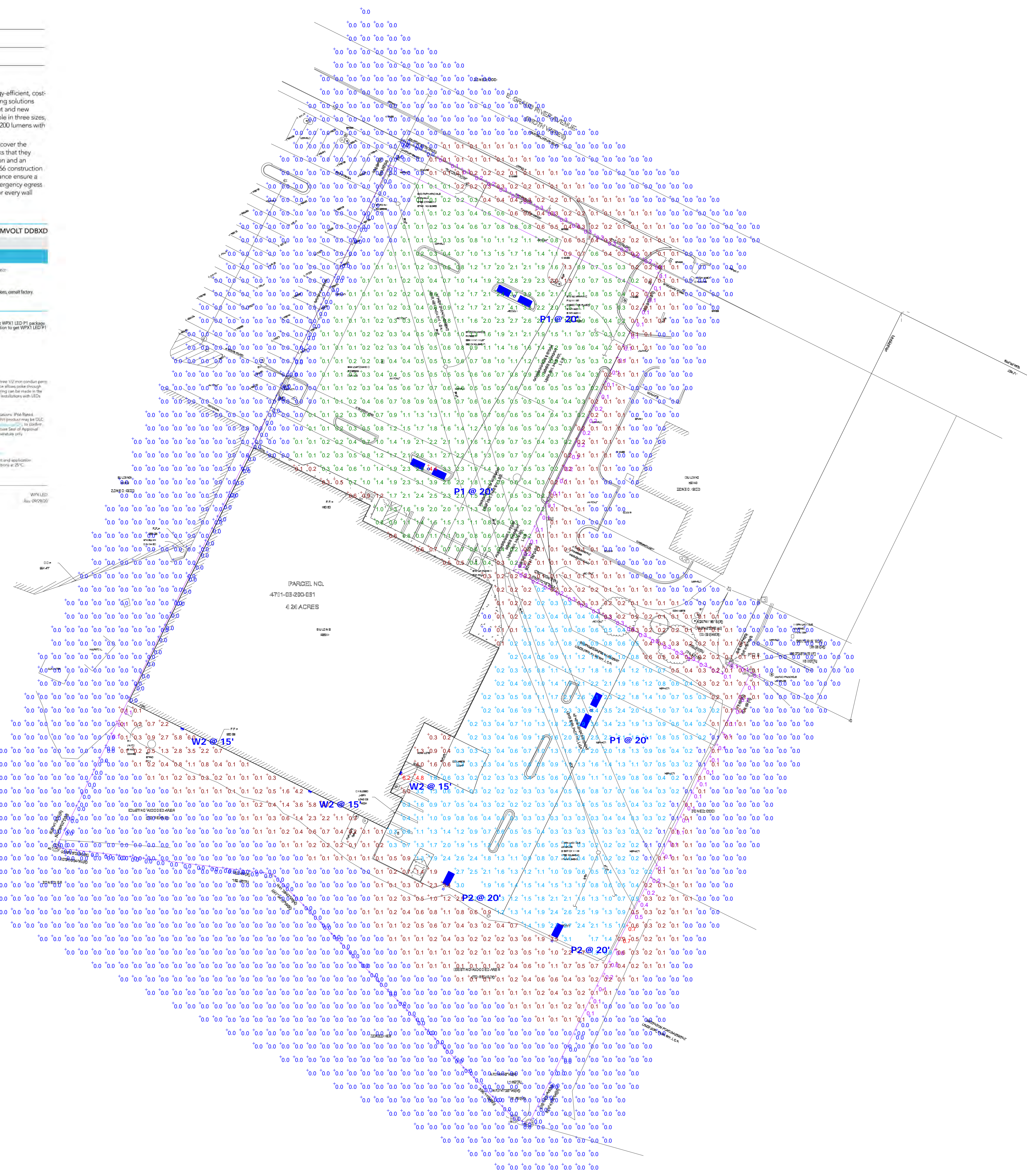
UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIREMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705.

**Alternates Note**  
 THE USE OF FIXTURE ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.

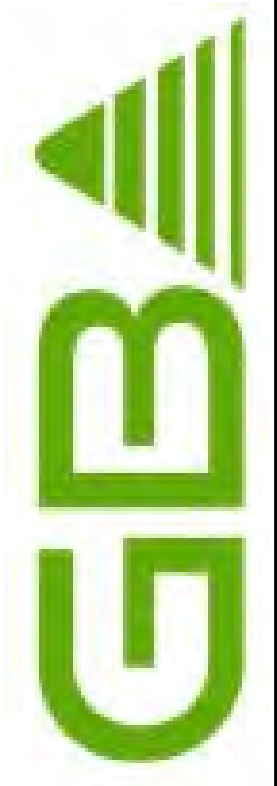
**Mounting Height Note**  
 MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

**Ordering Note**  
 FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

**Drawing Note**  
 THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.



**Plan View**  
 Scale - 1" = 40ft



2630 GRAND RIVER AVE  
 PHOTOMETRIC SITE PLAN  
 PREPARED FOR: GREENTECH ENGINEERING  
 GASSER BUSH ASSOCIATES  
 WWW.GASSERBUSH.COM

**Designer**  
 DB/DS/KB  
**Date**  
 1/27/2022  
 rev. 2/24/2022  
 rev. 5/4/2022  
 rev. 8/24/2022  
 rev. 10/6/2022  
 rev. 7/21/2023  
 rev. 7/27/2023  
**Scale**  
 Not to Scale  
**Drawing No.**  
 #22-71398-V7  
**1 of 1**



**GENOA CHARTER TOWNSHIP  
PLANNING COMMISSION  
PUBLIC HEARING  
February 12, 2024**

**MINUTES**

CALL TO ORDER: Chairman Grajek called the meeting of the Genoa Charter Township Planning Commission to order at 6:30 p.m. Present were Eric Rauch, Tim Chouinard, Glynis McBain, Marianne McCreary, Greg Rassel and Jeff Dhaenens. Absent was Eric Rauch. Also present were Planning Director Amy Ruthig, Brian Borden of Safebuilt, and Shelby Byrne of Tetra Tech.

PLEDGE OF ALLEGIANCE: The pledge of allegiance was recited.

APPROVAL OF AGENDA:

**Moved** by Commissioner Rassel, seconded by Commissioner Dhaenens, to approve the agenda as presented. **The motion carried unanimously.**

ELECTION OF OFFICERS:

**Moved** by Commissioner McBain, seconded by Commissioner Rassel, to maintain the current officer positions. **The motion carried unanimously.**

DECLARATION OF CONFLICT OF INTEREST:

None

CALL TO THE PUBLIC:

The call to the public was made at 6:32 pm with no response.

OLD BUSINESS:

**OPEN PUBLIC HEARING #1...REQUEST TO POSTPONE PER TOWNSHIP STAFF**

**RECOMMENDATION-** Consideration of a special land use application, environmental impact assessment and site plan to allow for a proposed automatic car wash located on vacant parcel #4711-04-300-017 Latson Road, east side of Latson Road, south side of Grand River Avenue. The request is petitioned by CWP West, LLC.

- A. Recommendation of Special Use Application.
- B. Recommendation of Environmental Impact Assessment (1-16-24)
- C. Recommendation of Site Plan (1-16-24)

The call to the public was opened at 6:33 pm with no response.

**Moved** by Commissioner Rassel, supported by Commissioner Chouinard, to postpone Open Public Hearing #1. **The motion carried unanimously.**

**OPEN PUBLIC HEARING #2...REQUEST TO POSTPONE PER TOWNSHIP STAFF**

**RECOMMENDATION-** Consideration of a special land use application, environmental impact assessment and site plan to allow for a proposed multi-tenant commercial center including a drive through coffee shop and outdoor seating restaurant located on vacant parcels#:4711- 04-300-017 and 4711-09-100-017 Latson Road, east side of Latson Road, south side of Grand River Avenue. The request is petitioned by Kevin Bahnam, 1015 Latson Road LLC.

- A. Recommendation of Special Use Application.
- B. Recommendation of Environmental Impact Assessment (1-16-24)
- C. Recommendation of Site Plan (1-16-24)

The call to the public was opened at 6:34 pm with no response.

**Moved** by Commissioner Rassel, supported by Commissioner Chouinard, to postpone Open Public Hearing #2. **The motion carried unanimously.**

**OPEN PUBLIC HEARING # 3...**Consideration of a site plan application, environmental impact assessment and site plan for an expansion, remodel and exterior site improvements for the existing Arby's Restaurant located at 3639 E. Grand River Avenue, between Grand Oaks Drive and Cleary Drive. The request is petitioned Chew Inc, dba Arby's.

- A. Recommendation of Environmental Impact Assessment (12-13-23)
- B. Disposition of Site Plan (12-13-23)

Ms. Cheryl Ball, the architect, and Mr. Joe Crawford, the owner, were present.

Ms. Ball stated they have altered the stacking spaces, changed the parking to meet the requirements, and updated the landscaping plan. They will be removing the pole sign and installing a monument sign. They presented colored renderings, colored photographs showing a newly built Arby's restaurant, which has the materials they would like to use, and sample building materials.

Mr. Borden stated they have met the vehicle parking requirements, but they do not have the RV and semi parking requirements. They do not have that currently so it is an existing condition. He noted the petitioner did a good job meeting his requirements. He reviewed his letter dated February 6, 2024:

1. A variance is needed to match the nonconforming rear yard setback. Ms. Ball stated they have received ZBA approval.
2. Building materials and color scheme are subject to approval by the Planning Commission, noting they do not completely meet the ordinance, but this is a remodel and they are



matching existing materials. Mr. Crawford stated they are proposing to remove all of the EFIS material.

3. He suggests additional shrubs be provided to fill in the gap near the sidewalk connection.
4. Required landscape buffer zone areas are deficient in both widths and plantings; however, the Commission may waive or modify the landscaping requirements, per Section 12.02.13. He noted that there are two greenbelt trees missing. He suggests those be added.
5. There are minor discrepancies between the plant schedule and landscape plan that need to be corrected.
6. The Planning Commission may allow a second wall sign.
7. The applicant must address any comments provided by the Township Engineer and/or the Brighton Area Fire Authority

The petitioner agreed to the landscape and tree planting requirements.

Ms. Byrne's letter stated that the petitioner has addressed her concerns, however, the proposed angled parking adjacent to the drive-through results in a drive aisle less than the required 15 feet. The proposed configuration matches the existing parking layout and there does not appear to be any current issue with vehicle circulation as a result so she has no concerns.

The Brighton Area Fire Authority Fire Marshals letter dated February 2, 2024 states that all his previous concerns have been addressed.

The call to the public was opened at 6:54 pm with no response.

Commissioner Dhaenens does not agree that the two trees need to be added and he would approve two building signs. Commissioner McBain agrees. Commissioner Chouinard agreed that the bushes should be added, but no additional trees are needed.

**Moved** by Commissioner Dhaenens, supported by Commissioner Rassel, to recommend to the Township Board approval of the Environmental Impact Assessment dated December 13, 2023 for an expansion, remodel and exterior site improvements for the existing Arby's Restaurant located at 3639 E. Grand River Avenue. **The motion carried unanimously.**

**Moved** by Commissioner Dhaenens, supported by Commissioner Rassel, to approve the Site Plan dated January 22, 2014 for an expansion, remodel and exterior site improvements for the existing Arby's Restaurant located at 3639 E. Grand River Avenue, with the following conditions:

- The requirement for the landscaping per section 12.02.13 is deficient; however, the Planning Commission will allow for shrubs and no canopy trees to be planted. The revised plan shall be reviewed and approved by township staff.
- The applicant is permitted to decrease the amount of EFIS on the building. The revision shall be reviewed and approved by township staff.
- A second wall sign is permitted.

- The building materials presented this evening are acceptable.  
**The motion carried unanimously.**

NEW BUSINESS:

**OPEN PUBLIC HEARING #4...**Consideration of a special land use application, environmental impact assessment and site plan to use the existing building at 2464 Dorr Road (formerly occupied by Humane Society) as a philanthropic or nonprofit center to assist individuals with social needs. The property is located on the west side of Dorr Road, north of I-96 on parcel #4711-15-200-019 and the request is petitioned by The Salvation Army of Livingston County.

- A. Recommendation of Special Use Application
- B. Recommendation of Environmental Impact Assessment (12-11-23)
- C. Recommendation of Site Plan (1-19-24)

Mr. David Barner, the attorney for the Salvation Army, Lieutenant Colonel Steven Merritt, Lieutenants Roberts and Leach, who would be the core commanders at this location, and Ms. Kelly Wirebaugh, Divisional Property Manager, were present.

He stated the property will be used as a core center. It will have a church and will provide many social services.

Mr. Borden reviewed his letter dated February 1, 2024.

1. Special Land Uses (Section 19.03):
  - a. The special land use standards of Section 19.03 are generally met.
  - b. The applicant must address any comments provided by the Township Engineer or Brighton Area Fire Authority regarding public facilities and services.
2. Outdoor Storage (Section 8.02.02(n)):
  - a. The subject site does not meet the 500-foot spacing from residential zoning. He noted that the applicant intends to apply to the ZBA for a variance. Ms. Wirebaugh stated they will apply for the variance after the purchase of the property is complete.
3. Site Plan Review:
  - a. If parking lot improvements are proposed, the applicant should be required to provide looped striping for parking spaces.
  - b. Removal of the existing structures associated with the Humane Society needs to be noted on the site plan. He stated the applicant has indicated they will be removed; however, it is still shown on the site plan.
  - c. The applicant must address any comments provided by the Township Engineer and/or the Brighton Area Fire Authority.



Ms. Byrne reviewed her letter dated February 5, 2024.

1. The petitioner will need to obtain approval from the Brighton Area Fire Authority prior to final site plan approval.
2. The impact assessment states that the site will be serviced by existing well and septic. The petitioner has noted that they will pursue approval from the Livingston County Health Department for the potential increased use of the existing facilities and approval should be provided to the Township for their records.
3. The existing site drive is close to the Dorr Road and I-96 overpass. The petitioner should confirm with the Livingston County Road Commission that sight distance is adequate at the current drive location and provide that approval to the Township for their records.

She added that the petitioner should provide a cross section of the proposed sidewalk for engineering review.

The Brighton Area Fire Authority Fire Marshal's letter dated February 2, 2024 states that the applicant has or will comply with his concerns. Item #5 states:

5. During the construction process, the building will be evaluated for emergency responder radio signal strength. If coverage is found to be questionable or inadequate; the contractor or the building owner shall hire an approved contractor to conduct a grid test of the facility. If the signal strength coverage is found to be non-compliant, an approved emergency responder radio coverage system shall be provided in the building. (There is a note directed toward the owner's rep regarding this note. This will be resolved during the life safety review with the architectural firm.)

Commissioner Dhaenens questioned if the parking is adequate for large events being held at the building. Ms. Wirebaugh stated that during holidays, they may need to use the greenspace for parking. He stated the township does not like to encourage parking on the grass. He asked the applicant to look into the parking further.

Commissioner McCreary thanked the applicant for the services they provide for the community as they are much needed. She reiterated Commissioner Dhaenens' concerns regarding parking. Ms. Wirebaugh stated that during the week, people visit by appointment only. Lieutenant Colonel Merritt stated they have a maximum number of people who can attend each event.

Mr. Barner stated that the current size of the parking is adequate for their existing services. If the need increases and they require more parking, they will return to the township.

The call to the public was opened at 7:20 pm

Mr. David Yancho of 5658 Evergreen Knoll, is a member of the Salvation Army Board. The services provided here are different from the Salvation Army thrift store. The church only

services a handful of families so it is not a typical church. He reiterated that the parking is sufficient for their current needs for other larger events.

Ms. Marlene Poff with the Salvation Army stated that parents drop off their children for the youth programs so there is no parking needed for that. They usually only have three to four clients in their building at one time.

Mr. Brian Kazak of 11236 Doves Mead, who is on the Salvation Army Board, stated the current location uses 6-8 spaces on a Sunday and this new parking lot doubles this. The appointments are usually one-on-one, and not groups.

The call to the public was closed at 7:25 pm.

Commissioner Chouinard thanked the public for the clarification on the parking needs.

**Moved** by Commissioner Dhaenens, supported by Commissioner Chouinard, to recommend to the Township Board approval of the Special Use Application to use the existing building at 2464 Dorr Road (formerly occupied by Humane Society) as a philanthropic or nonprofit center to assist individuals with social needs for the Salvation Army of Livingston County, with the following conditions:

- The special land use standards of Section 19.03 are generally met.
- The applicant will address the township engineer and Brighton Area Fire Authority Fire Marshal's concerns.
- The applicant shall obtain a variance from the ZBA for the lack of 500-foot spacing from residential zoning.

**The motion carried unanimously.**

**Moved** by Commissioner Dhaenens, supported by Commissioner Chouinard, to recommend to the Township Board approval of the Environmental Impact Assessment dated December 11, 2023 to use the existing building at 2464 Dorr Road (formerly occupied by Humane Society) as a philanthropic or nonprofit center to assist individuals with social needs for the Salvation Army of Livingston County. **The motion carried unanimously.**

**Moved** by Commissioner Dhaenens, supported by Commissioner Chouinard, to recommend to the Township Board approval of the Site Plan dated January 19, 2024 to use the existing building at 2464 Dorr Road (formerly occupied by Humane Society) as a philanthropic or nonprofit center to assist individuals with social needs for the Salvation Army of Livingston County, with the following conditions:

- If there are improvements to the parking the applicant will receive approval from the Township and it will require looped parking spaces.
- All of the existing structures shall be removed, with the exception of the garage.



- The applicant shall comply with the conditions of the Brighton Area Fire Authority Fire Marshal.
- The applicant shall provide the cross section details of the proposed sidewalk for the township engineer's review and approval.

**The motion carried unanimously.**

ADMINISTRATIVE BUSINESS:

**Staff Report**

Ms. Ruthig stated there is a Planning Commission meeting tomorrow. Commissioner Dhaenens will not be in attendance.

There may be four items on the March meeting agenda.

**Approval of the January 8 and January 9, 2024 Planning Commission meeting minutes**

One needed change was noted.

**Moved** by Commissioner McCreary, seconded by Commissioner Dhaenens, to approve the minutes of the January 8, 2024 Planning Commission Meeting as amended. **The motion carried unanimously.**

**Moved** by Commissioner McCreary, seconded by Commissioner Rassel, to approve the minutes of the January 9, 2024 Planning Commission Meeting as presented. **The motion carried unanimously.**

**Member Discussion**

There were no items to discuss this evening.

**Adjournment**

**Moved** by Commissioner McCreary, seconded by Commissioner Rassel, to adjourn the meeting at 7:39 pm. **The motion carried unanimously.**

Respectfully Submitted,

Patty Thomas, Recording Secretary

**GENOA CHARTER TOWNSHIP  
PLANNING COMMISSION  
PUBLIC HEARING  
FEBRUARY 13, 2024  
MINUTES**

**CALL TO ORDER:** Chairman Grajek called the meeting of the Genoa Charter Township Planning Commission to order at 6:30 p.m. Present were Commissioners Chris Grajek, Eric Rauch, Tim Chouinard, Glynis McBain, Marianne McCreary, and Greg Rassel. Absent was Jeff Dhaenens. Also present were Planning Director Amy Ruthig, Brian Borden of SafeBuilt, and Shelby Byrne of Tetra Tech.

**PLEDGE OF ALLEGIANCE:** The pledge of allegiance was recited.

**APPROVAL OF AGENDA:** Moved by Commissioner Rassel, seconded by Commissioner Rauch, to approve the agenda as presented. The motion carried unanimously.

**DECLARATION OF CONFLICT OF INTEREST:** None

**CALL TO THE PUBLIC:** The call to the public was made at 6:31 pm with no response.

**OLD BUSINESS:**

**OPEN PUBLIC HEARING #1...**Consideration of a site plan application, environmental impact assessment and site plan for a proposed car wash with 2 automatic bays, 4 self-service bays and 5 vacuum stations located within the existing Genoa Outlots PUD. The property is located on a vacant 1.39-acre site (parcel#4711-09-200-028), southwest corner of Grand River Avenue and Lawson Drive. The request is petitioned by Springborn Properties.

- A. Recommendation of Environmental Impact Assessment (1-23-24)
- B. Recommendation of Site Plan (1-23-24)

Patrick Cleary of Boss Engineering, Dave Richardson of Lindhout and Associates and Russell Springborn of Springborn Properties were present for the applicant.

Mr. Richardson gave an overview of the revisions that have been made since the last Planning Commission meeting in January. After receiving great feedback from the Commissioners, the building has been rotated 90 degrees which allows the 15- car stacking requirement to be met, allows for less pavement and for the brick gable with windows to be facing Grand River Avenue. The trench drains have been eliminated. The vacuum hoods will be black instead of blue. Mr. Cleary clarified that the renderings in the packet will need to be updated since the building was rotated.

Commissioner Rauch asked the applicant if the glass on the north elevation could be increased and if someone could see through the windows from Grand River Avenue. Mr. Richardson stated that mechanical units were in the location of the windows and would not be visible. The windows could be 50% higher with the addition of square transom windows. Commissioner Rauch believes that would be a great addition with some landscaping along the Grand River Avenue frontage.



Mr. Borden reviewed his letter dated February 6, 2024:

1. The use conditions for the car wash is mostly met however the self-service bays are not within a completely enclosed building. The applicant could apply for a variance or the Planning Commission could determine that. There was discussion as to how to handle the bays not being enclosed.
2. The applicant must identify the proposed color for the vacuum stations. Mr. Springborn stated that the color will be black instead of blue on the vacuums.
3. The building materials and color scheme are subject to approval by the Planning Commission. He stated that the building materials are high in quality and more than what is required in the ordinance.
4. A traffic impact assessment is required, though the Planning Commission may waive or modify this requirement.
5. The lighting plan has inconsistencies on the number of fixtures and he would like to have that corrected.
6. The landscaping plan has a slight deficiency in width as well as tree plantings. The southerly greenbelt has deficiencies as well. In total, it is 4 trees short however there are an additional 87 shrubs more than what is required and it exceeds the ordinance standards. Mr. Rauch asked if they could add in the 4 trees as required. Mr. Springborn stated that he felt they did not need to due to the fact that they are over the shrub count. Mr. Rauch is comfortable with the deficiency in the 4 trees. It was the consensus that the commissioners are good with the number of shrubs and short 4 trees. Commissioner McCreary asked about the type and height of the shrubs. Mr. Springborn stated that the tallest of the shrubs are 4-5 feet and are a mixture of species to compliment the spruces.

Ms. Ruthig had questions about the lighting on the vacuums. Mr. Springborn stated that the LED lights will be under the canopies and they are designed to shine on the car and they are shielded with canvas and do not shine up. The lights are on timers. Commissioner Rauch stated that the vacuum lights would fall under the site lighting and shall meet the Township Ordinance.

The Commissioners discussed the use condition requirement of section 7.02.02 (l) that self-service bays must be fully enclosed. Mr. Rauch believes that with this style of operation, it would not make sense to be fully enclosed and that requiring the applicant to apply for a variance would be an encumbrance. With the addition of the higher quality materials being proposed and because of the inability to efficiently operate, the majority of the Commissioners find that it meets the spirit of the ordinance by everything that can be enclosed is in enclosed and the building materials exceed the Zoning Ordinance requirements.

A call to the public was made at 7:02 p.m. with the following response: Susan Nickels, 4935 Fairways Drive, Brighton, MI. stated that she has been through a couple of these meetings and she is impressed with how much thought the commissioners put into the projects. She asked how many car washes does the Township really need. She thanked the Commissioners for their thoughtfulness and how they take a look at what is happening. The call to the public was closed at 7:03 p.m.

Commissioner McCreary stated that she is not in favor of this project even though it is located in a Planned Unit Development. She commended the applicant on their plan however she is not in agreement that the use condition has been met. Commissioner McCreary questioned if the reason for a

car wash being allowed in the Planned Unit Development is because of what of the developer is trying to bring to the development by allowing self-service car washes because of the use requirement that self-service car washes would be fully enclosed.

**Moved** by Commissioner Rauch, supported by Commissioner Rassel, to recommend approval to the Township Board, the Environmental Impact Assessment dated January 23, 2024 as written. **The motion carried as follows: Ayes- Commissioner Rauch, Commissioner Grajek, Commissioner Rassel, Commissioner Chouinard, and Commissioner McBain. Nays- Commissioner McCreary.**

**Moved** by Commissioner Rauch, supported by Commissioner Rassel, to recommend approval to the Township Board, the Site Plan dated January 23, 2024 with the following conditions:

1. The use conditions 7.02.02 (l) of the Zoning Ordinance meets the intent of the ordinance by all possible features for the operations of the building are enclosed and the materials are equal to or higher quality than what the Zoning Ordinance requires.
2. The four windows along the Grand River Avenue elevation (North elevation) be increased in area by 20 percent.
3. All vacuum and external elements for the operation are to be black and all site lighting shall meet the Township standards are met.
4. The landscape plan that was submitted is acceptable due to the increased number of shrubs.
5. The elevation plans need to be corrected.
6. The easterly greenbelt is deficient in width and the Planning Commission finds it acceptable.

**The motion carried as follows: Ayes- Commissioner Grajek, Commissioner Rassel, Commissioner Chouinard, Commissioner McBain and Commissioner Rauch. Nays- Commissioner McCreary.**

**NEW BUSINESS:**

**OPEN PUBLIC HEARING #2...**Consideration of a sketch plan for a facade updates to the existing Discount Tire building located at 3480 E. Grand River Avenue, located on the northeast corner of Grand River Avenue and Grand Oaks Drive. The request is petitioned by Isaac Nagel.

- A. Disposition of Sketch Plan (11-21-23)

Darrin LaButte of Discount Tire and Charlie Kemp of JLL Construction were present for the applicant.

Mr. LaButte stated that the elevations that were included in the Commissioners' packet were incorrect and the applicant is not painting the building. It will remain as the current red brick. The dumpster enclosure is not being relocated and the current enclosure will be brought into compliance with the addition of gates. The landscape plan will be improved upon with the addition of 4 trees. The existing pole sign will be removed and a conforming monument sign will be installed under a separate sign permit.

Mr. Borden reviewed his letter dated February 8<sup>th</sup>, 2024:

1. Use Conditions:
  - a. The east building elevation appears to exceed the maximum allowance of 25% of composite and metal siding, the Commission has the discretion to modify these requirements.
2. Site Plan:



- b. A color rendering and/or color samples should be provided prior to making discretion decision about materials.
- c. Any landscaping that is in poor condition should be replaced as part of this project. Any landscaping on the original approved site plan that has been removed should also be replaced.
- d. Since applicant has stated that the dumpster is being relocated, then he does not believe that a truck turning template needs to be provided.
- e. It was encouraged that the applicant removes the non-conforming pole sign and replace it with a conforming monument sign.
- f. A second wall sign is allowed for corner lots.
- g. The applicant is required to obtain a sign permit from the Township prior to installation of any new signage.

Applicant showed color renderings to the Commissioners. The Commission requested that the color renderings be emailed to staff to be included in the record. It was stated that the roof top mechanicals will continue to be screened.

Commissioners discussed the non-conforming pole sign being replaced with a monument sign. Commissioners requested that due to the building being allowed two wall signs and allowed to be deficient in materials on the new façade, the pole sign will be removed and replaced with a monument sign in conformance with the Township Ordinance.

A call to the public was made at 7:25 p.m.

Moved by Commissioner Rauch, supported by Commissioner McCreary, to approve the Sketch Plan dated November 21, 2023 for 3480 E. Grand River Avenue with the following conditions:

1. The updated renderings emailed to staff on February 13, 2024 and that were presented to the Commissioners at the February 13, 2024 Planning Commission meeting are acceptable.
2. Existing dumpster enclosure is found to be acceptable and will be brought into conformance with the addition of gates.
3. Landscaping will be reviewed staff and if required will be brought into compliance.
4. Material color and samples are acceptable and the Commission acknowledges the deficiency in the required materials percentages and will allow it due to the monument sign will replace the existing non-conforming pole sign.
5. Applicant is required to submit for a sign permit for the new monument sign.

**OPEN PUBLIC HEARING #3**...Consideration of a site plan application, environmental impact assessment and site plan for the reconstruction of the Faulkwood Shores Clubhouse building located at 300 S. Hughes Road, west side of S. Hughes Road, north of Arrow Drive. The request is petitioned by Singh Development, LLC.

- A. Recommendation of Environmental Impact Assessment (11-29-23)
- B. Disposition of Site Plan (1-22-24)

Matt DeLapp of Singh Development and Jason Fleis of the Umlor Group were present for the petitioner.

Mr. DeLapp stated that the Faulkwood Golf Course has been a staple in the community since 1969 with 117 acres that include natural features. Singh Development has owned and operated the golf course since 2017. The clubhouse was destroyed by a fire in 2022 which is made this project necessary. Mr. DeLapp proceeded to give a presentation of their request indicating the parking has been expanded to enhance public safety and be brought closer into conformance with the Township Zoning Ordinance by adding additional parking spaces and lighting. The floor plan was designed based on the concept of the Links of Novi Clubhouse on a smaller scale, and closing off the overflow parking unless the parking lot is at capacity. In regards to the building materials, the applicant is proposing to construct a building with incorporated materials that will maintain the character of the neighbor and resemble a residential building.

Mr. Fleis gave a brief overview of the proposed drainage on the site in regards to the additional hard surface being proposed to the project and the addition of rain-gardens that will direct runoff to the existing basin.

The Commissioners discussed their concerns about the public safety of the overflow parking and how it was going to be managed. Mr. DeLapp stated that the employees will manage the overflow parking especially on the peak days and times. There is a gate that will be installed to prohibit anyone from parking in overflow lot unless necessary.

The applicant is working with the Livingston County Road Commission on how to enhance the crossing on Hughes Road for the golf carts. Additional signage and striping on Hughes Road will be added for public safety.

Commissioner Rauch asked when the landscaping plan and lighting plan will be submitted for review. Mr. Borden stated that the landscape plan was included in the original submittal however it was not part of the resubmittal. The original landscape plan did meet the Township Zoning Ordinance and lighting plan must be reviewed for compliance. Mr. DeLapp stated that there are no proposed revisions to the landscaping plan.

Mr. Borden reviewed his letter dated February 1, 2024:

1. Use Conditions:
  - a. A variance is required to allow the encroachment into the front yard setback. The applicant has obtained a variance from the Zoning Board of Appeals.
2. Site Plan Review:
  - b. The amount of fiber cement siding exceeds the ordinance. The Planning Commission has discretion to modify that requirement.
  - c. The Commission may wish to require improvements to the overflow parking.
  - d. The lighting plan shall be submitted to the Township and reviewed for compliance with the Township Zoning Ordinance.

Ms. Shelby Byrne reviewed her letter dated February 6, 2024:

1. The proposed parking lot does not include concrete curb and gutter as required. The Commission may wish to require the addition of curb and gutter as part of this project.



2. Drainage on this site goes directly to the Lake Chemung Outlet drain without any detention or pretreatment. As part of this project, pretreatment should be provided for any additional impervious surface added to the site. Rain gardens sized for the additional impervious surface have been added to the plans, but it appears that the entire parking lot drains away from the rain gardens and they would not provide any pretreatment of storm water flow from the parking lot. A portion of the parking lot should be graded toward the rain gardens, or the rain gardens should be relocated.
3. It is recommended that an additional drainage and grading review be required to ensure that the rain gardens are functional.

Commissioner McCreary asked if the removal of the trees as stated in the Impact Assessment were taken into account on the original landscaping plan. Mr. DeLapp stated that the landscaping plan does include the removal of the 5 trees.

A call to the public was made at 8:04 p.m. with the following response: Melanie Johnson, 3990 Chilson Road, asked if the structure behind clubhouse is where the golfers obtain the golf cart and if so then that encourages the golfers to park in the overflow parking. Mr. DeLapp stated that the golfers have to go into the clubhouse prior to obtaining a golf cart. The call to the public was closed at 8:05 p.m.

**Moved** by Commissioner Rauch, supported by Commissioner McCreary, to recommend approval to the Township Board, the Environmental Impact Assessment dated November 29, 2023 for improvements to the Faulkwood Clubhouse as submitted. **The motioned carried unanimously.**

**Moved** by Commissioner Rauch, support by Commissioner McBain, to approve the Site Plan dated January 22, 2024 with the following conditions:

1. Planning Commission finds the deficiency of the materials to be acceptable because it provides a more residential look to the building and fits in with the neighboring properties and the quality of materials is not diminished.
2. A lighting plan must be submitted to Township Staff for review and shall comply with the Township Lighting Standards.
3. Landscape plan provided in a previous submittal shall be a part of this submission and that it meets the Township Zoning Ordinance per the Township Planner.
4. Exclusion of curb and gutter is acceptable as the modifications to the site include significant upgrades to the parking lot and drainage would be encumbered by the addition of the curb and gutter.
5. The grading and drainage updates specifically the rain garden components need to be submitted and approved by the Township Engineer.
6. The operations of the golf course will require the overflow parking to be gated and only open in the necessity of the primary parking lot being at capacity.

**The motion carried unanimously.**

#### **ADMINISTRATIVE BUSINESS:**

##### **Staff Report**

Ms. Ruthig did not have a report.

**Member discussion**

Discussion was had in regards to the design standards and how the materials and designs have changed in last decade and how it pertains to the Township Zoning Ordinance. Commissioner McCreary informed the Commissioners that MISHDA, in order to obtain affordable housing, is proposing legislation for a \$50 million-dollar real estate transfer tax on the sale of all residential and commercial properties which would allow them to fund grants for affordable housing.

**Adjournment**

**Moved** by Commission Chouinard, support by Commissioner McBain, to adjourn the meeting at 8:24 p.m. **The motion carried unanimously.**

Respectfully submitted,

Amy Ruthig

DRAFT