

**WHITE LAKE TOWNSHIP
PLANNING COMMISSION**
7525 Highland Road
White Lake, MI 48383
JANUARY 7, 2021 @ 7:00 p.m.
Electronic Meeting

Chairman Fine called the meeting to order at 7:07 p.m. and led the Pledge of Allegiance. Roll was called.

ROLL CALL: Debby Dehart, White Lake, MI
Steve Anderson, White Lake, MI
Merrie Carlock, White Lake, MI
Peter Meagher, Cape Coral, FL
Matt Slicker, Commerce, MI
Joe Seward, White Lake, MI
Mark Fine, White Lake, MI
Scott Ruggles, Board Liaison, White Lake, MI

Absent: Rhonda Grubb – Secretary

Also Present: Sean O’Neil, WLT Planning Director
Justin Quagliata, Planning
Lisa Hamameh, Attorney
Sherri Barber, Recording Secretary

Visitors: Chris Madigan (McKenna Associates)

Approval of Agenda

Mr. Meagher moved to approve the agenda as presented. Mr. Anderson supported and the MOTION CARRIED with a voice vote. (8 yes votes)

Approval of Minutes

- a. December 17, 2020

Mr. Seward wanted to note that on page 2, the word “asked” needs to be inserted in the sentence regarding non-resident, not employed comment.

Mr. Anderson moved to approve the minutes of December 17, 2020 as amended. Ms. Carlock supported and the MOTION CARRIED with a voice vote. (8 yes votes)

Call to the Public (for items not on the agenda)

No members of the public called in.

Public Hearing:

a) Zoning Ordinance Amendments

Mr. O'Neil briefly introduced the ordinances again. Most items are housekeeping. The more significant changes are to the Medical Marihuana Home Occupation. One of the items that was discussed was the tri level, quad level square footage minimums and that has been completed.

Mr. O'Neil has had a lot of opposition from one local builder. There are other municipalities that use the same language for the minimum lot area calculations. Mr. O'Neil wanted to enter into the record that Mr. Forest Wall from the Builders Association opposes the minimum lot area calculations. The Planning Commission has received the letter. Ms. Hamameh wanted to comment for the benefit of the Homeowners Association and anyone else watching that this doesn't prevent someone from applying to the ZBA. Mr. O'Neil noted that we have left the door open for the Planning Commission to look at this. Providing accessibility for everyone is important.

Chairperson Fine opened up the public hearing at 7:28 p.m.

There were no members of the public who were waiting to speak.

Chairperson Fine closed the public hearing at 7:29 p.m.

MOTION by Mr. Seward to recommend to the Township Board the approval of the Zoning Ordinance Amendments as presented. Mr. Ruggles supported and the MOTION CARRIED with a roll call vote: Dehart – yes; Anderson – yes; Carlock – yes; Meagher – yes; Slicker – yes; Seward – yes; Fine – yes; Ruggles – yes. (8 yes votes).

Old Business:

No old business.

New Business

No new business.

Liaison's Report

Mr. Ruggles reported that the Township board would like to lower the speed limit on unimproved roads. This has been important to Mr. Ruggles for a long time on the dirt roads. Mr. Ruggles discussed the Community Block Development Grant (CBDG) program and noted that it gets distributed in a few ways. \$ 10,000. in funds were allocated to a new roof at the Dublin Senior Center, instead it will be handed out to people in the community for minor home repair and water heaters, furnaces, etc. for people who qualify. The grant varies each year, but it's around \$ 46,000. At Terry Lilley's last Township Board Meeting they did a tribute for him. The sanitary sewer system has seen a great deal of demand lately. Fire Station No. 3 is now fully manned which will improve response times. The Township board is working on a one year contract for Police, Fire and general Township employees.

Ms. Carlock reported that we are still looking at more concepts for Stanley Park and some grants for the park. Mr. Anderson asked how Stanley Park was named. It was the name of the family who sold the property to the Township.

Planning Consultant's Report

Chris Madigan was in attendance but did not have a report.

Director's Report:

Mr. O'Neil reported that the Civic Center Development Committee will meet in a few weeks. Mr. Quagliata has been spearheading the restaurant relief program. Oakland County has made green houses and igloos available to Township restaurants along with propane heaters and propane. The restaurants are very appreciative. Mr. Anderson wanted to thank Planning for getting that relief, certain areas aren't allowing it. Mr. Slicker asked if any restaurants have closed. The only one Mr. O'Neil knows is Sonic, but that may have closed prior to the COVID issues. Mr. Quagliata is working on a grant application for \$ 50,000. for the Ralph Wilson grant towards the triangle trail along M59, Elizabeth Lake Road and Teggerdine. Mr. O'Neil noted that we can meet remotely as long as the Governor's order allows it, once we get together the meetings will be at the annex.

Ms. Dehart asked if the Township is doing anything with vaccinations. To Mr. O'Neil's knowledge the Township won't. First responders are getting them.

Mr. Fine thanked everyone for allowing him to serve as Chair for the last two years. Planning Commission bylaws allow two, one year terms.

Other Business:

- a) Election of Officers and selection of Liaisons

Mr. Fine moved to appoint Mr. Anderson as the Chairperson of the Planning Commission. Ms. Dehart supported and the MOTION CARRIED with a voice vote. (8 yes votes)

Mr. Anderson moved to appoint Ms. Carlock as the Vice Chairperson of the Planning Commission. Mr. Fine supported and the MOTION CARRIED with a voice vote. (8 yes votes)

Mr. Fine moved to appoint Ms. Grubb as the Secretary of the Planning Commission. Mr. Anderson supported and the MOTION CARRIED with a voice vote. (8 yes votes)

Ms. Dehart moved to appoint Ms. Grubb as the liaison to the Parks and Recreation Board. Ms. Carlock supported and the MOTION CARRIED with a voice vote. (8 yes votes)

Mr. Fine moved to appoint Ms. Dehart as the liaison to the Zoning Board of Appeals. Mr. Anderson supported and the MOTION CARRIED with a voice vote. (8 yes votes)

Communications:

Next Meeting Dates: January 21, 2021

February 4, 2021

Adjournment:

Mr. Meagher moved to adjourn the meeting at 8:10 p.m. Ms. Dehart supported and the MOTION CARRIED with a voice vote. (8 yes votes)

DRAFT

Director's Report

Project Name: Eagle's Landing

Description: Final Site Plan Approval Date on Agenda

this packet pertains to: February 18, 2021

- | | |
|---|--|
| <input type="checkbox"/> Public Hearing
<input type="checkbox"/> Initial Submittal
<input type="checkbox"/> Revised Plans
<input type="checkbox"/> Preliminary Approval
<input type="checkbox"/> Final Approval | <input type="checkbox"/> Special Land Use
<input type="checkbox"/> Rezoning
<input type="checkbox"/> Tentative Preliminary Plat
<input type="checkbox"/> Final Preliminary Plat
<input type="checkbox"/> Other _____ |
|---|--|

Contact	Consultants & Departments	Approval	Denial	Approved w/ Conditions	Comments
DLZ	Engineering Consultants				
McKenna & Associates	Planning Consultants				
John Holland	WLT Fire Marshal				
Jeanine Smith	Assessing Department				
Sean O'Neil	Planning Director				



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

January 28, 2021

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

RE: Eagles Landing - Final Site Plan and Final Engineering Plan Review- 3rd Review

DLZ # 1945-6937-00

Dear Mr. O' Neil,

Our office has reviewed the above-mentioned revised plans prepared by Kieft Engineering, Inc. and dated December 18, 2020. These plans were reviewed for conformance with the Township Engineering Design Standards. We offer the following comments for your consideration:

Site Improvement Information-

- An 18 unit single family residential (condominium) development.
- Paved and curbed public road (Blue Ridge Parkway) that is 27' wide with one boulevard entrance off Bogie Lake Road.
- One open sedimentation/detention basin with outlet to Bogie Lake Road.
- Site to be serviced by extension of municipal sanitary sewer with pressure sewer system and individual grinder stations.
- Site to be serviced with water by individual private wells for each unit.
- 5' wide concrete sidewalk along both sides of Blue Ridge Parkway frontage.
- Proposed 6' wide asphalt sidewalk along Bogie Lake Road frontage.

Note that comments from our review dated December 17, 2020 are in *italic* font. Responses to those comments are in **bold**. New comments are in standard font.

Final Site Plan Comments-

General

1. *The Landscape Plan shall show locations of all proposed storm sewer and sanitary sewer. Trees cannot be planted over or within 10' of sanitary sewer or storm sewer. Additionally, plantings of any type cannot be planted within surface drainage areas such as swales. There are several areas as follows on Sheet LP-1 where there are conflicts as listed: 1) Trees along the south side of Blue Ridge Parkway and in center of cul de sac are proposed over storm sewer 2) Tree over detention basin outlet pipe 3) Two northernmost trees along Bogie Lake Road frontage over/in ditch line and storm sewer . (Reference General – Comment 2 of our Preliminary Site Plan Review letter dated June 26, 2019 as well.) Comment outstanding. Design engineer indicates that Sheet LP-1 is to be revised by Landscape Architect. Sheet LP-1 was not included in this submittal and will need to be included with next submittal. **Comment partially addressed. Please update Sheet LP-1 to reflect revisions to storm sewer per engineering plans. (Ex. There is no storm sewer now between Units 13 and 14). In addition, please relocate proposed tree that is in middle of the cul-de-sac; it is proposed directly over the storm sewer.***
2. *An existing overhead electric line is shown over the area where the detention basin is proposed. Easements are shown for this utility on the property to the south, does an easement exist for this overhead electric onsite? If so, does easement provide applicant the ability to construct the detention basin within the easement? **Comment outstanding. Design engineer has noted that DTE is reviewing the plans and that changes are forthcoming.***

Water Service/Wells

1. *Due to the nature of the proposed site use, we defer to the Township Fire Department with regard to the requirement for fire suppression as well as emergency access. (Reference Watermain – Comment 2 of our Preliminary Site Plan Review letter dated June 26, 2019.) **Comment remains as a notation.***
2. *Individual permits for wells will be required at time of individual plot plan submittal from the Oakland County Health Department. **Comment remains as a notation.***

Stormwater Management

1. *Stormwater discharge from the proposed detention basin will need to be accepted and approved by RCOC. (Reference Stormwater Management – Comment 1 of our Preliminary Site Plan Review letter dated June 26, 2019.) **Comment remains. Design engineer indicates the RCOC permit application is in process.***
-

2. *There appears to be existing onsite easements related to stormwater detention for both the site north and south of the subject property. See below Final Engineering comments related to these items.*
Comment remains as a notation.

Final Engineering Plan Comments

Grading/Paving

1. *While the overall general grading in most areas appears acceptable, a more detailed review of grading of individual units will occur at time of individual plot plan submittals once the specific floorplans are determined.* **Comment remains as a notation.**
2. *Per the Township Fire Marshal, turn radii shall accommodate the largest Fire Department apparatus (40'). As the plans meet the Oakland County Road Commission standards for residential road and cul-de-sac dimensions this requirement is met.* **Comment remains as a notation.**
3. *Per the Township Fire Marshal, the angle of approach and departure shall not exceed 8 degrees. The profile on Sheet 8 of the plan set shows the entrance at a relatively flat slope of -1.58% therefore the angle of approach will not exceed the maximum allowable. We consider this requirement met.*
Comment remains as a notation.

Water Service/Wells

1. *Proposed private wells shall be placed no closer than 50 feet to the constructed sanitary sewer system. All proposed well locations meet this requirement.* **Comment remains as a notation.**

Stormwater Management

1. *Darken in the design HWL of the detention basin on all relevant sheets. Comment outstanding. We are unable to find where HWL has been emphasized. We recommend a dark dashed line be added in plan view to the basin to delineate HWL.* **Comment addressed. A dark, dashed line has been added to all relevant sheets.**
 2. *The outflow pipe located downstream of Overflow MH-1 will need to be sized to accommodate 10 year unrestricted flow.* **Comment outstanding. Design engineer has noted that they are awaiting the RCOC review since the existing pipe is only 12" diameter.**
 3. *Sheet 12- Provide detention basin spillway cross section and sizing. Note that spillway shall be armored. Comment outstanding. Sheet 12 shows spillway at 957.27 on basin profile and in detention basin calculations. Also, 957.27 on Sheet 8 with berm elevation at 958.00 on both these sheets.*
-

*Sheet 5 shows 957.50 @ 30'X24" for spillway in plan view with berm at 958.5. Spillway section "S"- "S" shows berm at 958.5 with spillway at 957.5. Section "S-2" needs to be indicated in plan view. This section shows spillway elevation at 957.5 and berm at 958.5 with spillway at 18'X30' dimensions. Please clarify and assure all sheets are consistent with regard to these items. **Comment addressed.***

- 4. Please provide our office with verification of Road Commission approval of discharge from proposed detention basin to the existing storm sewer in Bogie Lake Road. In addition, it should be verified that the existing sewer in Bogie Lake Road has the capacity to accept 10 year flows from Eagles Landing. **Comment remains. The RCOC is presently reviewing the plans per design engineer.***

Required Permits and Approvals

The following permits and approvals will be required:

1. Permit from the Road Commission for all work within the Bogie Lake Right-Of-Way and for the proposed stormwater discharge as well as approval of the design of Blue Ridge Parkway. **Design engineer indicates that this in process.**
2. SESC permit from OCWRC. **Permit 000-945-2020-00 was issued on 10/15/2020.**
3. A Notice of Coverage for Stormwater Discharge under the NPDES program as administered by the MDEQ is required. **Permit MIR116319 was issued on 11/04/2020.**
4. Individual permits for wells will be applied for from the Oakland County Health Department at the time of individual plot plan submittal.
5. Sanitary sewer permit from OCWRC (**Electronic application has been submitted**).
6. Sanitary sewer permit from EGLE.
7. Executed Stormwater Maintenance Agreement.
8. Easement for Sanitary Sewer.

Recommendation

We recommend that the above items be addressed on the final stamping sets. Please note there are other agency permits listed above that will need to be obtained prior to final approval.

Please contact our office should you have any questions.

Sincerely,

DLZ Michigan



Michael Leuffgen, P.E.
Project Engineer



Victoria Loemker, P.E.
Senior Engineer

Cc: Nick Spencer, Building Department, *via email*
Justin Quagliata, Community Development, *via email*
Hannah Micallef, Community Development, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
John Holland, Fire Marshall, White Lake Township, *via email*

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MCKENNA

December 21, 2020

Planning Commission
Charter Township of White Lake
7525 Highland Road
White Lake, MI 48383

Subject: Eagle Landing Project
Final Site Plan Review #2

Location: West side of Bogie Lake Road, south of Ridgefield Court

Dear Planning Commissioners:

Better Built Homes proposes to develop an 18-unit condominium subdivision (site condominium) on a site consisting of 10.0 gross acres. The plan proposes detached, single-family homes on individual home sites.

We have reviewed the application for compliance with the Township's Zoning Ordinance and Master Plan, as well as sound planning and design principles, and offer the following comments:

Condominium Subdivision Review Process

The Condominium Subdivision review process is set forth in Section 6.1 of the Zoning Ordinance. It involves three (3) steps, previously the Planning Commission and Township Board considered and approved the preliminary condominium design. The current stage of review is the final condominium design and engineering plan review:

1. Preliminary Condominium Design Review: The overall site design, lot and road layout, number and size of units, common areas and ordinance compliance are reviewed during the preliminary site plan review. The Planning Commission must review the proposal and make a recommendation to the Township Board for the preliminary site plan. The Township Board is required to take action, approving or denying the preliminary site plan.
2. Final Condominium Design and Engineering Plan Review: The detailed engineering plans are distributed to the engineering consultant, Oakland County Road Commission, Oakland County Drain Commission, Oakland County Health Department, utility companies, and other governmental agencies if determined necessary. The detailed engineering plans are reviewed for compliance with the Township's Engineering Design Standards Ordinance to assure proper road design and drainage, adequacy of public utilities, sanitary sewage disposal, water supply, site drainage, and survey monuments. The Planning Commission reviews the plan and makes a recommendation to the Township Board.
3. Condominium Document Review: The condominium documents are reviewed administratively by the Township.

HEADQUARTERS
235 East Main Street
Suite 105
Northville, Michigan 48167

☎ 248.596.0920
☎ 248.596.0930
MCKA.COM

Communities for real life.

Review Comments

1. **Zoning, Land Use, and Future Land Use:** The current Zoning District, current land use, and future land use of the site, as well as the surrounding areas, are as follows:

	Zoning Districts	Current Land Uses	Future Land Use
Site	R1-C	Vacant	Open Space Estates
North	R1-C	Residential	Open Space Estates
East	R1-D	Residential	Residential Resort
South	AG	Residential	Open Space Estates
West	R1-C	Vacant	Public-Quasi Public

2. **Required Information:** The information required for a Preliminary Condominium Design Plan is set forth in Section 6.1(C)(i)(a) of the Zoning Ordinance. The following required information remains to be provided:

- a. Building elevations and floor plans. (The applicant notes that their client will provide building elevations and floor plans. Those had not yet been received when this review letter was finalized.)

3. **Dimensional Standards:**

- a. **Lot Area, Setbacks, Lot Coverage.** Sections 3.1.5 (R1-C District) and 3.11 (Notes to District Standards) of the Zoning Ordinance include provisions for minimum lot area, setbacks, and lot coverage, as follows:

	Zoning Ordinance Requirements
Min. Lot Area	16,000 SF
Min. Lot Width	100'
Min. Front Yard	35'
Min. Side Yard	10' min. and 20' combined.
Min. Rear Yard	35'
Max. Height	30' or 2 stories
Max. Lot Coverage	20%

- b. **Wetland Setbacks.** Section 3.11(Q) of the Zoning Ordinance requires all buildings to be located at least 25 feet from a regulated wetland, submerged land, or other water body. The plan does not note any regulated wetlands.

4. **Landscaping and Screening:** The site is heavily wooded. The landscape plan submitted in the application materials indicates that the applicant intends to preserve the wooded area around the perimeter of the of the development including some areas which encroach into the buildable areas of several lots. Per Section 6.1(F)(vi), the natural features and character of lands must be preserved wherever practical. We are not aware of a tree survey indicating the number and species of trees to be removed with this development.



Applicable Requirement	Landscaping Requirements	Proposed Landscaping
Section 5.19(A)(iii)	All landscaped areas greater than 200 square feet must be irrigated.	An automated irrigation is noted in number 19 of "Planting Notes" on the Landscaping Sheet.
Section 5.19(F)	<p>150 lineal feet of entry drive shall be landscaped, including 1 tree and 3 shrubs for every 300 square feet of landscape area.</p> <p>Calculations are not available for the area of landscaping but based on approximately 200 linear feet in length and 20 feet in width, there should be 14 trees and 42 shrubs.</p>	<p>The first 220 feet are landscaped, with a 20-foot gap for a turnaround drive.</p> <p>There are 6 Norway Spruce, 6 River Birch, and 2 Flowering Dogwood proposed, and the number of shrubs far exceeds the minimum requirement.</p>
Section 5.19(F)(iii)(d)	Landscaping must adhere to clear vision standards.	<p>The proposed landscape plantings will comply with the clearance standards because they are low-growing species.</p> <p>The proposed entry sign may conflict with clear vision for vehicles exiting the site. Clearance lines in the median have been confirmed on the revised landscaping sheet.</p>
Section 5.19(H)	<p>Minimum Plant Size at Installation:</p> <p>Deciduous Tree: 2.5"</p> <p>Evergreen Tree: 7'</p> <p>Ornamental Tree: 1.5"</p> <p>Shrubs: 30" height or spread</p>	<p>Deciduous, Evergreen, and Ornamental species achieve the specified standards.</p> <p>In the first version of this review we noted that at a minimum, 42 of the shrubs must be planted at 30" size or greater to meet this standard (42 being the minimum number of required shrubs in the entry islands). We believe that the revised landscaping plan has satisfied this requirement.</p>
Subdivision Ordinance Section 20-62(b)(16)	<p>In platted subdivisions, the Township Ordinance calls for a street tree every 60 feet, or 2 per lot, whichever is greater.</p> <p>The Zoning Ordinance does not have a street tree requirement for residential developments.</p>	The project proposes approximately 2 street trees per lot, satisfying this requirement.



5. **Layout and Open Space:** All the proposed lots appear to be of conforming size and the proper setbacks are shown. The applicant has demonstrated the required 100' width has been satisfied prior to the building line for the pie-shaped lots on the cul-de-sac. The cul-de-sac length and block length are less than the maximum allowable of 1,500'. The only usable open space in the condominium will be used for storm water detention. The location of the detention area is adjacent other open space in Walnut Ridge Subdivision to the south.
6. **Sidewalks and Non-Motorized Pathway:** Section 6.1(F)(ii)(b) requires public walkways within a condominium and at its periphery. Internal sidewalks are to be five feet wide, and as required by Section 5.21 of the Zoning Ordinance, a 6-foot wide sidewalk is proposed along Bogie Lake Road. Additionally, as discussed during the preliminary stage of plan review, a 10-foot easement is proposed between lots 10 And 11. This easement would exist to accommodate a future six-foot asphalt pathway.
7. **Roads and Access:** The proposed development has one access point unto Bogie Lake Road. Offsets of 396-feet to Ridgefield Court, and 342-feet to Pinecrest Drive are noted on Sheet 3. Section 6.1(F)(i)(d)(1) requires the proposed street to be public, and the applicant has noted on the Final Site Plan that the street is proposed to be public. There are no streets on adjacent parcel to which the project could reasonably connect.
8. **Lighting:** The applicant has noted that exterior lighting is not proposed for the development. Should the applicant wish to propose exterior lighting, a plan indicating compliance with Section 5.18(g) of the Zoning Ordinance should be submitted.
9. **Signage:** Details of a proposed entranceway sign are included on the landscape page of the submittal materials. Any sign must comply with the standards of Section 5.9 of the Zoning Ordinance. A separate sign application should be submitted to the community development department for review and approval.

Recommendation

At this time there are two minor issues noted in the review letter, which we believe can be corrected or clarified. If the Planning Commission is comfortable with it, then we would suggest that the project could be recommended for approval subject to the issues identified by underlining above.

If you have any questions about this report or require additional information, please do not hesitate to contact us.

Respectfully submitted,

McKENNA



Chris Madigan, AICP
Associate Planner

cc: Mr. Sean O'Neal, AICP





Fire Department
Charter Township
of White Lake

Site / Construction Plan Review

To: Sean O'Neil, Planning Department Director

Date: 01/27/21

Project: Eagles Landing

File #: Not Shown

Date on Plans: 02/03/20

The Fire Department has the following comments with regards to the engineering / site plans submitted for the project known as Eagle's Landing:

No further comments at this time.

John Holland
Fire Marshal / Deputy Chief
Charter Township of White Lake
(248)698-3993
jholland@whitelaketwp.com

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

Memo

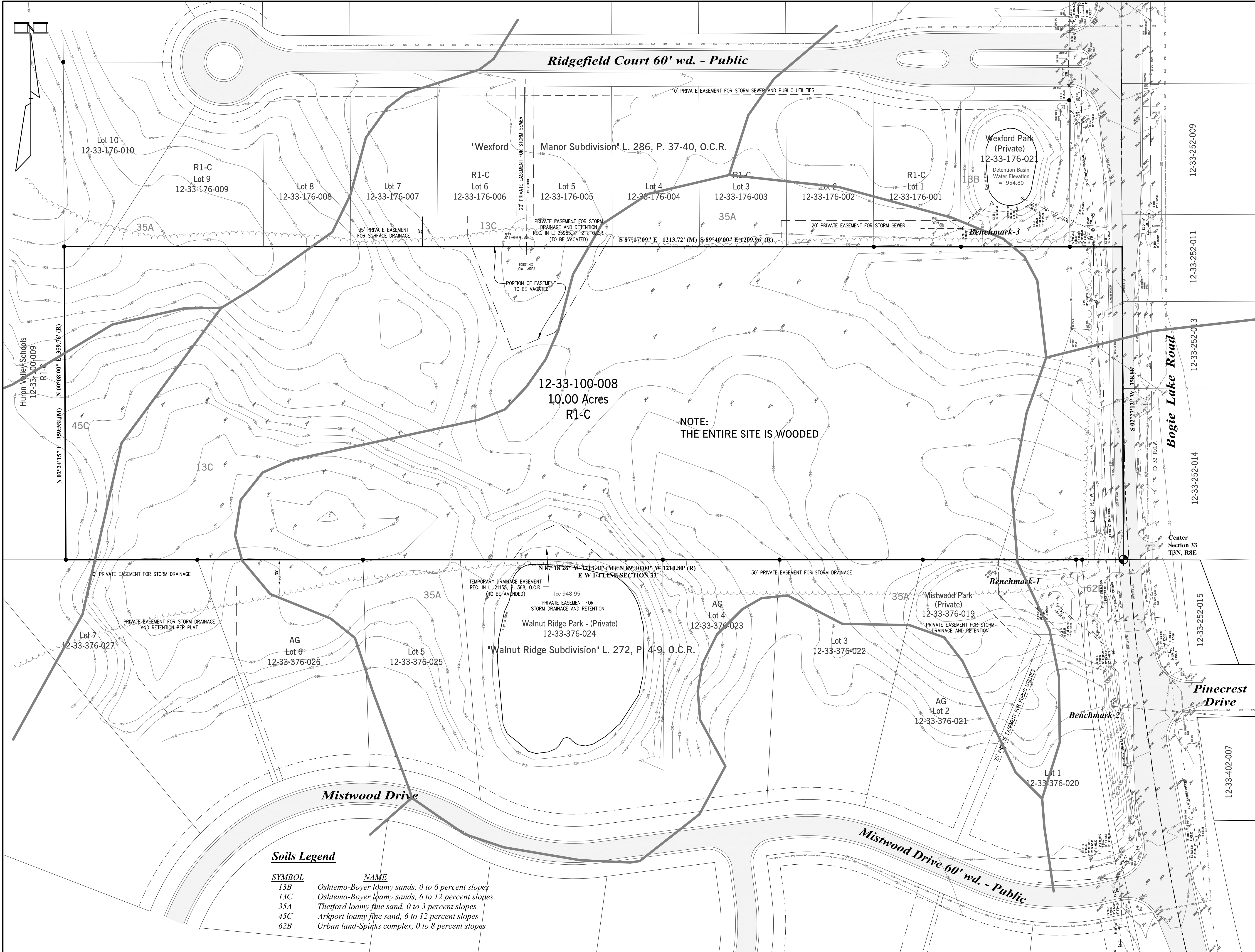
To: Sean O'Neil, Planning

From: Jeanine A Smith

Date: October 13, 2020

Re: Project Name: Eagles Landing File No: Parcel Number: 12-33-100-008
subdivision

Comments: No Comment



LEGEND

EXISTING	
	STORM SEWER
	SANITARY SEWER
	SANITARY FORCE MAIN
	GAS MAIN
	ELEC., TELE., CABLE
	SOIL DELINEATION
	STORM MANHOLE
	CATCH BASIN
	INLET
	REARYARD CATCH BASIN
	END SECTION
	SANITARY MANHOLE
	CONTOURS
	GRADE

Benchmarks:

BM-1
NAIL IN EAST FACE OF POWER POLE LOCATED ALONG SOUTH PROPERTY LINE, 143'+/- WEST OF EDGE OF ROAD. ELEVATION = 956.55 (NAVD 88)

BM-2
NAIL IN EAST FACE OF POWER POLE LOCATED ON THE WEST SIDE OF BOGIE, ON INTERSECTION OF PINECREST. ELEVATION = 959.27 (NAVD 88)

BM-3
RIM OF EXISTING CATCH BASIN LOCATED AT THE SE CORNER OF LOT 1 "WEXFORD MANOR SUBDIVISION". ELEVATION = 960.00 (NAVD 88)

Soils Legend

SYMBOL	NAME
13B	Oshemo-Boyer loamy sands, 0 to 6 percent slopes
13C	Oshemo-Boyer loamy sands, 6 to 12 percent slopes
35A	Thetford loamy fine sand, 0 to 3 percent slopes
45C	Arkport loamy fine sand, 6 to 12 percent slopes
62B	Urban land-Spinks complex, 0 to 8 percent slopes

DATE	ISSUE
11-30-2020	PER MCKENNA (10-25-20), PER DLZ (10-27-20)
12-18-2020	PER MCKENNA (10-25-20), PER DLZ (12-17-2020)

PROPRIETOR:
BETTER BUILT HOMES
156 EAST MEADOW CIRCLE
WHITE LAKE, MICHIGAN 48383
(248) 892-0080

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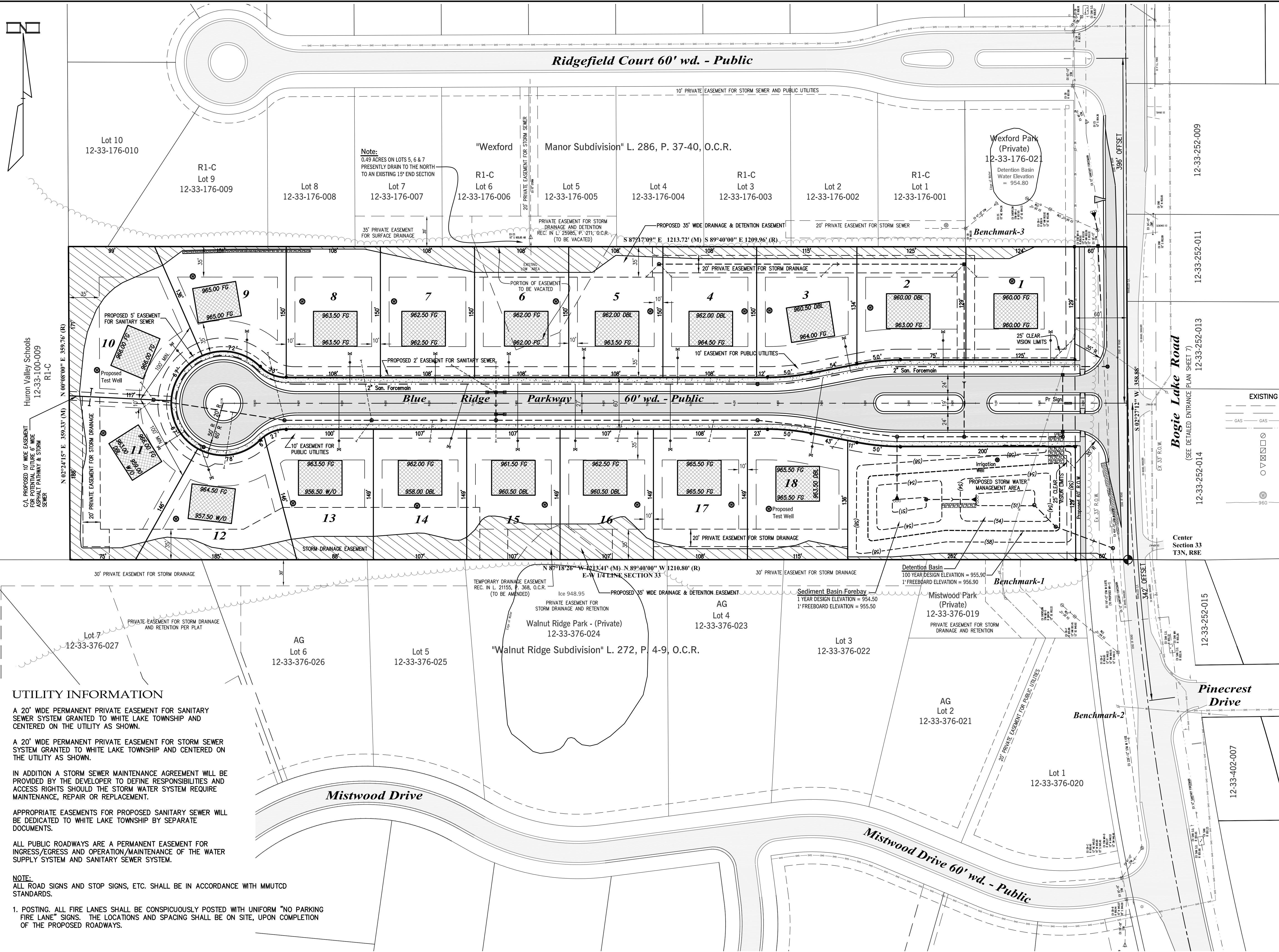
DATE	CKD. BY	DATE
2-3-2020		

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

Existing Conditions Plan
"Eagles Landing" Site Condominium
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 50'
SHEET 2 OF 19
KE 2018.296

G:\2018\296\Drawings\Site Plan.dwg, E2, 12/18/2020 10:55:53 AM



Proposed Lot Areas

Unit	Area
1	16,149 SF 0.37 acres
2	16,270 SF 0.37 acres
3	16,594 SF 0.38 acres
4	16,082 SF 0.37 acres
5	16,162 SF 0.37 acres
6	16,166 SF 0.37 acres
7	16,170 SF 0.37 acres
8	16,175 SF 0.37 acres
9	16,004 SF 0.37 acres
10	22,000 SF 0.51 acres
11	21,346 SF 0.49 acres
12	16,681 SF 0.38 acres
13	16,008 SF 0.37 acres
14	16,000 SF 0.37 acres
15	16,000 SF 0.37 acres
16	16,000 SF 0.37 acres
17	16,113 SF 0.37 acres
18	16,730 SF 0.38 acres

**Parcel is Zoned R-1C
Single Family Residential
SETBACKS:**
FRONT - 35 FT
SIDES - 10 FT
REAR - 35 FT
LOT AREAS - 16,000 SF
LOT WIDTH - 100 FT

LEGEND

- EXISTING
 - STORM SEWER
 - SANITARY SEWER
 - GAS MAIN
 - ELEC. TELE. CABLE
 - STORM MANHOLE
 - CATCH BASIN
 - INLET
 - REARYARD CATCH BASIN
 - END SECTION
 - SANITARY MANHOLE
 - GRINDER PUMP & CURB STOP
 - 4" SUMP LEAD
 - WELL
 - CONTOURS
 - PROPOSED FINISH GRADE
 - FINISH GRADE
 - WALKOUT EXISTING
 - MATCH EXISTING
 - SUMP DISCHARGE
- PROPOSED
 - STORM SEWER
 - SANITARY SEWER
 - GAS MAIN
 - ELEC. TELE. CABLE
 - STORM MANHOLE
 - CATCH BASIN
 - INLET
 - REARYARD CATCH BASIN
 - END SECTION
 - SANITARY MANHOLE
 - GRINDER PUMP & CURB STOP
 - 4" SUMP LEAD
 - WELL
 - CONTOURS
 - PROPOSED FINISH GRADE
 - FINISH GRADE
 - WALKOUT EXISTING
 - MATCH EXISTING
 - SUMP DISCHARGE
- TYPICAL HOUSE FOOTPRINT
- TREE DISRUPTION LIMITS

Benchmarks:

- BM-1**
NAIL IN EAST FACE OF POWER POLE
LOCATED ALONG SOUTH PROPERTY
LINE, 143'+/- WEST OF EDGE OF ROAD.
ELEVATION = 956.55 (NAVD 88)
- BM-2**
NAIL IN EAST FACE OF POWER POLE
LOCATED ON THE WEST SIDE OF BOGIE,
ON INTERSECTION OF PINECREST.
ELEVATION = 959.27 (NAVD 88)
- BM-3**
RIM OF EXISTING CATCH BASIN LOCATED
AT THE SE CORNER OF LOT 1 "WEXFORD
MANOR SUBDIVISION".
ELEVATION = 960.00 (NAVD 88)

UTILITY INFORMATION

A 20' WIDE PERMANENT PRIVATE EASEMENT FOR SANITARY SEWER SYSTEM GRANTED TO WHITE LAKE TOWNSHIP AND CENTERED ON THE UTILITY AS SHOWN.

A 20' WIDE PERMANENT PRIVATE EASEMENT FOR STORM SEWER SYSTEM GRANTED TO WHITE LAKE TOWNSHIP AND CENTERED ON THE UTILITY AS SHOWN.

IN ADDITION A STORM SEWER MAINTENANCE AGREEMENT WILL BE PROVIDED BY THE DEVELOPER TO DEFINE RESPONSIBILITIES AND ACCESS RIGHTS SHOULD THE STORM WATER SYSTEM REQUIRE MAINTENANCE, REPAIR OR REPLACEMENT.

APPROPRIATE EASEMENTS FOR PROPOSED SANITARY SEWER WILL BE DEDICATED TO WHITE LAKE TOWNSHIP BY SEPARATE DOCUMENTS.

ALL PUBLIC ROADWAYS ARE A PERMANENT EASEMENT FOR INGRESS/EGRESS AND OPERATION/MAINTENANCE OF THE WATER SUPPLY SYSTEM AND SANITARY SEWER SYSTEM.

NOTE:
ALL ROAD SIGNS AND STOP SIGNS, ETC. SHALL BE IN ACCORDANCE WITH MMUTCD STANDARDS.

1. POSTING. ALL FIRE LANES SHALL BE CONSPICUOUSLY POSTED WITH UNIFORM "NO PARKING FIRE LANE" SIGNS. THE LOCATIONS AND SPACING SHALL BE ON SITE, UPON COMPLETION OF THE PROPOSED ROADWAYS.

DATE	ISSUE
11-30-2020	PER MCKENNA (10-25-20), PER DLZ (10-27-2020)
12-18-2020	PER MCKENNA (10-25-20), PER DLZ (12-17-2020)

PROPRIETOR:
BETTER BUILT HOMES
156 EAST MEADOW CIRCLE
WHITE LAKE, MICHIGAN 48383
(248) 892-0080

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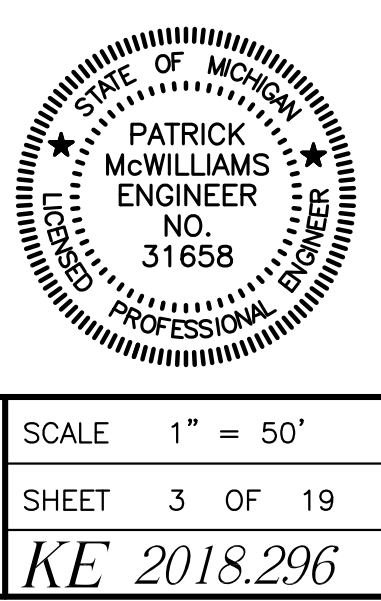


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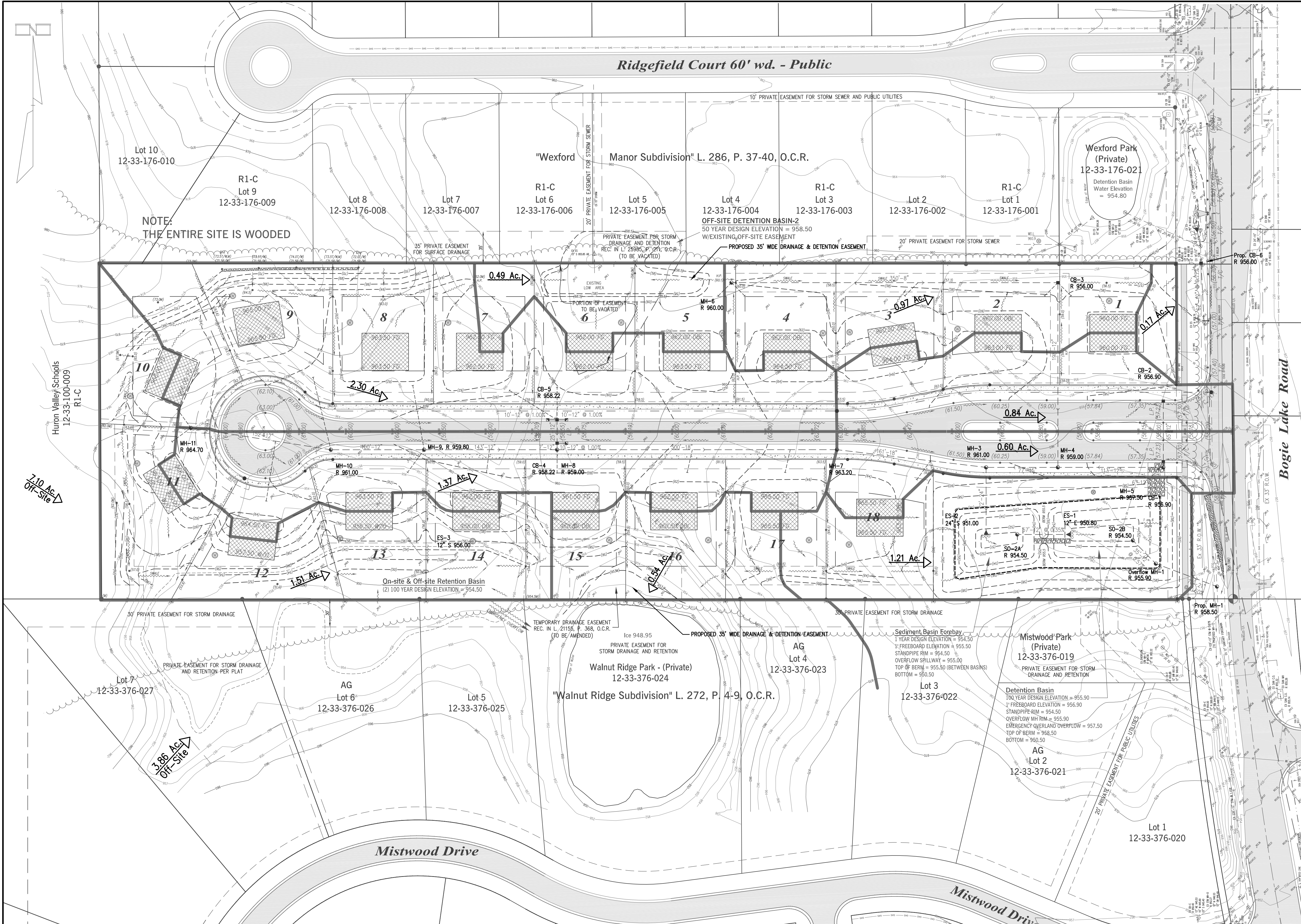
DATE	CKD. BY	DATE
2-3-2020		

DESIGN: PCM
SECTION: 33
T-3-N-R-8-E

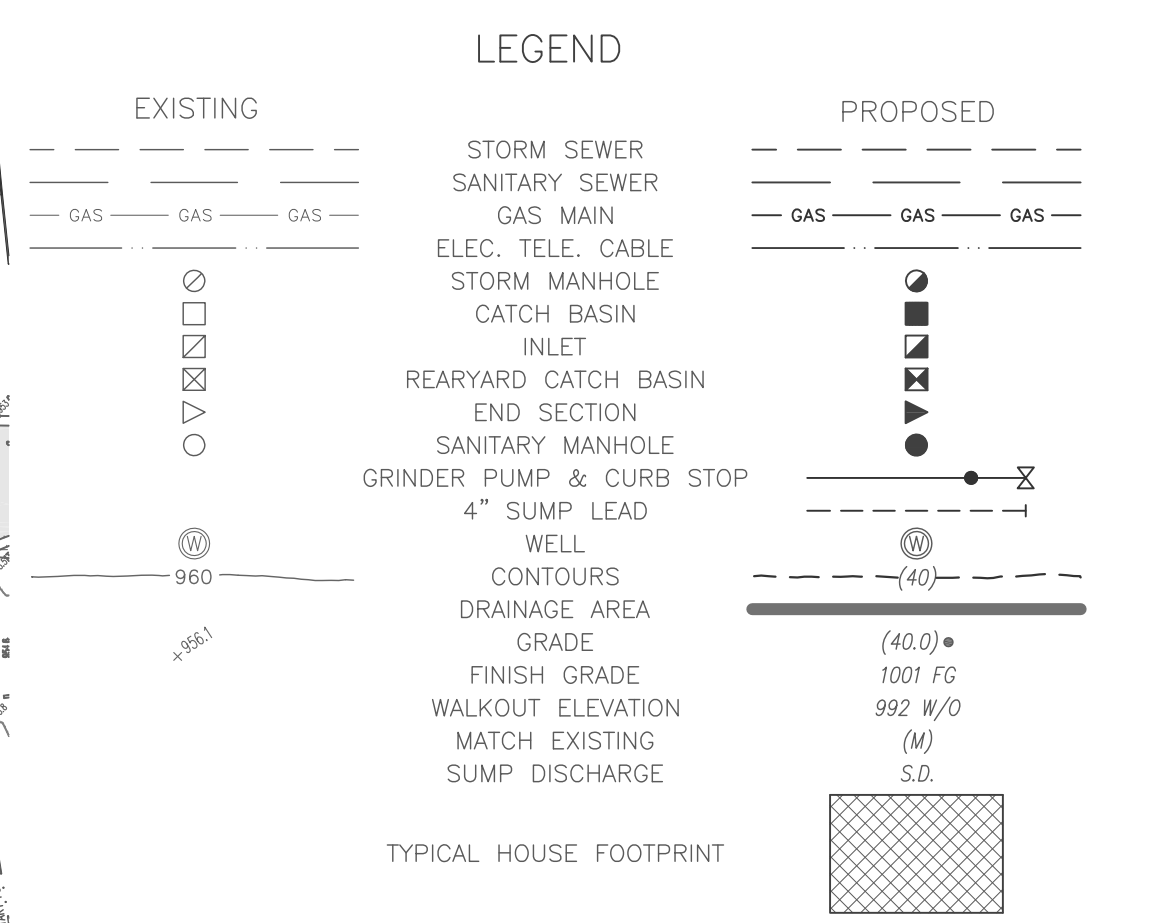
General Plan & Benchmarks
"Eagles Landing" Site Condominium
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN



SCALE	1" = 50'
SHEET	3 OF 19
KE	2018.296



- Quantities:**
- DISRUPTION AREA: 9 ACRES
 - TREE CLEARING & GRUBBING: 9 ACRES
 - MASS GRADING (ROUGH): CUT/FILLS - 26,000 CY
 - SOIL EROSION CONTROLS: SEED & MULCH - 3 ACRES; SILT FENCING - 1,600 LF; SILT FENCE GRAVEL FILTER - 2 EA; CONSTRUCTION STONE ACCESS DRIVE - 240 SY
 - SANITARY SEWER: CONSTRUCT MANHOLE (TSV-1) OVER EXISTING 12" FORCE MAIN (IN R.O.W.) - 1 EA; 2" HDPE SDR 11 (IPS) FORCE MAIN - 1174 LF; 1 1/2" SDR 11 HDPE SERVICE LATERALS - 915 LF; LOT LATERAL VALVE KIT ASSEMBLIES - 18 EA; TERMINAL CLEAN-OUT MANHOLE W/AIR RELEASE VALVE, 6" DIA., "C" - 1 EA; TERMINAL CLEAN-OUT MANHOLE, 6" DIA., "C" - 1 EA; LOT TERMINATION PACKAGE W/GRINDER PUMPS - TO BE INSTALLED WHEN HOMES ARE BUILT - 18 EA
 - STORM SEWER: 4" SCH 40 PVC (SUMP LINES) - 615 LF; 8" SCH 40 PVC - 350 LF; 12" C76 CL4, PREMIUM JOINT - 945 LF; 15" C76 CL4, PREMIUM JOINT - 139 LF; 18" C76 CL4, PREMIUM JOINT - 461 LF; 21" C76 CL4, PREMIUM JOINT - 66 LF; 24" C76 CL4, PREMIUM JOINT - 66 LF; 12" CONCRETE END SECTION, 6' LENGTH - 2 EA; 24" CONCRETE END SECTION, 6' LENGTH W/BARS/SCREEN - 1 EA; CATCH BASIN, 4' DIA., 6508 COVER - 4 EA; CATCH BASIN, 4' DIA., 6508 COVER - 1 EA; CATCH BASIN, 4' DIA., 6508 COVER, OVER EXISTING 15" PIPE IN R.O.W. - 1 EA; INLET, 2' DIA., 7045 COVER - 3 EA; MANHOLE, 4' DIA., 1040 COVER - 5 EA; MANHOLE, 5' DIA., 1040 COVER - 1 EA; MANHOLE, 4' DIA., 1040 COVER, OVER EXISTING 12" PIPE IN R.O.W. - 1 EA; OVERFLOW MANHOLE, 4' DIA., BARGRATE COVER - 1 EA; MANHOLE, 2' DIA., 1040 COVER - 3 EA; CATCH BASIN FILTERS - 8 EA; GROUTED RIP-RAP - 120 SY; DITCHING IN R.O.W. - 30 LF
 - ON-SITE PAVEMENT & CURBS, ETC.: 5' WIDE, 4" CONCRETE SIDEWALK ON 4" C.S.B. - 1,250 SY; 4" MOUNTABLE STANDARD CURB, 30" WIDE - 2,140 LF; 5 1/2" B-2 REVERSE CURB, 30" WIDE (ISLANDS) - 564 LF; 4" ASPHALT OVER 6"-21AA - 3,850 SY
 - BOGIE LAKE ROAD R.O.W.: 5 1/2" B-2 STANDARD CONCRETE CURB, 30" WIDE - 374 LF; 5 1/2" B-2 REVERSE CONCRETE CURB, 30" WIDE - 70 LF; 9" DEEP STRENGTH ASPHALT - 880 SY; 6' WIDE, 4" ASPHALT SAFETY PATH ON 4" C.S.B. - 230 SY; "M" DETAIL, 30" WIDE - 0 LF; SAWCUT & BUTTJOINT - 470 LF
 - MISCELLANEOUS: BOULDER WALL (2'-2.5' HIGH) - 400 SF +/-



DATE 2-3-2020 **ISSUE** 11-30-2020 PER MCKENNA (10-25-20), PER DLZ (10-27-20)
 12-18-2020 PER MCKENNA (10-25-20), PER DLZ (12-17-2020)

PROPRIETOR: BETTER BUILT HOMES, 156 EAST MEADOW CIRCLE, WHITE LAKE, MICHIGAN 48383, (248) 892-0080

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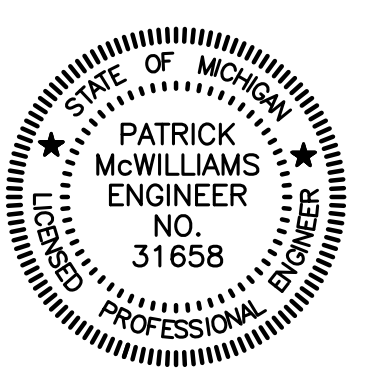
DATE 2-3-2020 **CKD. BY** DATE
 DRAWN GF
 DESIGN PCM
 SECTION 33 T-3-N-R-8-E

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

Overall Drainage Area Plan & Quantities
"Eagles Landing Site Condominium"
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 50'
SHEET 4 OF 19
KE 2018.296

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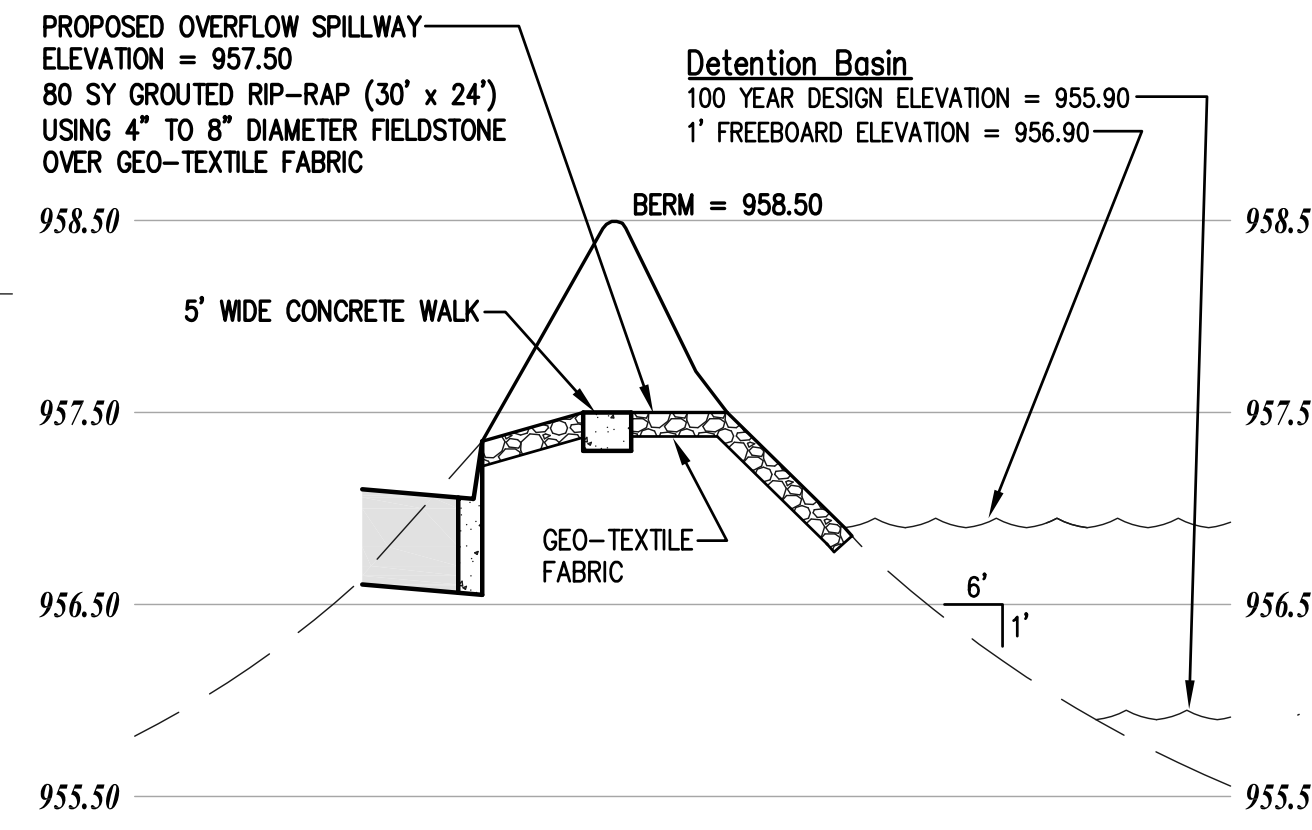
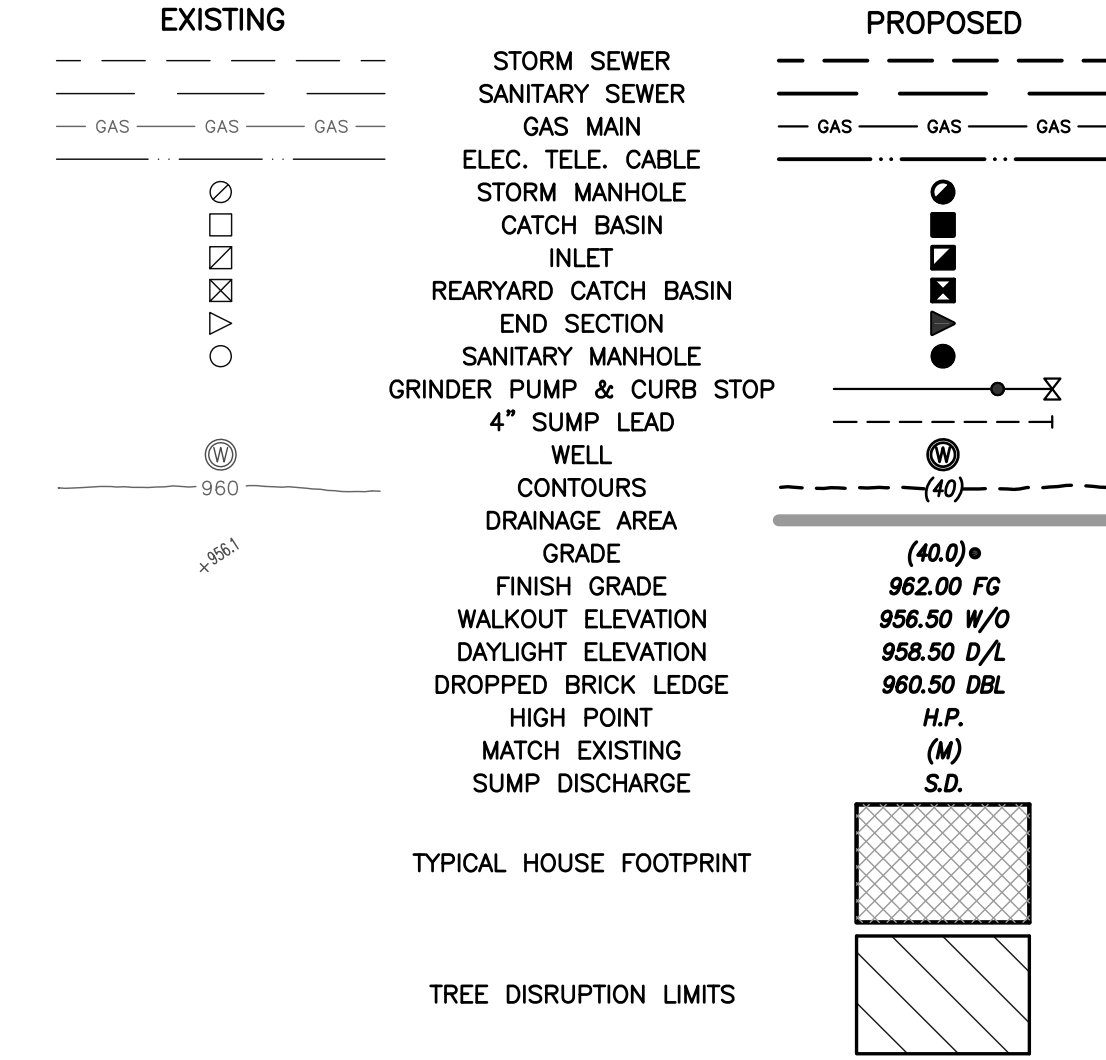
OFF-SITE DETENTION BASIN-2
 50 YEAR DESIGN ELEVATION = 958.50
 W/EXISTING OFF-SITE EASEMENT
 NOTE: RE-GRADE PER PLAN & AMEND
 DETENTION BASIN EASEMENT AS SHOWN.
 EXISTING CONTRIBUTING AREA = 0.65 ACRES
 PROPOSED CONTRIBUTING AREA = 0.49 ACRES

"VOLUME CALCULATION"

956.0: 150 SF
 3,500 SF x 2' DEPTH = 7,000 CF
 958.0: 6,850 SF
 8,500 SF x 0.5' DEPTH = 4,250 CF
 958.5: 10,150 SF
 TOTAL VOLUME PROVIDED = 11,250 CF, OK
 EXISTING VOLUME REQUIRED = 10,735 CF, AB (SEE WEXFORD MANOR SUB PLANS)

NOTE:
 THE ENTIRE SITE IS WOODED

LEGEND

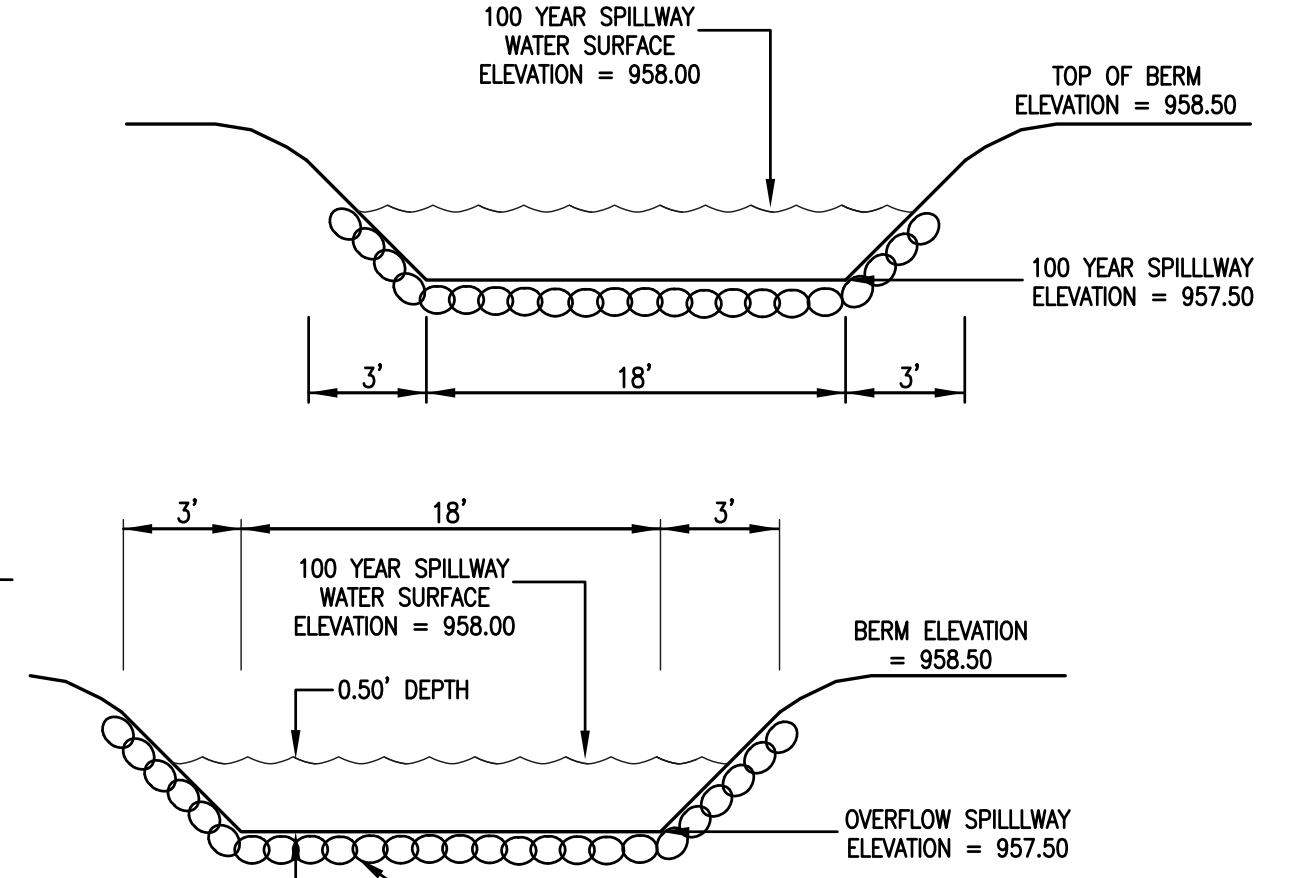


Spillway Section "S" - "S"

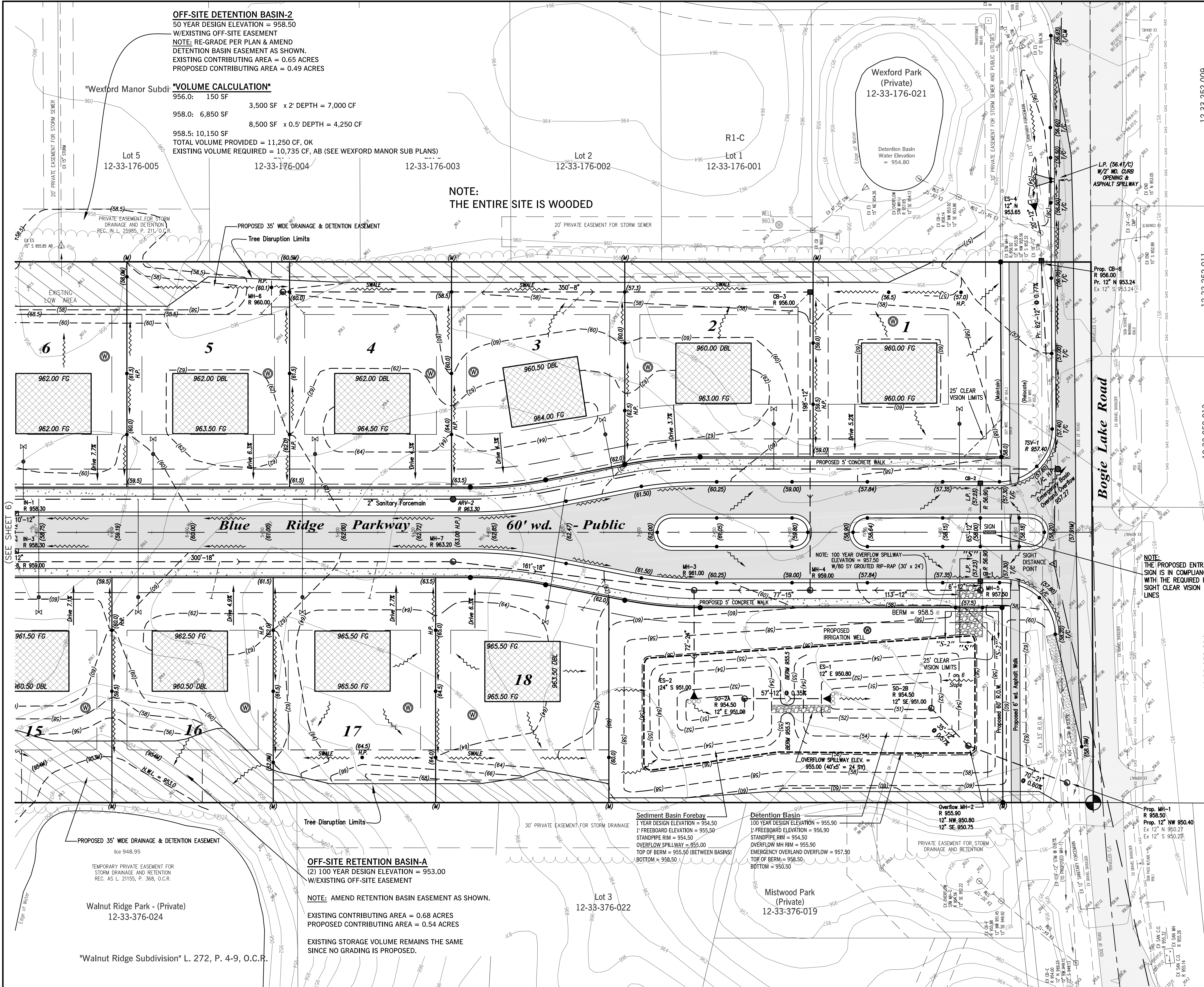
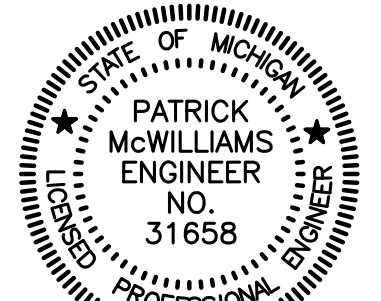
HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 1'

100 Year Spillway Design

100 YR $T = 27.5$; $T = 21.91$; $I = 5.86$
 $T = 25$
 Q REQUIRED = $ACI = (9.51)(0.373)(5.86) = 20.79$ C.F.S.
 Q PROVIDED = $3.367 LH^{3/2}$ TRY $H = 0.50$
 TRY $H = 0.40$ AND SOLVE FOR L .
 L REQUIRED = Q REQD. = 20.79 C.F.S. = $18'$
 $3.367 H^{3/2}$ (3.367)(0.50)^{3/2}
 USE $L = 18'$ & $H = 0.50'$
 THUS, Q PROVIDED = $(3.367)(L)(H)^{3/2} = (3.367)(18')(0.50)^{3/2} = 21$ C.F.S., OK!



Spillway Section "S-2"



OFF-SITE RETENTION BASIN-A
 (2) 100 YEAR DESIGN ELEVATION = 953.00
 W/EXISTING OFF-SITE EASEMENT

NOTE: AMEND RETENTION BASIN EASEMENT AS SHOWN.
 EXISTING CONTRIBUTING AREA = 0.68 ACRES
 PROPOSED CONTRIBUTING AREA = 0.54 ACRES
 EXISTING STORAGE VOLUME REMAINS THE SAME
 SINCE NO GRADING IS PROPOSED.

Sediment Basin Forebay
 1 YEAR DESIGN ELEVATION = 954.50
 1' FREEBOARD ELEVATION = 955.50
 STANDPIPE RIM = 954.50
 OVERFLOW SPILLWAY = 955.00
 EMERGENCY OVERLAND OVERFLOW = 957.50
 TOP OF BERM = 958.50
 BOTTOM = 950.50

Detention Basin
 100 YEAR DESIGN ELEVATION = 955.90
 1' FREEBOARD ELEVATION = 956.90
 STANDPIPE RIM = 954.50
 OVERFLOW MH RIM = 955.90
 EMERGENCY OVERLAND OVERFLOW = 957.50
 TOP OF BERM = 958.50
 BOTTOM = 950.50

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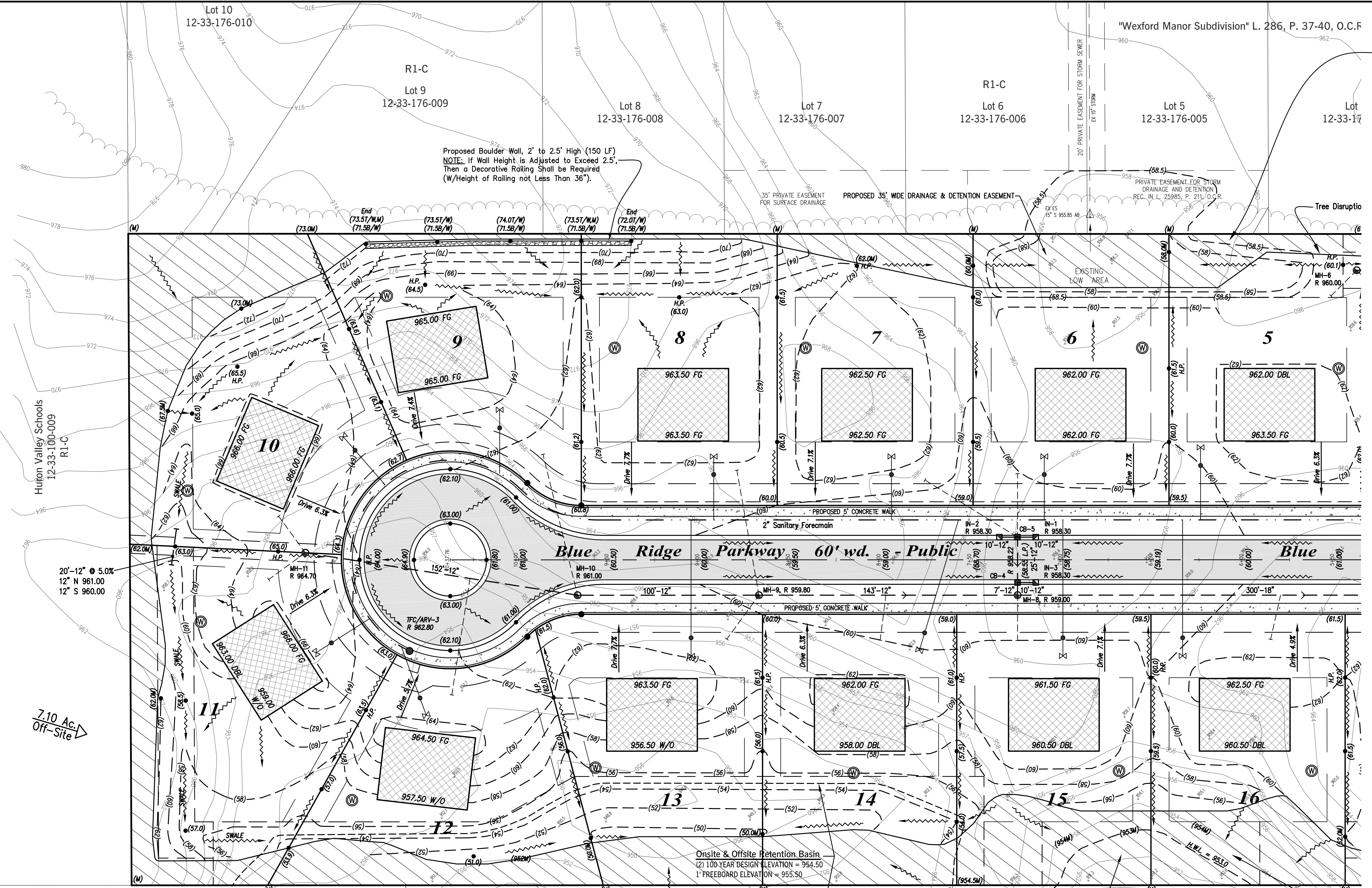
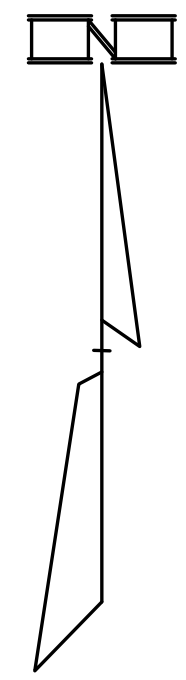
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DATE	2-3-2020	CKD. BY	DATE
DRAWN OF			
DESIGN PCM			
SECTION 33		T-3-N-R-8-E	



Site/Grading Plan - East
"Eagles Landing" Site Condominium
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE	1" = 30'
SHEET	5 OF 19
KE	2018.296



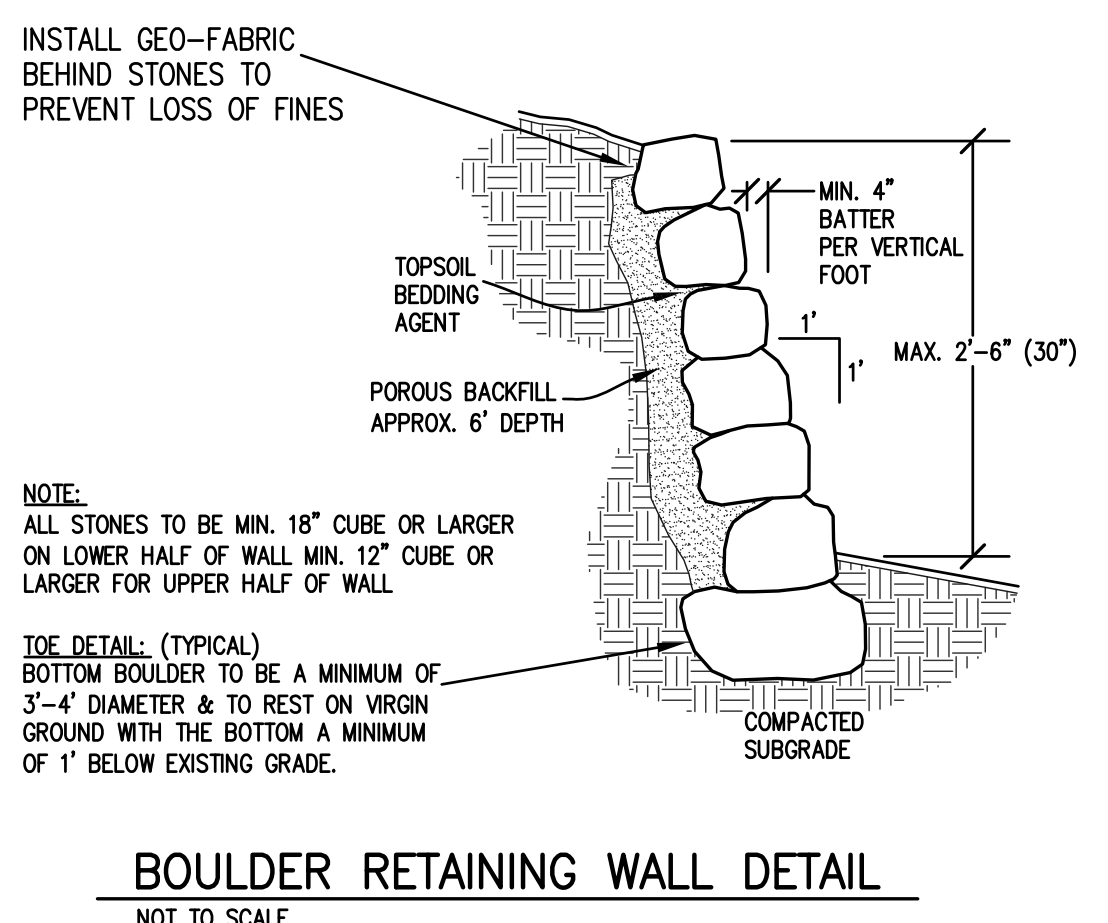
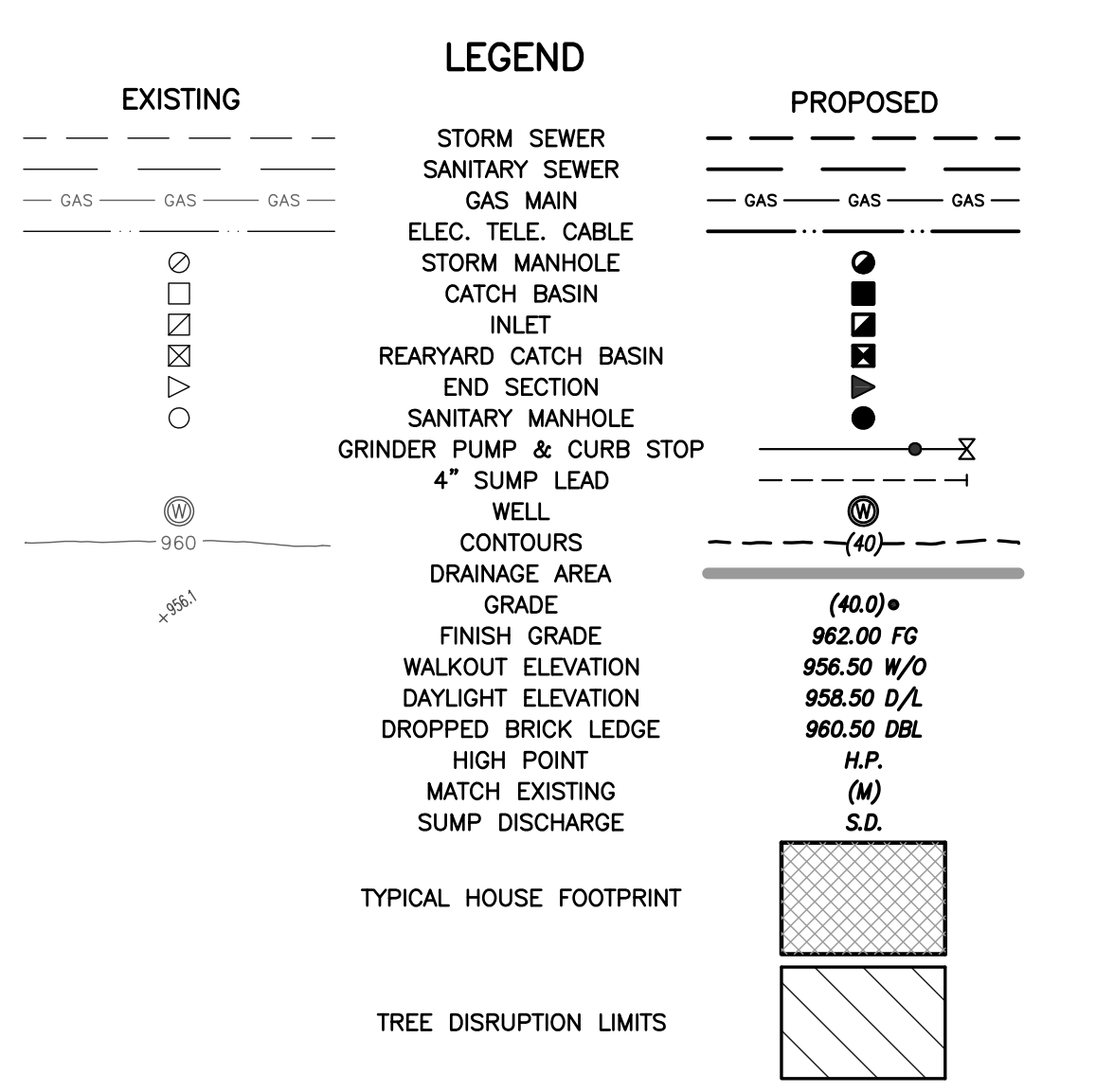
OFF-SITE DETENTION BASIN-2
 50 YEAR DESIGN ELEVATION = 958.50
 W/EXISTING OFF-SITE EASEMENT

NOTE: RE-GRADE PER PLAN & AMEND
 DETENTION BASIN EASEMENT AS SHOWN.

EXISTING CONTRIBUTING AREA = 0.65 ACRES
 PROPOSED CONTRIBUTING AREA = 0.49 ACRES

"VOLUME CALCULATION"
 956.0: 150 SF → 3,500 SF_{AV} x 2' DEPTH = 7,000 CF
 958.0: 6,850 SF → 8,500 SF_{AV} x 0.5' DEPTH = 4,250 CF
 958.5: 10,150 SF

TOTAL VOLUME PROVIDED = 11,250 CF, OK
 EXISTING VOLUME REQUIRED = 10,735 CF, AB (SEE WEXFORD MANOR SUB PLANS)



(2) 100 YEAR RETENTION BASIN-(ON-SITE & OFF-SITE)

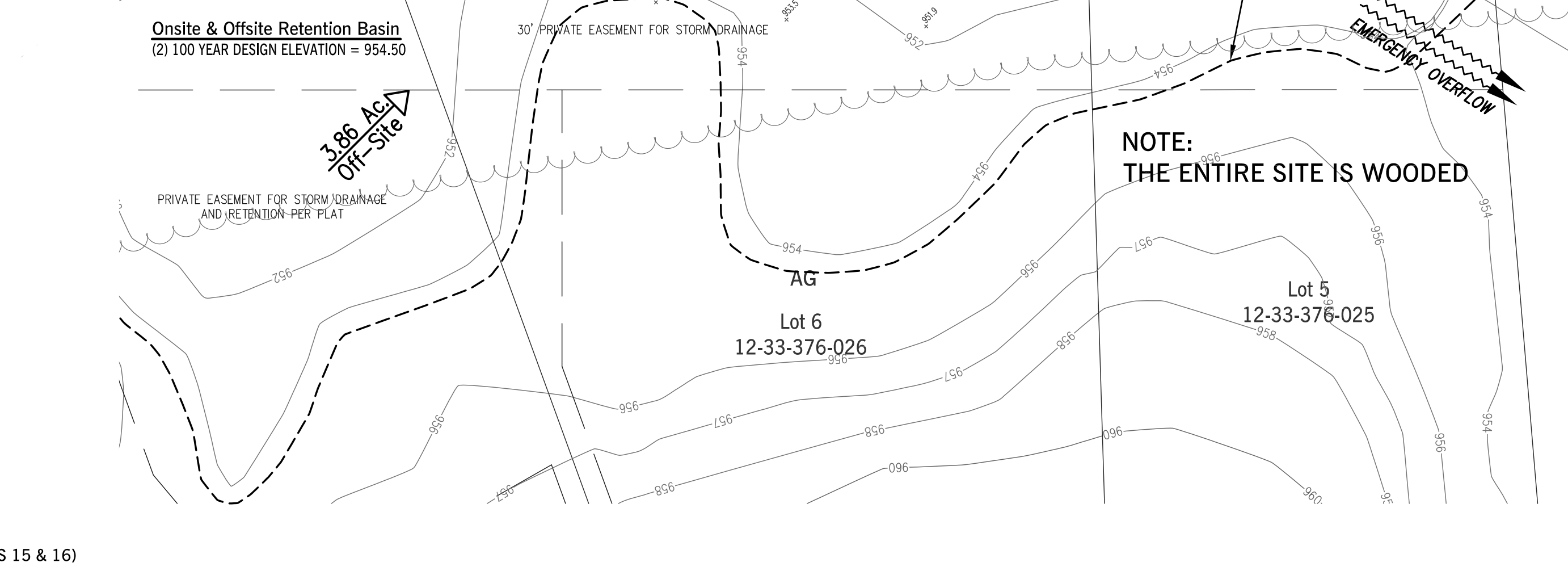
VOLUME REQUIRED:
 ONSITE CONTRIBUTING AREA = 1.51 ACRES
 OFFSITE CONTRIBUTING AREA = 10.96 ACRES (3.86 + 7.10)
 TOTAL CONTRIBUTING AREA = 12.70 ACRES

AVERAGE RUNOFF COEFFICIENT (C) = 0.20
 VOLUME (2) 100 YR = (2)(A)(C)(16,500) = (2)(12.70)(0.20)(16,500) = 83,820 CF

VOLUME PROVIDED:
 950.0: 1,100 SF → 9,050 SF_{AV} x 2' DEPTH = 18,100 CF
 952.0: 17,000 SF → 27,000 SF_{AV} x 2' DEPTH = 54,000 CF
 954.0: 37,000 SF → 39,800 SF_{AV} x 0.5' DEPTH = 19,900 CF
 954.5: 42,600 SF

TOTAL VOLUME PROVIDED = 92,000 CF, OK!

RETENTION BASIN:
 EXISTING WATER ELEVATION = NONE
 DESIGN HIGH WATER ELEVATION = 954.50
 1' FREEBOARD ELEVATION = 955.50
 STORAGE REQUIRED = 83,820 CF (BOTH ON-SITE & STORAGE PROVIDED = 92,000 CF OFF-SITE COMBINED)
 NOTE: EMERGENCY OVERFLOW TO THE OFF-SITE RETENTION BASIN (SOUTH OF UNITS 15 & 16)



OFF-SITE RETENTION BASIN-A
 (2) 100 YEAR DESIGN ELEVATION = 953.00
 W/EXISTING OFF-SITE EASEMENT

NOTE: AMEND RETENTION BASIN EASEMENT AS SHOWN.

EXISTING CONTRIBUTING AREA = 0.68 ACRES
 PROPOSED CONTRIBUTING AREA = 0.54 ACRES

EXISTING STORAGE VOLUME REMAINS THE SAME SINCE NO GRADING IS PROPOSED.

Walnut Ridge Park - (Private)
 12-33-376-024

"Walnut Ridge Subdivision" L. 272, P. 4-9, O.C.R.

DATE	ISSUE
11-30-2020	PER MCKENNA (10-25-20), PER DLZ (10-27-20)
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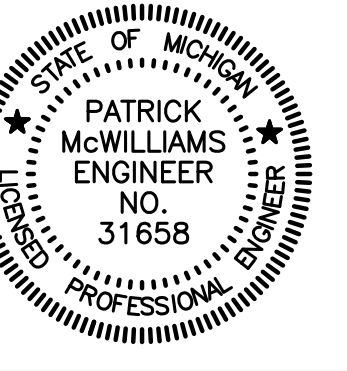


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DATE	CKD. BY	DATE
2-3-2020		

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 800-482-7171
 (TOLL FREE)

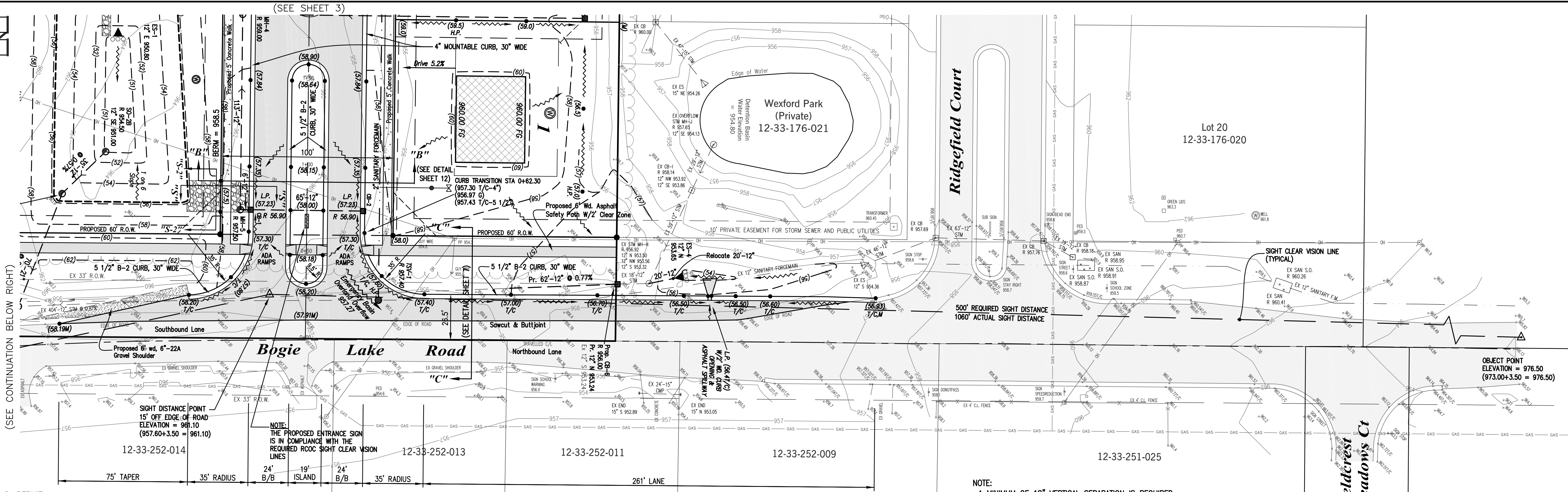
Site/Grading Plan - West
"Eagles Landing" Site Condominium
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN



SCALE 1" = 30'
 SHEET 6 OF 19
 KE 2018.296

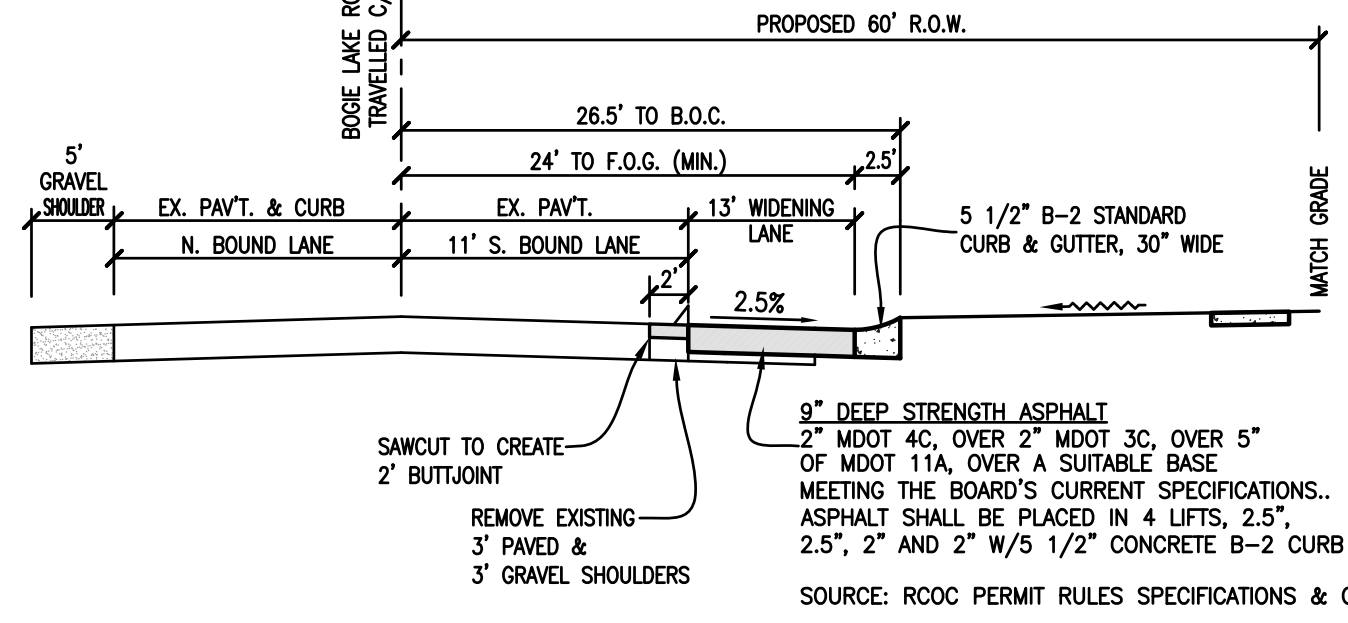
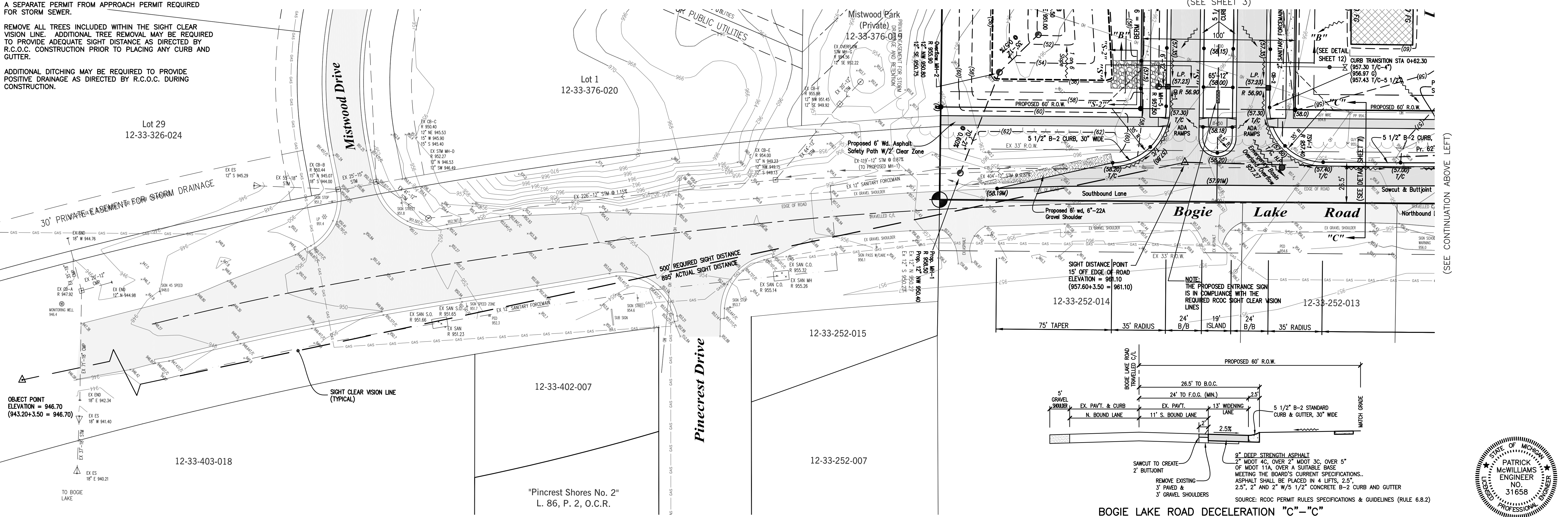
ADA RAMP NOTES:
 ADA RAMP WITH ADA DETECTABLE WARNING STRIPS AT ALL ROAD CROSSINGS.
 MAXIMUM RUNNING SLOPE = (1 ON 12) 8.3%
 MAXIMUM CROSS SLOPE = 2%

PEDESTRIAN CROSSING SIGNS TO BE INSTALLED AT ALL PEDESTRIAN PATH CROSSINGS WHERE THE CROSSING OCCURS AT A LOCATION OTHER THAN AN INTERSECTION. (TYPICAL)



NOTES:
 A PERMIT MUST BE OBTAINED FROM THE R.C.O.C. PERMIT DIVISION PRIOR TO ANY WORK BEING DONE ALONG EXISTING COUNTY ROADS.
 RESTORE ALL DISTURBED AREAS, DRIVEWAYS, LAWNS ETC., TO A CONDITION AT LEAST EQUAL TO EXISTING.
 A SEPARATE PERMIT FROM APPROACH PERMIT REQUIRED FOR STORM SEWER.
 REMOVE ALL TREES INCLUDED WITHIN THE SIGHT CLEAR VISION LINE. ADDITIONAL TREE REMOVAL MAY BE REQUIRED TO PROVIDE ADEQUATE SIGHT DISTANCE AS DIRECTED BY R.C.O.C. CONSTRUCTION PRIOR TO PLACING ANY CURB AND GUTTER.
 ADDITIONAL DITCHING MAY BE REQUIRED TO PROVIDE POSITIVE DRAINAGE AS DIRECTED BY R.C.O.C. DURING CONSTRUCTION.

NOTE:
 -A MINIMUM OF 18" VERTICAL SEPARATION IS REQUIRED BETWEEN ALL UTILITIES (SANITARY & STORM)



DATE	ISSUE
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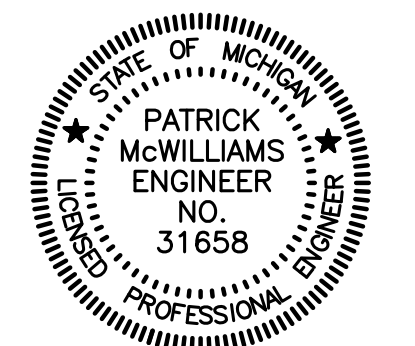


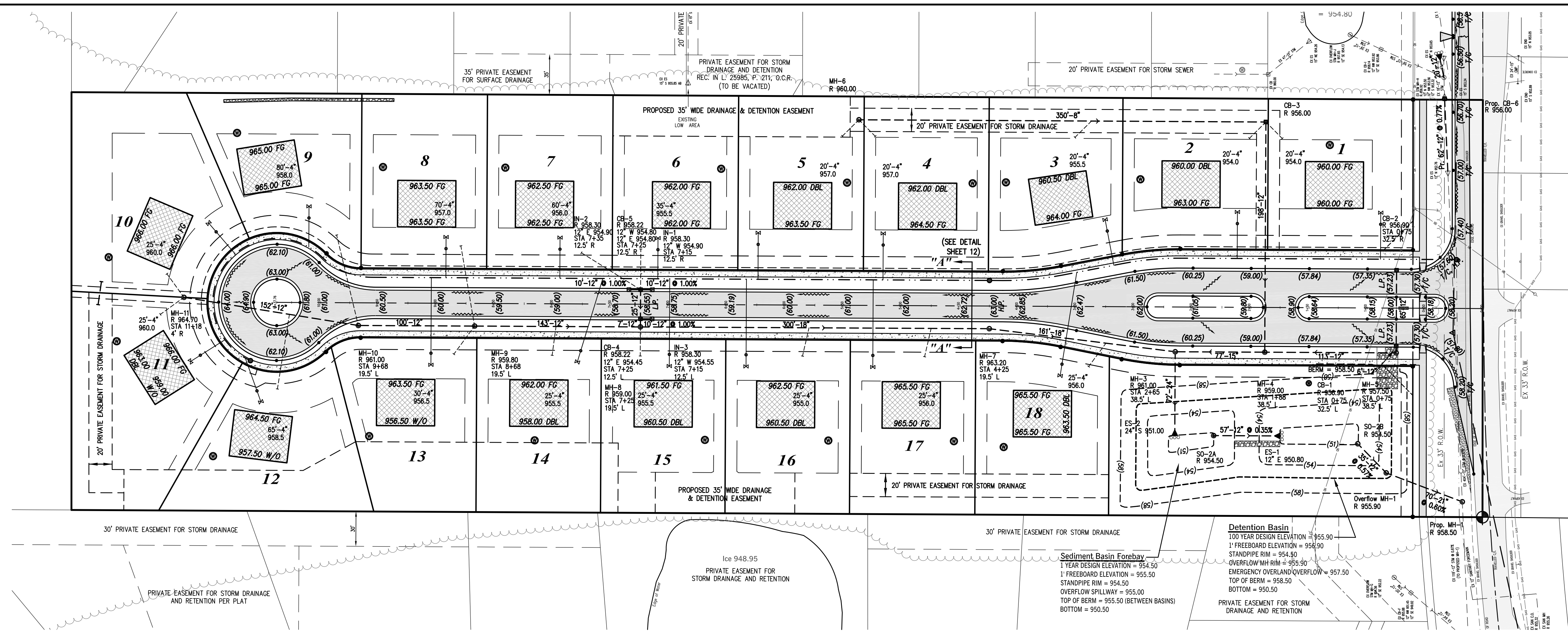
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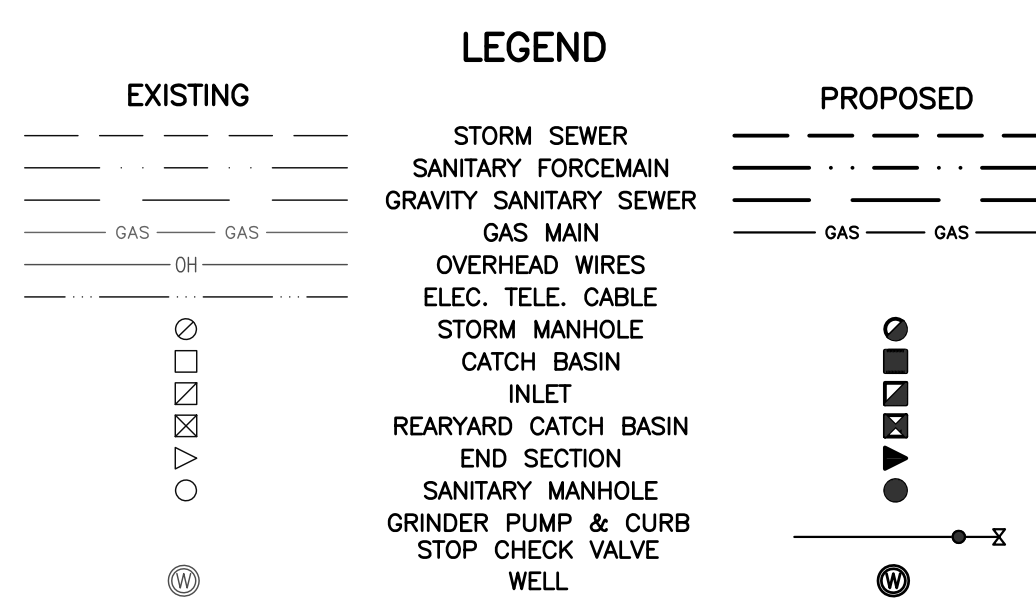
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Bogie Lake Road Entrance Plan
 "Eagles Landing" Site Condominium
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN



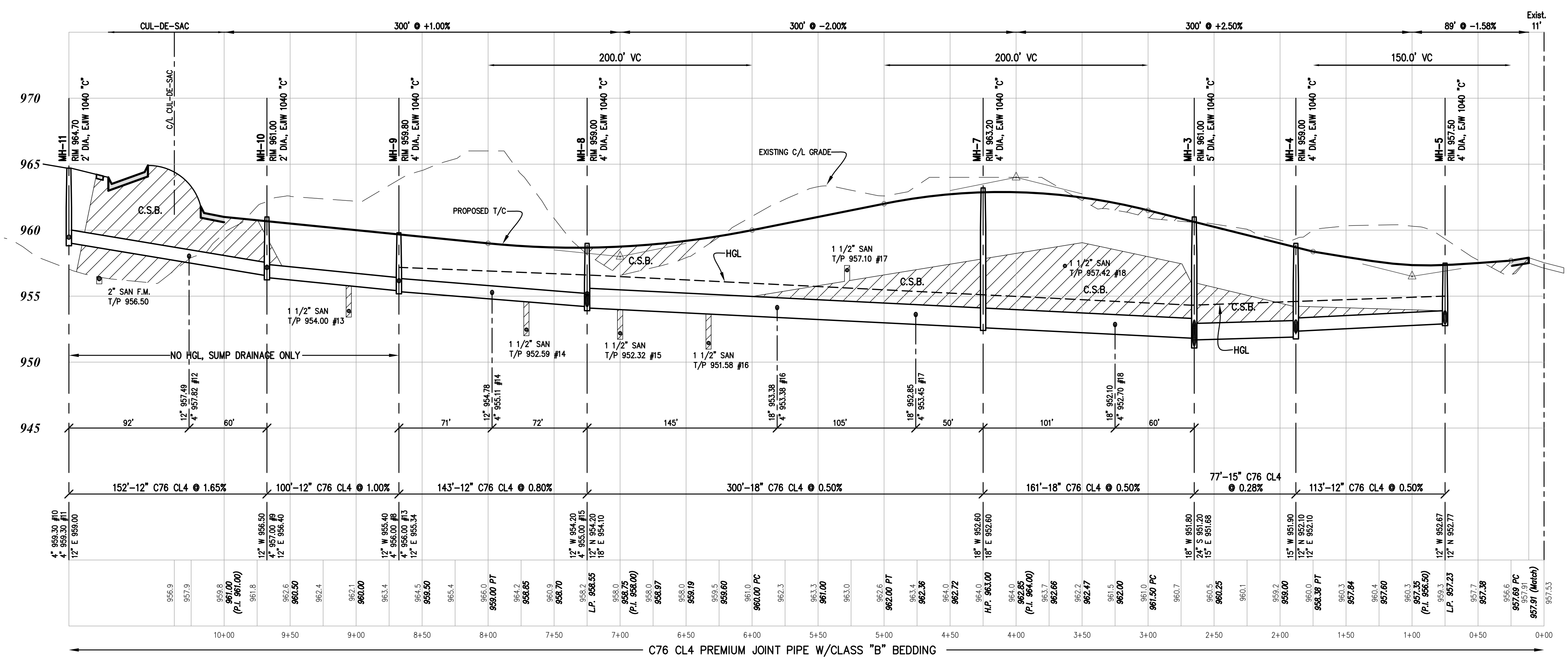


ADA RAMP NOTES:
 ADA RAMP WITH ADA DETECTABLE WARNING STRIPS AT ALL ROAD CROSSINGS.
 MAXIMUM RUNNING SLOPE = (1 ON 12) 8.3%
 MAXIMUM CROSS SLOPE = 2%
 PEDESTRIAN CROSSING SIGNS TO BE INSTALLED AT ALL PEDESTRIAN PATH CROSSINGS WHERE THE CROSSING OCCURS AT A LOCATION OTHER THAN AN INTERSECTION. (TYPICAL)



NOTE:
 -A MINIMUM OF 18" VERTICAL SEPARATION IS REQUIRED BETWEEN ALL UTILITIES (SANITARY & STORM)

Blue Ridge Parkway



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DATE	ISSUE
11-30-2020	PER MCKENNA (10-25-20), PER DLZ (10-27-20)
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DRAWN GF			
DESIGN PCM			
SECTION	33	T-3-N-R-8-E	

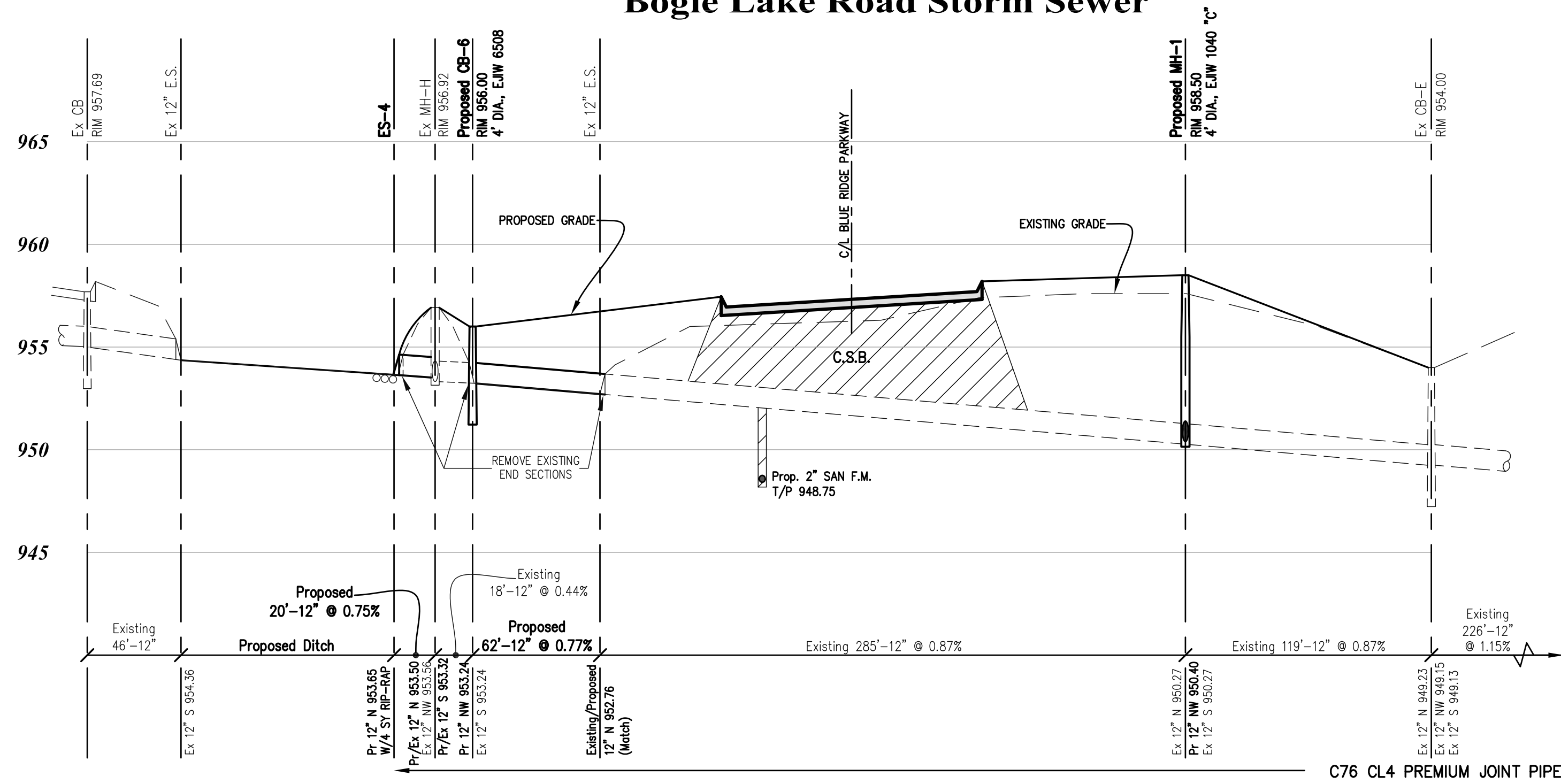
72 HOURS (4 WORKING DAYS) BEFORE YOU DIG
 CALL MISS DIG
 800-482-7171
 (TOLL FREE)

Paving & Storm Sewer Plan & Profile
 "Eagles Landing" Site Condominium
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

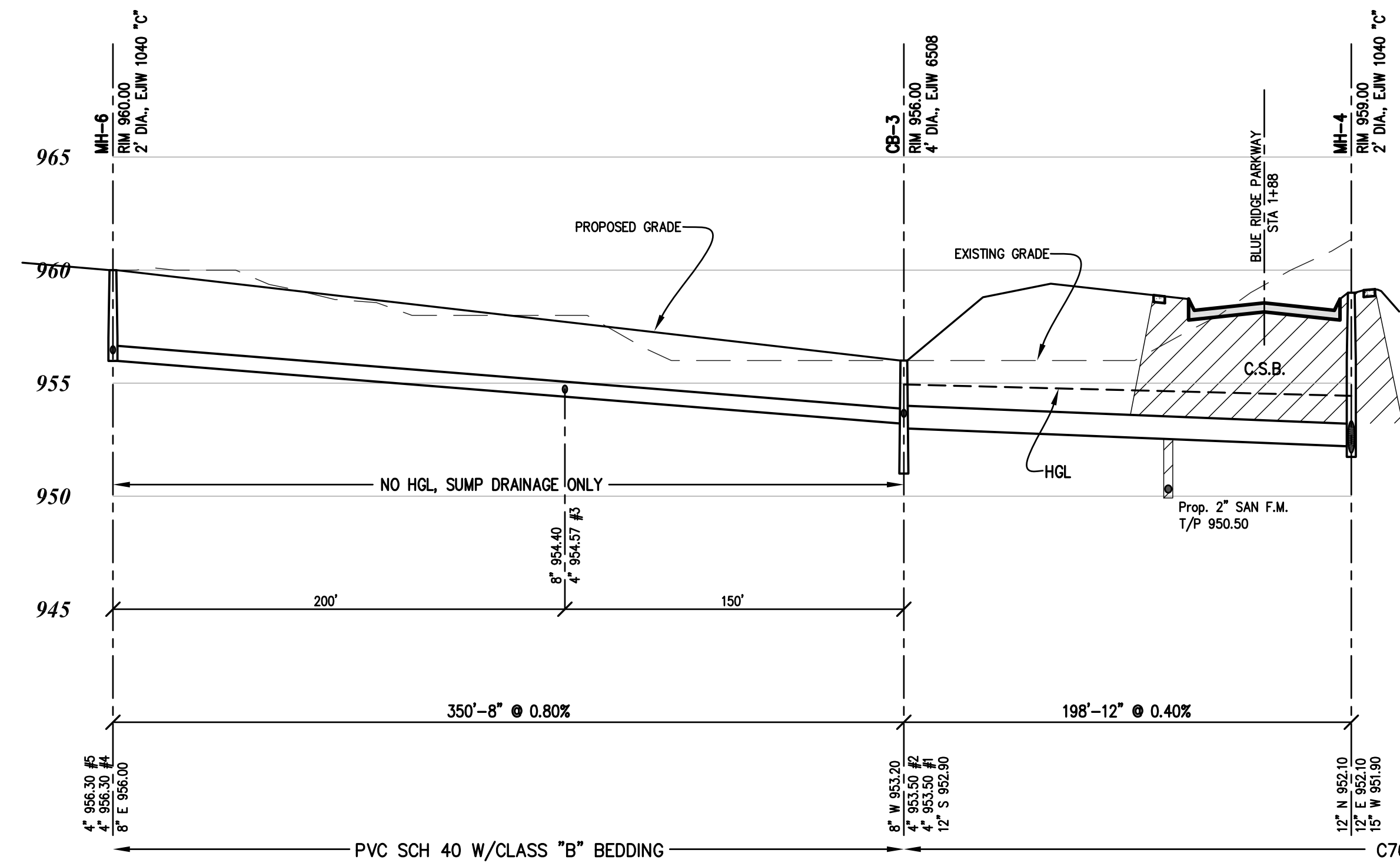
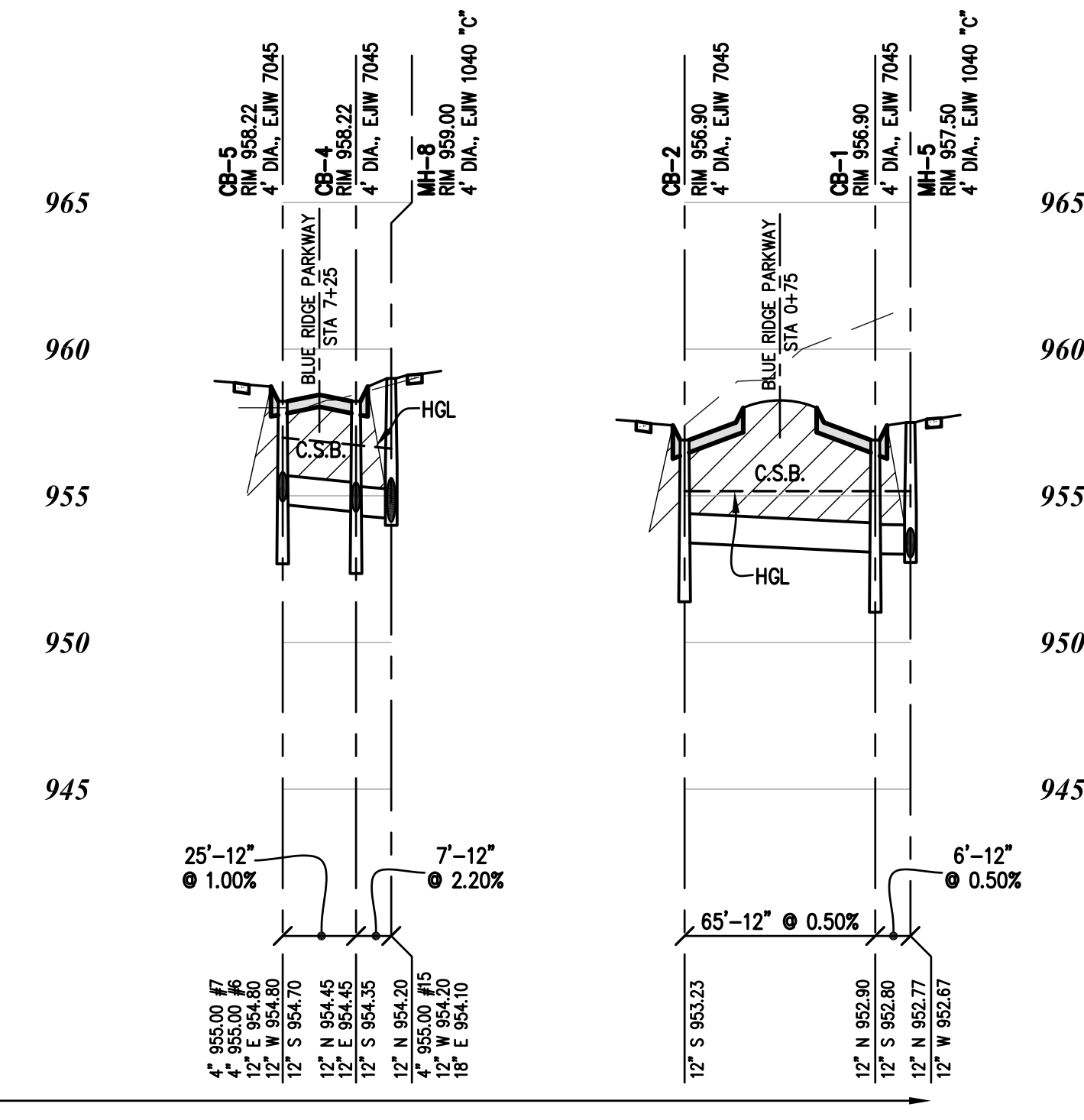
STATE OF MICHIGAN
 PATRICK MCWILLIAMS
 ENGINEER
 NO. 31658
 PROFESSIONAL

SCALE 1" = 50' HORIZ.
 1" = 5' VERT.
 SHEET 8 OF 19
 KE 2018.296

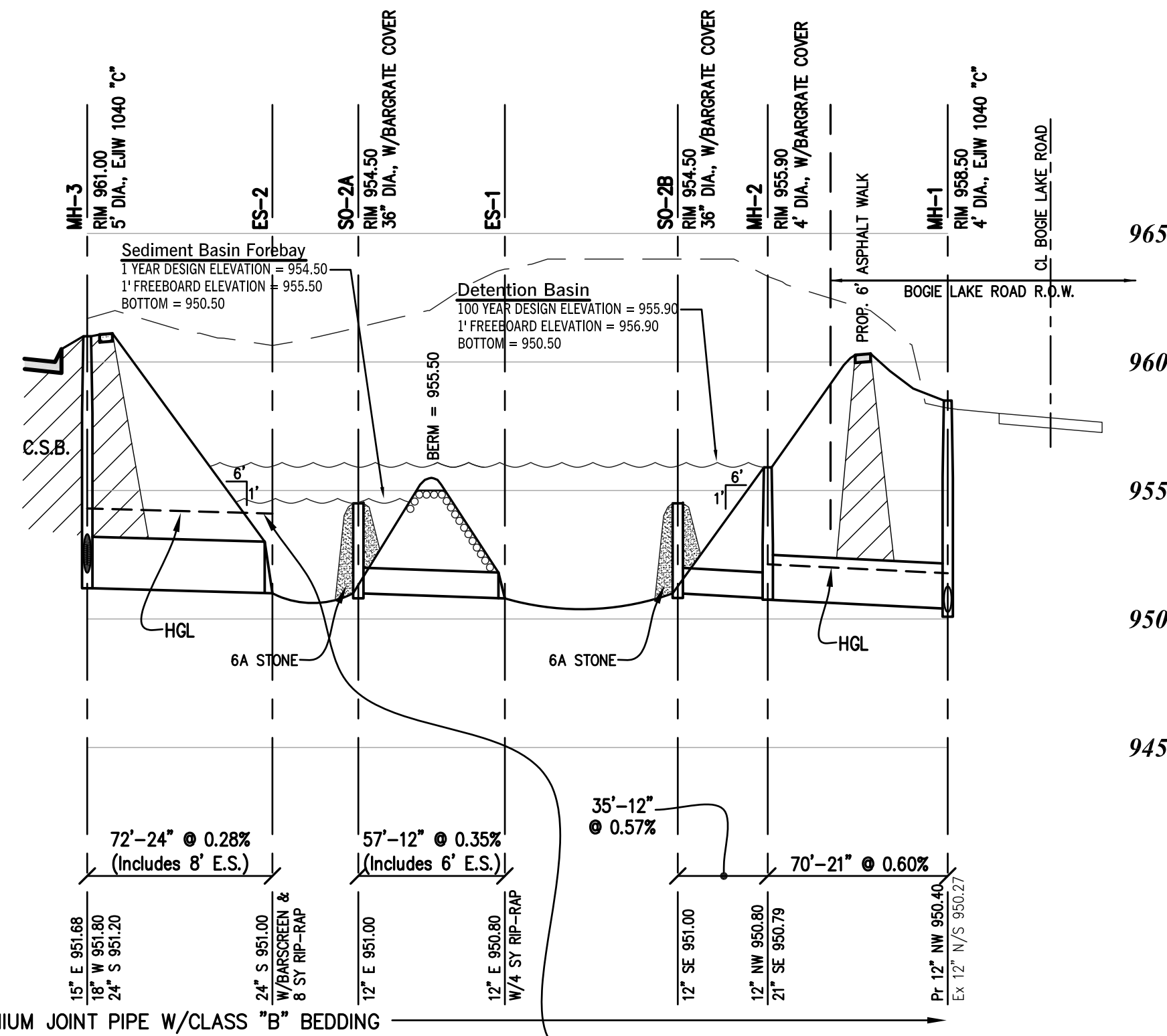
Bogie Lake Road Storm Sewer



C76 CL4 PREMIUM JOINT PIPE W/CLASS "B" BEDDING



C76 CL4 PREMIUM JOINT PIPE W/CLASS "B" BEDDING



Starting H.G.L. Calculation
 1055.90-1051.00 = 4.90'
 (4.9)/(2/3) = 3.27'
 1051.00+3.27' = 1054.27'

STORM SEWER SYSTEM DESIGN

$Q = A \cdot 1.486 \cdot R^{2/3} \cdot S^{1/2}$ $Q = C \cdot I \cdot A$ $I = \frac{1.78}{L + 25}$

STRUCTURE NO.	INCREMENTAL AREA (A)	TOTAL AREA (A)	RUNOFF COEFFICIENT (C)	EQUIV. AREA (C-A)	TRAVEL TIME (T)	MANHOLE INTENSITY (I)	C.FLOW (Q = 12 C A)	PIPE CAPACITY (C.F. FALL)	DIAMETER OF PIPE	LENGTH OF PIPE TO NEXT STRUCTURE	SLOPE OF PIPE	SLOPE OF H.G.	VELOCITY OF FLOW		H.G. ELEV.		INVERT ELEV.		RM ELEVATION COMMENTS
													FT/SEC	M/SEC	UPPER END	LOWER END	UPPER END	LOWER END	
MH-11	0	0	0.37	0	0	-	-	12	152	1.65	1.85		967.17	967.17	12" E	959.40	12" S	964.70	
MH-10	0	0	0.37	0	0	-	-	12	108	1.00	1.00				12" W	958.40	12" S	958.40	961.00
MH-9	1.51	1.51	0.37	0.56	0.56	20.88	2.16	12	143	0.80	0.37	4.06	957.17	957.17	12" W	955.40	12" S	955.34	959.80
MH-8	3.87	5.18	0.37	1.36	1.92	20.88	2.16	12	143	0.80	0.37	4.06	956.64	956.64	12" W	954.20	12" S	954.10	959.80
MH-7	0	0	0.37	0	0	-	-	12	143	0.80	0.37	4.06	957.17	957.17	12" W	954.20	12" S	954.10	959.80
MH-6	0	0	0.37	0	0	-	-	8	300	0.80	-	-	-	-	8" E	953.20	8" S	952.90	960.00
MH-5	2.30	2.30	0.37	0.85	0.85	20.0	3.89	12	25	1.00	0.86	4.55	957.01	957.01	12" W	954.80	12" S	954.70	958.22
MH-4	1.37	3.67	0.37	0.51	1.36	20.09	3.88	12	7	2.20	2.19	6.75	956.79	956.79	12" W	954.40	12" S	954.30	958.22
MH-3	2.41	7.59	0.37	0.88	2.81	22.80	3.71	12	161	0.50	0.46	4.20	954.43	954.43	12" W	951.80	12" S	951.20	963.20
MH-2	0	0	0.37	0	0	-	-	8	300	0.80	-	-	-	-	8" W	953.20	8" S	952.90	960.00
MH-1	0	0	0.37	0	0	-	-	8	300	0.80	-	-	-	-	8" W	953.20	8" S	952.90	960.00
CB-3	0.97	0.97	0.37	0.36	0.36	20.0	3.89	12	198	0.40	0.16	2.88	954.95	954.95	8" W	953.20	8" S	952.90	956.00

STORM SEWER SYSTEM DESIGN

$Q = A \cdot 1.486 \cdot R^{2/3} \cdot S^{1/2}$ $Q = C \cdot I \cdot A$ $I = \frac{1.78}{L + 25}$

STRUCTURE NO.	INCREMENTAL AREA (A)	TOTAL AREA (A)	RUNOFF COEFFICIENT (C)	EQUIV. AREA (C-A)	TRAVEL TIME (T)	MANHOLE INTENSITY (I)	C.FLOW (Q = 12 C A)	PIPE CAPACITY (C.F. FALL)	DIAMETER OF PIPE	LENGTH OF PIPE TO NEXT STRUCTURE	SLOPE OF PIPE	SLOPE OF H.G.	VELOCITY OF FLOW		H.G. ELEV.		INVERT ELEV.		RM ELEVATION COMMENTS	
													FT/SEC	M/SEC	UPPER END	LOWER END	UPPER END	LOWER END		
MH-4	1.44	2.41	0.37	0.53	0.89	21.14	3.79	12	77	0.28	0.27	2.79	954.63	954.63	12" W	952.10	12" S	951.90	959.00	
CB-2	0.84	0.84	0.37	0.31	0.31	20.0	3.89	12	65	0.50	0.12	3.22	955.11	955.11	12" S	953.23	12" S	953.23	956.90	
CB-1	0.80	1.44	0.37	0.22	0.53	20.34	3.86	12	6	0.50	0.33	3.22	955.02	955.02	12" W	952.90	12" S	952.90	956.90	
MH-5	0	1.44	0.37	0	0.53	20.37	3.86	12	113	0.50	0.33	3.22	955.01	955.01	12" W	952.77	12" S	952.77	957.50	
MH-4	0.97	2.41	0.37	0.36	0.89	21.14	3.79	12	77	0.28	0.27	2.79	954.63	954.63	12" W	952.10	12" S	951.90	959.00	
MH-3	0	7.59	0.37	1.92	21.60	3.78	10.57	11.96	24	72	0.28	0.22	3.80	954.43	954.43	12" W	951.80	12" S	951.20	961.00
ES-2	0	7.59	0.37	0	2.81	21.91	-	-	-	-	-	-	954.27	954.27	24" S	951.00	E.S.	951.00		
SO-2A	1.21	8.80	0.37	0.45	3.26	-	-	-	12	57	0.35	-	-	-	-	12" E	951.00	12" S	950.00	950.80
ES-1	0	8.80	0.37	0	3.26	-	-	-	-	-	-	-	-	-	-	12" E	950.00	12" S	950.00	950.80
SO-2B	0	8.80	0.37	0	3.26	-	-	-	12	35	0.57	-	-	-	-	12" SE	951.00	12" S	951.00	954.50
OVERFLOW	0	8.80	0.37	0	3.26	21.91	3.73	12.16	21	70	0.60	0.59	952.18	952.18	12" NW	950.80	24" S	950.79	955.80	
MH-1	0	0	0.37	0	0	-	-	-	12	120	0.87	-	951.77	951.77	PR 21" NW 950.37	EX 12" S 950.27	24" S	950.27	958.50	
EXIST. CB-E	0	0	0.37	0	0	-	-	-	-	-	-	-	951.77	951.77	EX 12" N 950.77	EX 12" S 950.27	E.S.	954.00		

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DATE	ISSUE
11-30-2020	PER McKENNA (10-25-20), PER DLZ (10-27-20)

PROPRIETOR:
 BETTER BUILT HOMES
 156 EAST MEADOW CIRCLE
 WHITE LAKE, MICHIGAN 48383
 (248) 892-0080

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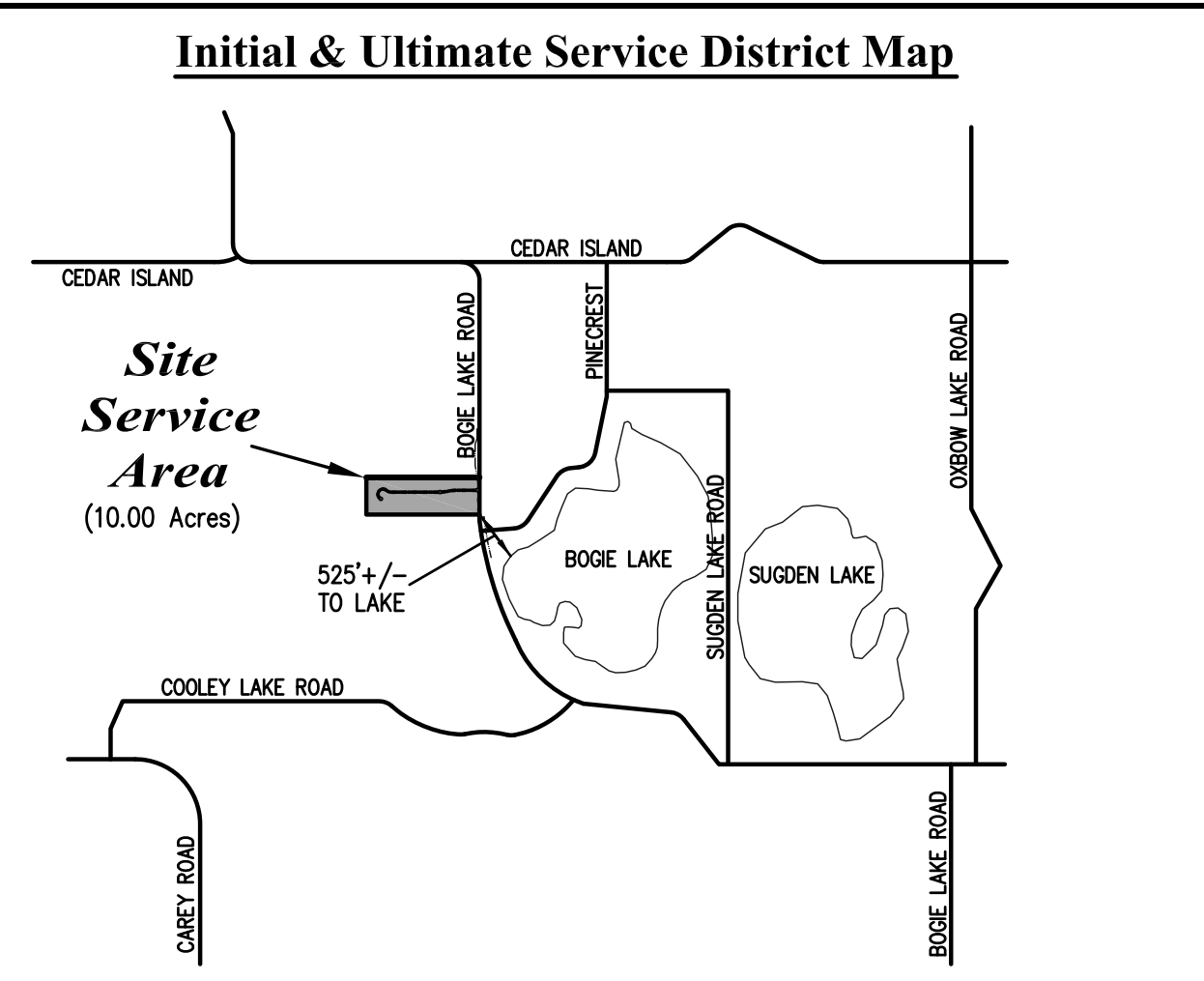
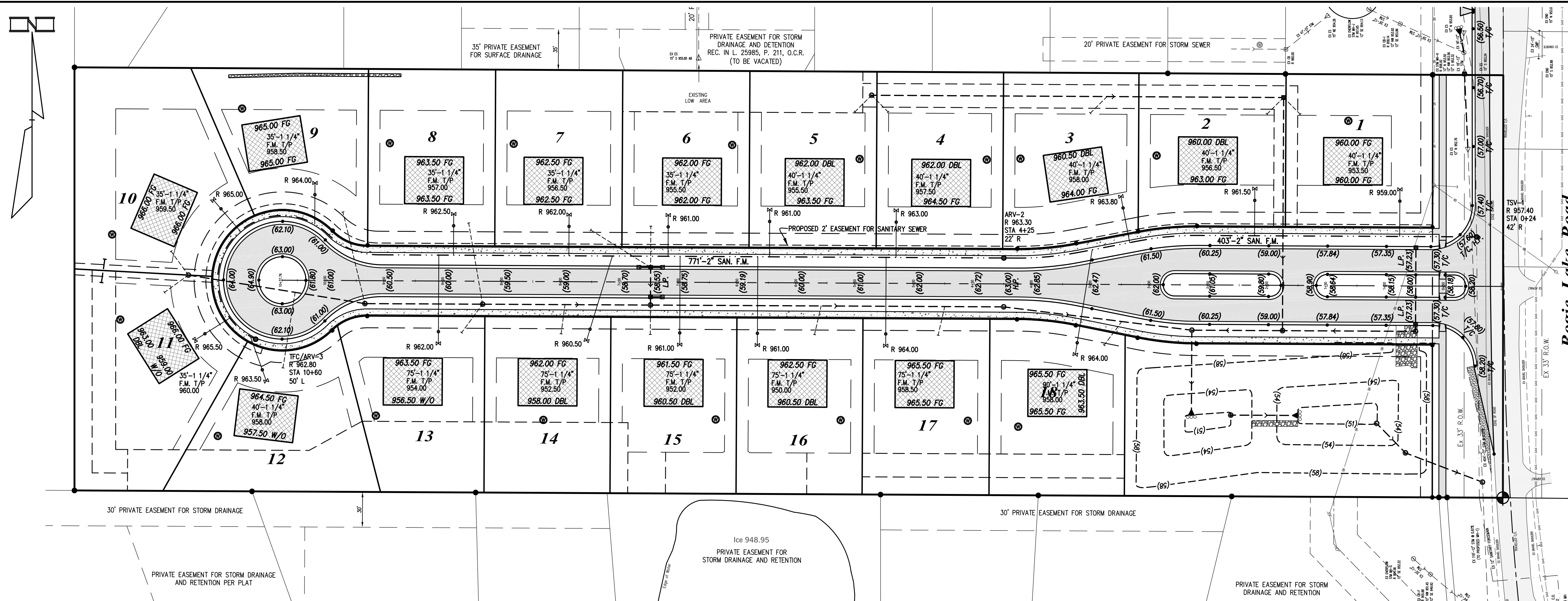
KIEFT ENGINEERING, INC.
 PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	2-3-2020	CKD. BY	DATE
DRAWN BY	PCD		
DESIGN BY	PCD		
SECTION	33	T-3-N-R-8-E	



Paving & Storm Sewer Plan & Profile
 "Eagles Landing" Site Condominium
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 50' HORIZ.
 5" VERT.
 SHEET 9 OF 19
 KE 2018.296



Initial & Ultimate Service District (10.00 Acres)
SANITARY DESIGN (SOUTH COMMERCE WWTF SERVICE AREA)

"AVERAGE FLOW"
 18 REU'S @ 2.70 PERSONS/REU = 49 PERSONS
 49 PERSONS x 100 GPCD = 4,900 GPD = 0.0049 MGPD
 $Q = 1.55$ (conversion)
 $Q = 0.0076$ CFS

"PEAK FLOW"
 18 REU'S @ 2.70 PERSONS/REU = 49 PERSONS/1000 = 0.049 = P
 $Q = 100 \times (18 + \sqrt{P}) / (4 + \sqrt{P}) = 431.65$ GPCD
 49 PERSONS x 431.65 GPCD = 21,150 GPD = 0.0212 MGPD
 $Q = 1.55$ (conversion)
 $Q = 0.0328$ CFS

NOTE: AN 8" TRUSS PIPE @ 0.40% CAN CARRY 0.765 CFS @ 2.19 FPS.
 A 10" TRUSS PIPE @ 0.30% CAN CARRY 1.194 CFS @ 2.19 FPS

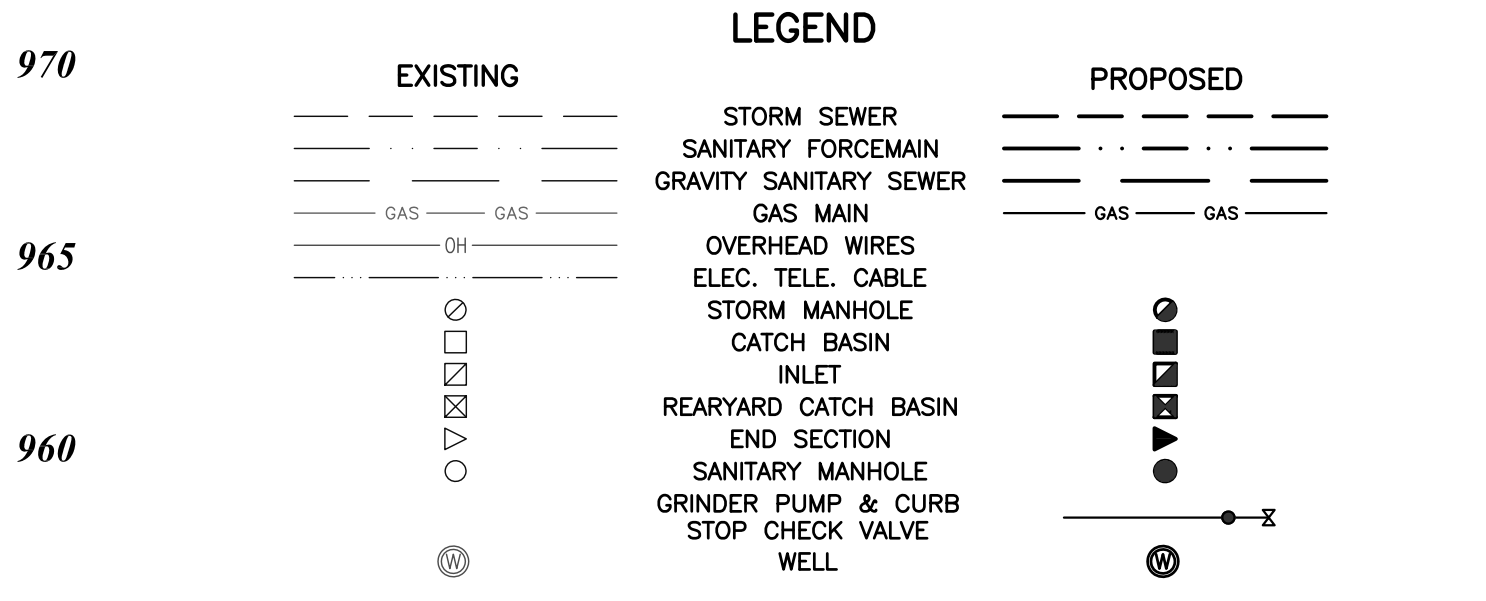
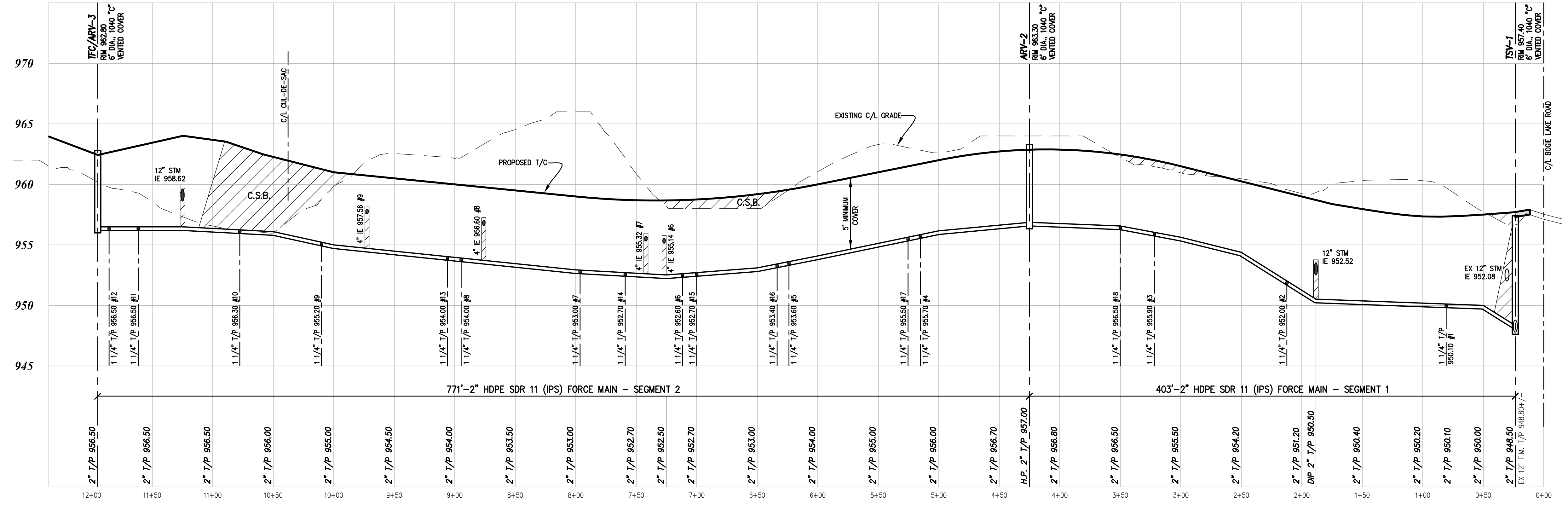
SANITARY FORCEMAIN SEGMENTS	
SEGMENT	LOTS
1	1, 2, 3 & 18
2	4 THRU 17

NOTE:
 -SANITARY SEWER GRAVITY SERVICE IS AVAILABLE FOR ALL FIRST FLOOR ELEVATIONS ONLY.
 -SANITARY SEWER GRAVITY SERVICE IS NOT AVAILABLE FOR BASEMENTS.

Blue Ridge Parkway

Grinder Pump Table

Lot#	House Elev.	House Bsm Elev.	Barnes Eco Tran System Omni Grind Plus Grinder Pump (2 HP) Model	Basin Diameter	Basin Depth	Rim Elev.	1.5" Intake Elev.	Pump off Elev.	Basin Bottom Elev.
1	960.0	953.0	OGP2022CE	See Drawing	114"	959.00	952.60	950.60	949.50
2	963.0	956.0	OGP2022CE	See Drawing	114"	961.50	955.10	953.10	952.00
3	964.0	957.0	OGP2022CE	See Drawing	114"	963.80	957.40	955.40	954.30
4	964.5	957.5	OGP2022CE	See Drawing	114"	963.00	956.60	954.60	953.50
5	963.5	956.5	OGP2022CE	See Drawing	114"	961.00	954.60	952.60	951.50
6	962.0	955.0	OGP2022CE	See Drawing	114"	961.00	954.60	952.60	951.50
7	962.5	955.5	OGP2022CE	See Drawing	114"	962.00	955.60	953.60	952.50
8	963.5	956.5	OGP2022CE	See Drawing	114"	962.50	956.10	954.10	953.00
9	965.0	958.0	OGP2022CE	See Drawing	114"	964.00	957.60	955.60	954.50
10	966.0	959.0	OGP2022CE	See Drawing	114"	965.00	958.60	956.60	955.50
11	966.0	959.0	OGP2022CE	See Drawing	114"	965.00	959.10	957.10	956.00
12	964.5	957.5	OGP2022CE	See Drawing	114"	963.50	957.10	955.10	954.00
13	963.5	956.5	OGP2022CE	See Drawing	114"	962.00	955.60	953.60	952.50
14	962.0	955.0	OGP2022CE	See Drawing	114"	960.50	954.10	952.10	951.00
15	961.5	954.5	OGP2022CE	See Drawing	114"	961.00	954.60	952.60	951.50
16	962.5	955.5	OGP2022CE	See Drawing	114"	961.00	954.60	952.60	951.50
17	965.5	958.5	OGP2022CE	See Drawing	114"	964.00	957.60	955.60	954.50
18	965.5	958.5	OGP2022CE	See Drawing	114"	964.00	957.60	955.60	954.50



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DATE	ISSUE
11-30-2020	PER McKENNA (10-25-20), PER DLZ (10-27-20)

PROPRIETOR:
 BETTER BUILT HOMES
 156 EAST MEADOW CIRCLE
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DATE	CKD. BY	DATE
2-3-2020		

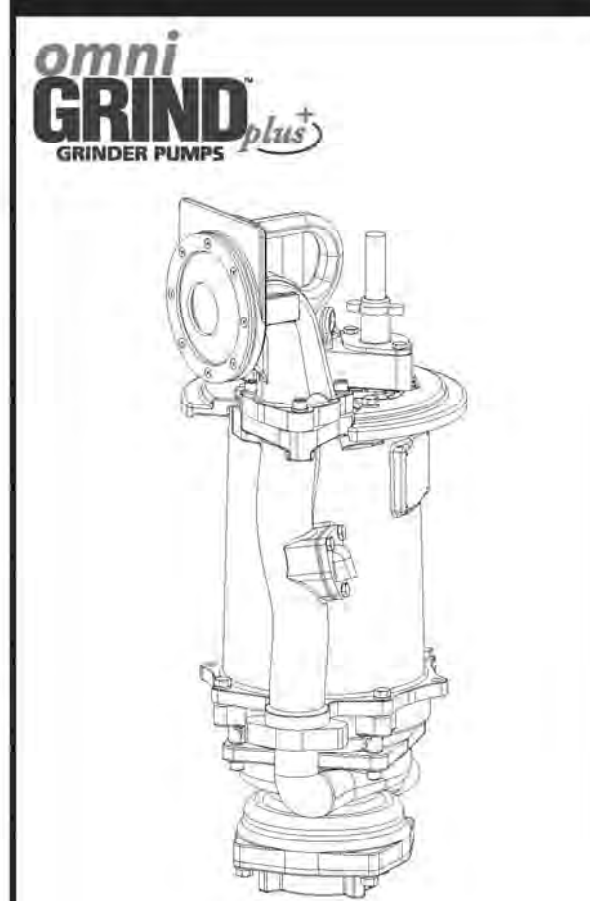


Sanitary Force Main Plan & Profile
 "Eagles Landing" Site Condominium
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 50' HORIZ.
 5" VERT.
 SHEET 10 OF 19
 KE 2018.296

Specifications:

- DISCHARGE1 1/2" Bolt-on Moveable
- LIQUID TEMPERATURE104°F (40°C) Continuous
- VOLUTECast Iron ASTM A-48, Class 30
- MOTOR HOUSINGCast Iron ASTM A-48, Class 30
- SEAL PLATECast Iron ASTM A-48, Class 30
- IMPELLERS: Design12 Vane, Vortex, With Pump Out Vanes
On Back Side, Dynamically Balanced,
ISO G6 3
Material25-5-5 Bronze
- IMPELLER SPACER300 Series Stainless Steel
- SHREDDING RINGHardened 440C Stainless Steel
- CUTTERRockwell® C-55
Stationary Faces - Silicon-Carbide
Elastomer - Buna-N
- SHAFT416 Stainless Steel
- SQUARE RINGSBuna-N
- HARDWARE300 Series Stainless Steel
- PAINTAir Dry Enamel
- SEAL: DesignSingle Mechanical
MaterialRotating Faces - Silicon-Carbide
Stationary Faces - Silicon-Carbide
Elastomer - Buna-N
- CORD ENTRY15 ft. (4.5m) Std. Cord, Custom Molded
Quick Connect for Sealing and Strain
Relief (Supplied with station)
- CORDAutomaticCSA/UL Approved 12/6 Type SOW
- UPPER BEARING: DesignSingle Row, Angular contact Ball
LoadOil
LubricationRadial & Thrust
- LOWER BEARING: DesignSingle Row, Angular contact Ball
LoadOil
LubricationRadial & Thrust
- MOTOR: DesignNEMA L- Single Phase Torque Curve,
Oil-Filled, Squirrel Cage Induction
InsulationClass F
- SINGLE PHASECapacitor Start/Capacitor Run
- SUPPORT PLATEFiberglass
- CHECK VALVE BodyCast Iron ASTM A-48, Class 30
SeatBronze ASTM C836
FlagFiber Reinforced Buna
- LEVEL CONTROLSUPPLIED IN PACKAGE SYSTEM
Model ESPS-150e, Environmentally
sealed pressure switch with CPVC
housing, HBRB diaphragm, Custom
molded quick connect for sealing and
strain relief

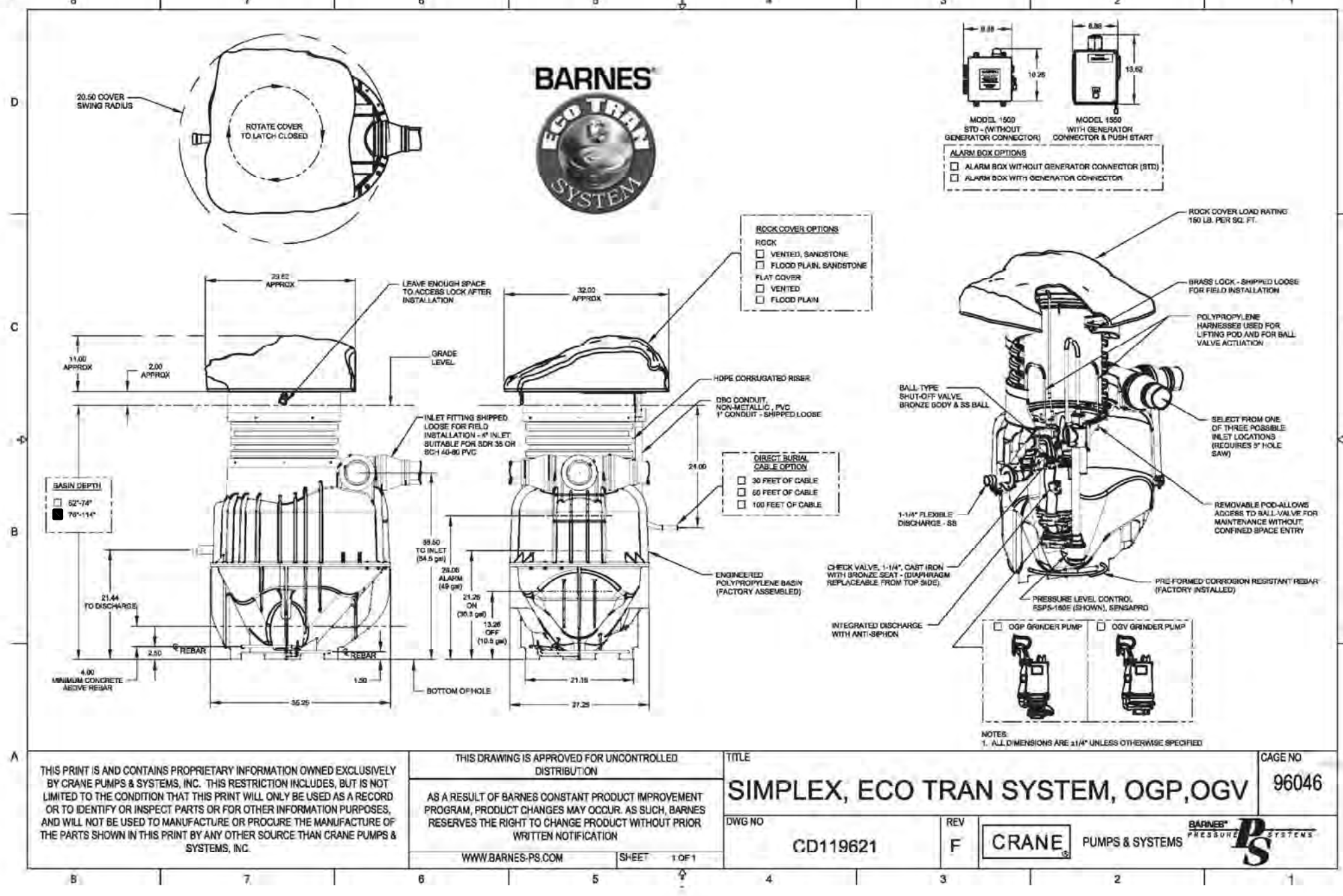


**Series: OGP2022CE
2HP, 3450RPM, 60Hz**

This product may be covered by one or more of the following patents and other patent(s) pending:
US Patent 7,357,341

DESCRIPTION:
THE GRINDER PUMP IS DESIGNED TO REDUCE DOMESTIC SEWAGE TO A FINELY GROUND SLURRY.

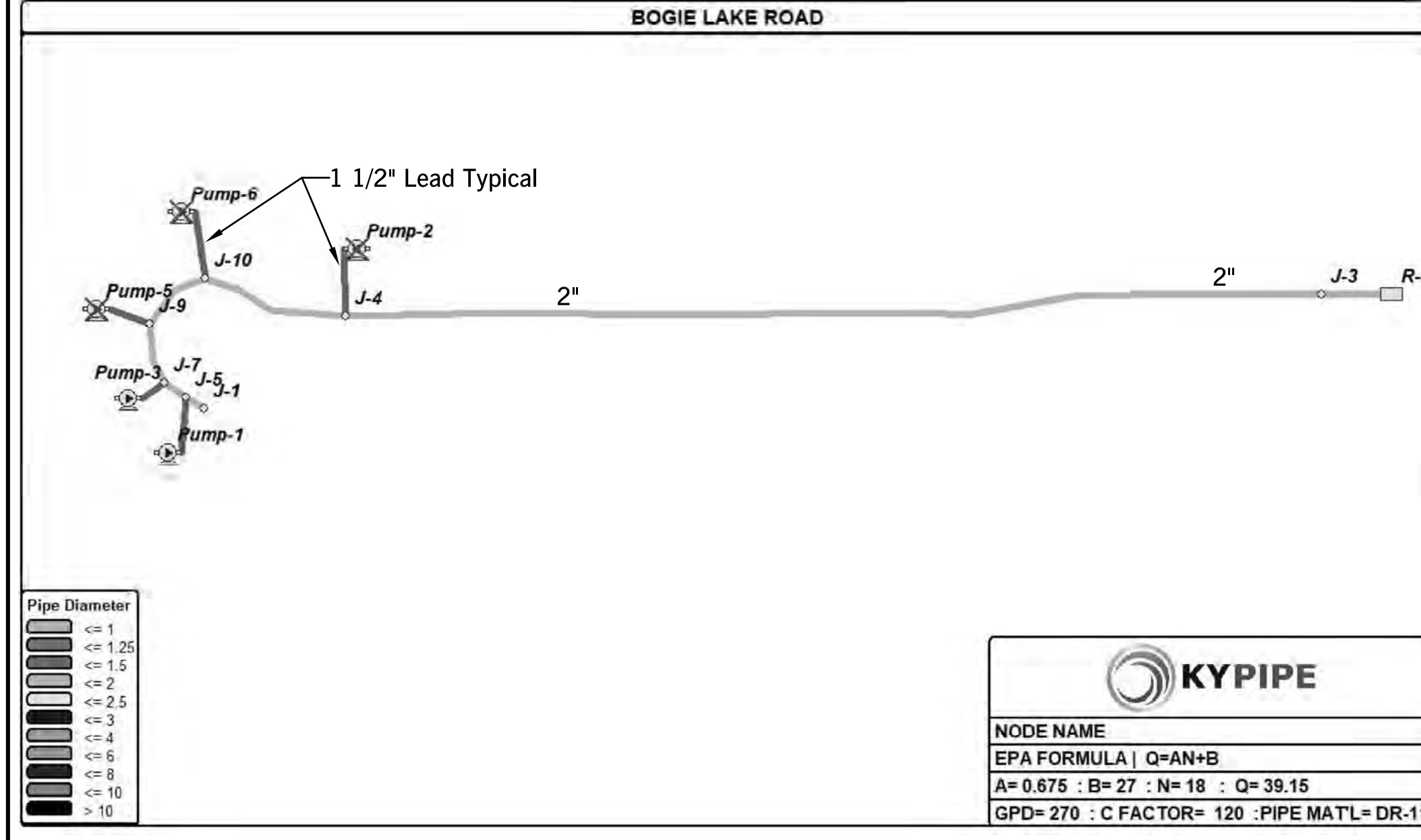
WARNING:
CANCER AND REPRODUCTIVE HARM -
WWW.P65WARNINGS.CA.GOV



SIMPLEX, ECO TRAN SYSTEM, OGP, OGV
CD119821
CRANE PUMPS & SYSTEMS

Grinder Pump Table

Lot#	House FG Elev.	House Bsmt Elev.	Barnes Eco Tran System Omni Grind Plus Grinder Pump (2 HP) Model	Basin Diameter	Basin Depth	Rim Elev.	1.5' Intake Elev.	Pump off Elev.	Basin Bottom Elev.
1	960.0	953.0	OGP2022CE	See Drawing	114"	959.00	952.60	950.60	949.50
2	963.0	956.0	OGP2022CE	See Drawing	114"	961.50	955.10	953.10	952.00
3	964.0	957.0	OGP2022CE	See Drawing	114"	963.80	957.40	955.40	954.30
4	964.5	957.5	OGP2022CE	See Drawing	114"	963.00	956.60	954.60	953.50
5	963.5	956.5	OGP2022CE	See Drawing	114"	961.00	954.60	952.60	951.50
6	962.0	955.0	OGP2022CE	See Drawing	114"	961.00	954.60	952.60	951.50
7	962.5	955.5	OGP2022CE	See Drawing	114"	962.00	955.60	953.60	952.50
8	963.5	956.5	OGP2022CE	See Drawing	114"	962.50	956.10	954.10	953.00
9	965.0	958.0	OGP2022CE	See Drawing	114"	964.00	957.60	955.60	954.50
10	966.0	959.0	OGP2022CE	See Drawing	114"	965.00	958.60	956.60	955.50
11	966.0	959.0	OGP2022CE	See Drawing	114"	965.50	959.10	957.10	956.00
12	964.5	957.5	OGP2022CE	See Drawing	114"	963.50	957.10	955.10	954.00
13	963.5	956.5	OGP2022CE	See Drawing	114"	962.00	955.60	953.60	952.50
14	962.0	955.0	OGP2022CE	See Drawing	114"	960.50	954.10	952.10	951.00
15	961.5	954.5	OGP2022CE	See Drawing	114"	961.00	954.60	952.60	951.50
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17	965.5	958.5	OGP2022CE	See Drawing	114"	964.00	957.60	955.60	954.50
18	965.5	958.5	OGP2022CE	See Drawing	114"	964.00	957.60	955.60	954.50



SUMMARY OF ORIGINAL DATA

UNITS SPECIFIED
FLOWRATE = gallons/minute
HEAD (HGL) = Feet
PRESSURE = psig

PIPELINE DATA

PIPE NAME	NODE #1	NODE #2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS	MINOR LOSS COEFF.
P-1	J-1	J-5	18.04	1.97	120.0000	0.00
P-2	J-3	R-1	61.19	1.97	120.0000	0.00
P-3	J-4	J-3	858.30	1.97	120.0000	0.00
P-4	J-5	J-7	23.16	1.97	120.0000	0.00
P-5	O-Pump-1	J-5	51.52	1.53	120.0000	0.00
P-6	O-Pump-2	J-4	58.78	1.53	120.0000	0.00
P-8	J-7	J-9	54.82	1.97	120.0000	0.00
P-9	O-Pump-3	J-7	34.56	1.53	150.0000	0.00
P-12	J-9	J-10	65.25	1.97	120.0000	0.00
P-13	O-Pump-5	J-9	48.31	1.53	150.0000	0.00
P-14	J-10	J-4	131.02	1.97	120.0000	0.00
P-15	O-Pump-6	J-10	62.21	1.53	150.0000	0.00

NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
J-1		0.00	954.00	
J-3		0.00	958.00	
J-4		0.00	966.00	
J-5		0.00	954.00	
J-7		0.00	954.00	
J-9		0.00	962.00	
J-10		0.00	964.00	
O-Pump-1		954.00		944.00
O-Pump-2		954.00		944.00
O-Pump-3		962.00		952.00
O-Pump-5		964.00		954.00
O-Pump-6		957.00		952.00
R-1		966.00		956.00

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE #1	NODE #2	FLOWRATE (gpm)	HEAD LOSS (ft)	MINOR LOSS (ft)	LINE LOSS (ft)	HL+ML/1000 (ft/ft)	HL/1000 (ft/ft)
P-1	J-1	J-5	0.00	0.00	0.00	0.00	0.00	0.00
P-2	J-3	R-1	56.42	5.81	0.00	5.94	95.00	95.00
P-3	J-4	J-3	56.42	81.54	0.00	5.94	95.00	95.00
P-4	J-5	J-7	28.17	0.61	0.00	2.96	26.24	26.24
P-5	O-Pump-1	J-5	28.17	4.63	0.00	4.92	89.88	89.88
P-6	O-Pump-2	J-4	0.00	0.00	0.00	0.00	0.00	0.00
P-8	J-7	J-9	56.42	5.21	0.00	5.94	95.00	95.00
P-9	O-Pump-3	J-7	28.25	2.07	0.00	4.93	59.78	59.78
P-12	J-9	J-10	56.42	6.20	0.00	5.94	95.00	95.00
P-13	O-Pump-5	J-9	0.00	0.00	0.00	0.00	0.00	0.00
P-14	J-10	J-4	56.42	12.45	0.00	5.94	95.00	95.00
P-15	O-Pump-6	J-10	0.00	0.00	0.00	0.00	0.00	0.00

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
J-1		0.00	1063.82	954.00	109.82	47.59
J-3		0.00	957.81	958.00	-0.19	-0.08
J-4		0.00	1039.35	966.00	73.35	31.79
J-5		0.00	1063.82	954.00	109.82	47.59
J-7		0.00	1063.21	954.00	109.21	47.32
J-9		0.00	1058.00	962.00	96.00	41.60
J-10		0.00	1051.80	964.00	87.80	38.05
O-Pump-1		1058.45	954.00	114.45	49.59	
O-Pump-2		1065.27	954.00	111.27	48.22	
O-Pump-3		1058.00	962.00	96.00	41.60	
O-Pump-5		1051.80	964.00	87.80	38.05	
O-Pump-6		952.00	957.00	-5.00	-2.17	
R-1		1039.35	966.00	73.35	31.79	

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES (psi)	JUNCTION NUMBER	MINIMUM PRESSURES (psi)
O-Pump-1	49.59	R-1	-2.17
O-Pump-3	48.22	J-3	-0.08
J-1	47.59	J-4	31.79
J-5	47.59	O-Pump-2	31.79
J-7	47.32	J-10	38.05

VELOCITIES

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-8	5.94	P-4	2.96
P-12	5.94	P-5	4.92
P-2	5.94	P-9	4.93
P-3	5.94	P-14	5.94

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
Pump-1	28.17	
Pump-3	28.25	
R-1	-56.42	

NET SYSTEM INFLOW = 56.42
NET SYSTEM OUTFLOW = -56.42
NET SYSTEM DEMAND = 0.00

***** HYDRAULIC ANALYSIS COMPLETED *****

1 YEAR SEDIMENT FOREBAY CALCULATIONS (i.e. WITH OUTLET)

ONSITE CONTRIBUTING AREA = 9.51 ACRES
 OFFSITE CONTRIBUTING AREA = 0 ACRES
 TOTAL CONTRIBUTING AREA = 9.51 ACRES
 RUNOFF COEFFICIENT (C) = 0.373

$Q_A = (0.20)(9.51 \text{ ACRES}) = 1.902 \text{ C.F.S.}$

$Q_0 = \frac{Q_A}{(A)(C)} = \frac{1.902}{(9.51)(0.373)} = 0.5362$

$T = -25 + \sqrt{\frac{2,700}{Q_0}} = 45.96 \text{ MINUTES}$

$V_S = \frac{4,320 T}{T + 25} - 40 Q_0 T = 1,813 \text{ C.F./ACRE}$

$V_T \text{ REQ'D} = V_S (C)(A) = (1,813)(0.373)(9.51) = 6,432 \text{ C.F. REQ'D.}$

VOLUME PROVIDED:

- 951.00: 500 SF → 1,600 SF_{AV} x 1' DEPTH = 1,600 CF
 - 952.00: 1,200 SF → 3,900 SF_{AV} x 2' DEPTH = 7,800 CF
 - 954.00: 3,800 SF → 2,500 SF_{AV} x 2' DEPTH = 5,000 CF
 - 954.50: 4,800 SF → 4,300 SF_{AV} x 0.5' DEPTH = 2,150 CF
 - 955.90: 7,000 SF → 5,900 SF_{AV} x 1.4' DEPTH = 8,260 CF
- TOTAL = 16,260 CF

SEDIMENT FOREBAY

EXISTING WATER ELEVATION = NONE
 1 YEAR DESIGN HIGH WATER ELEVATION = 954.50
 1' FREEBOARD ELEVATION = 955.50
 STORAGE REQUIRED = 6,432 CF
 STORAGE PROVIDED = 8,000 CF
 STANDPIPE RIM = 954.50
 OVERFLOW SPILLWAY = 955.00
 TOP OF BERM = 955.50 (BETWEEN BASINS)
 BOTTOM = 950.50

1 YEAR SEDIMENT BASIN

1 YEAR REQUIRED VOLUME = 6,432 CF
 1 YEAR STORM LEVEL = 954.50
 AREA = VOLUME / 3.5' HEIGHT = 1,838 SF
 ORIFICE AREA REQUIRED $A = (0.3988)(\text{AREA})(\sqrt{\text{HEIGHT}}) = 0.0079 \text{ FT}^2$
 172,800
 THUS, IF AREA = 1,838 SF, HEIGHT = 3.5'; THEN $A = 0.0079 \text{ FT}^2$
 0.0079 FT² / 0.00545 FT² PER 1" DIA. HOLE = 2 HOLES
 USE (3) 1" DIAMETER HOLES TO OFFSET FOR CLOGGING

100 YEAR DETENTION BASIN CALCULATIONS (i.e. WITH OUTLET)

ONSITE CONTRIBUTING AREA = 9.51 ACRES (NOTE: ACTUAL TO BASIN = 8.80 ACRES)
 OFFSITE CONTRIBUTING AREA = 0.00
 TOTAL CONTRIBUTING AREA = 9.51 ACRES
 RUNOFF COEFFICIENT (C) = 0.373

$Q_A = (0.20)(9.51 \text{ ACRES}) = 1.902 \text{ C.F.S.}$

$Q_0 = \frac{Q_A}{(A)(C)} = \frac{1.902}{(9.51)(0.373)} = 0.5362$

$T = -25 + \sqrt{\frac{10,312.50}{Q_0}} = 113.68 \text{ MINUTES}$

$V_S = \frac{16,500 T}{T + 25} - 40 Q_0 T = 11,088 \text{ C.F./ACRE}$

$V_T \text{ REQ'D} = V_S (C)(A) = (11,088)(0.373)(9.51) = 39,332 \text{ C.F. REQ'D.}$

VOLUME PROVIDED:

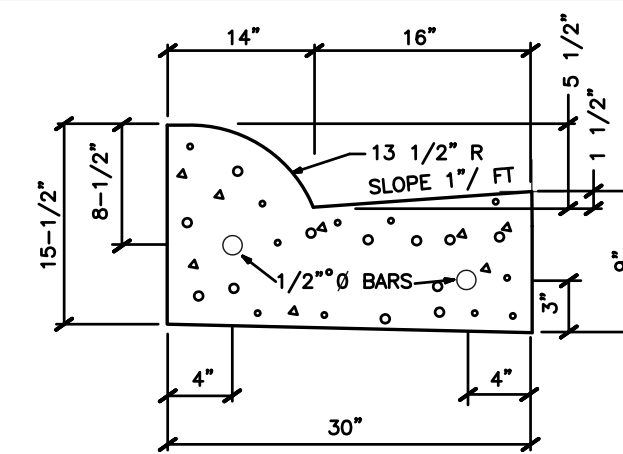
- 951.00: 1,000 SF → 1,600 SF_{AV} x 1' DEPTH = 1,600 CF
 - 952.00: 2,200 SF → 3,900 SF_{AV} x 2' DEPTH = 7,800 CF
 - 954.00: 5,600 SF → 2,500 SF_{AV} x 2' DEPTH = 5,000 CF
 - 955.90: 9,600 SF → 7,600 SF_{AV} x 1.9' DEPTH = 14,440 CF
- TOTAL VOLUME = 23,840 CF PROVIDED!
- OVERALL TOPO = 23,840 CF (BASIN) + 16,260 CF (FORE-BAY) = 40,100 CF PROVIDED, OK!

ORIFICE FORMULA

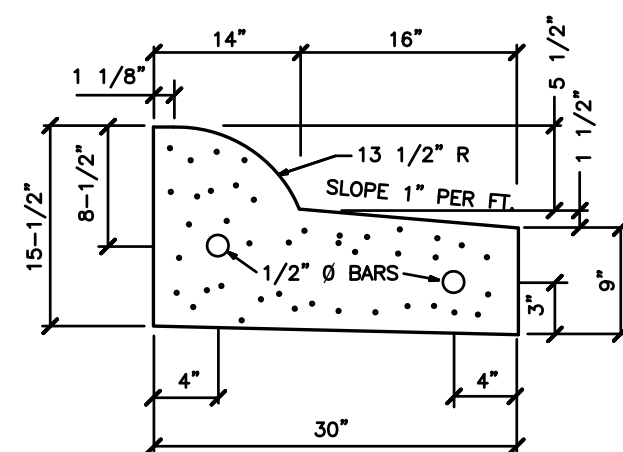
$Q_A = 0.62 (A_0)(2gh)^{1/2}$
 $A_0 = \text{AREA OF ORIFICE PIPE}$
 $g = 32.2 \text{ FT./SEC.}^2$
 $H = \text{DEPTH OF BASIN ABOVE CENTERLINE OUTLET PIPE} = 955.90 - [951.00 + \frac{6''}{2}] = 951.25 = 4.65'$
 $A_0 = \frac{Q_A}{0.62 (2gh)^{1/2}} = \frac{1.902}{0.62 [(2)(32.2)(4.65)]^{1/2}} = 0.1773 \text{ S.F.}$
 DIAMETER ORIFICE (D₀): $D_0 = \sqrt{\frac{4(A_0)}{\pi}} = \sqrt{\frac{4(0.1773)}{\pi}} = 0.475 \text{ FT.} = 5.70 \text{ INCH}$
 USE 6" RESTRICTION

DETENTION BASIN

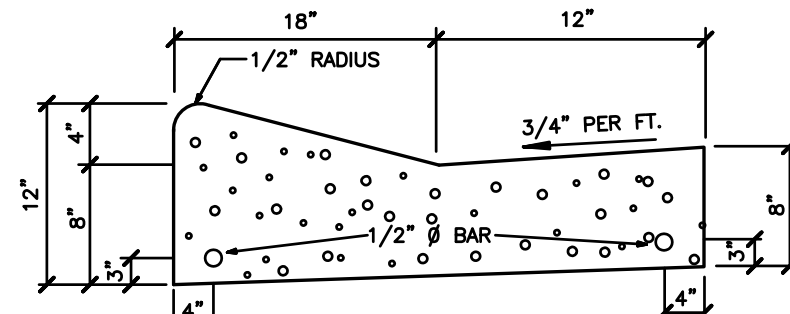
EXISTING WATER ELEVATION = NONE
 100 YEAR DESIGN HIGH WATER ELEVATION = 955.90
 1' FREEBOARD ELEVATION = 956.90
 STORAGE REQUIRED = 39,332 C.F.
 STORAGE PROVIDED = 40,100 C.F.
 STANDPIPE RIM = 954.50
 OVERFLOW MANHOLE RIM = 955.90
 EMERGENCY OVERLAND OVERFLOW = 957.50
 TOP OF BERM = 958.50
 BOTTOM = 950.50



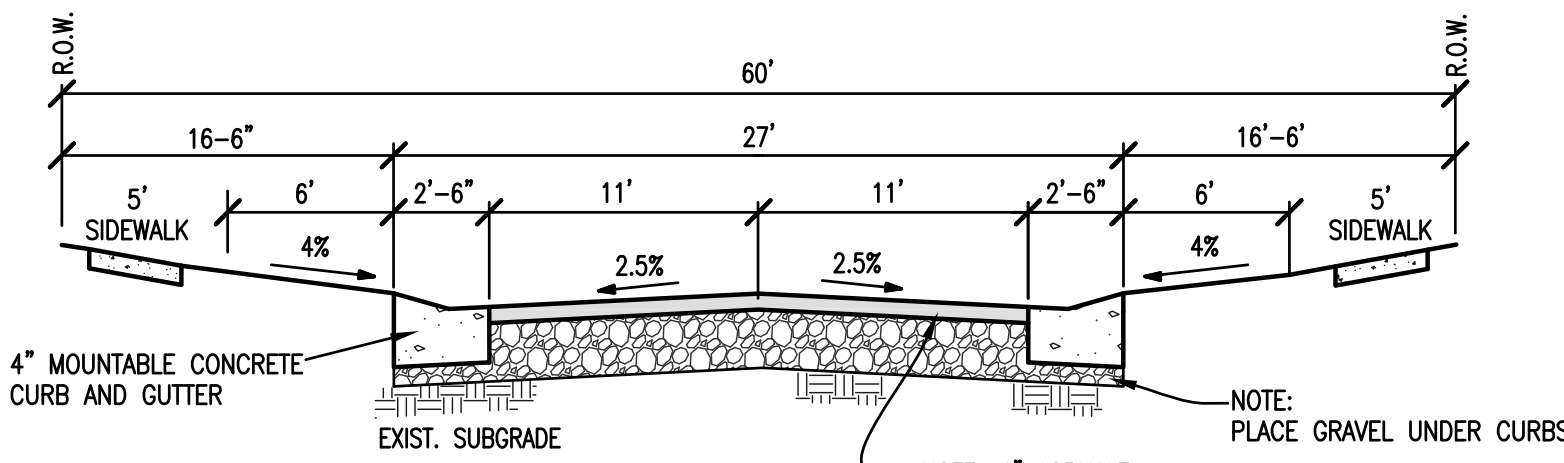
CONCRETE CURB & GUTTER (B-2)



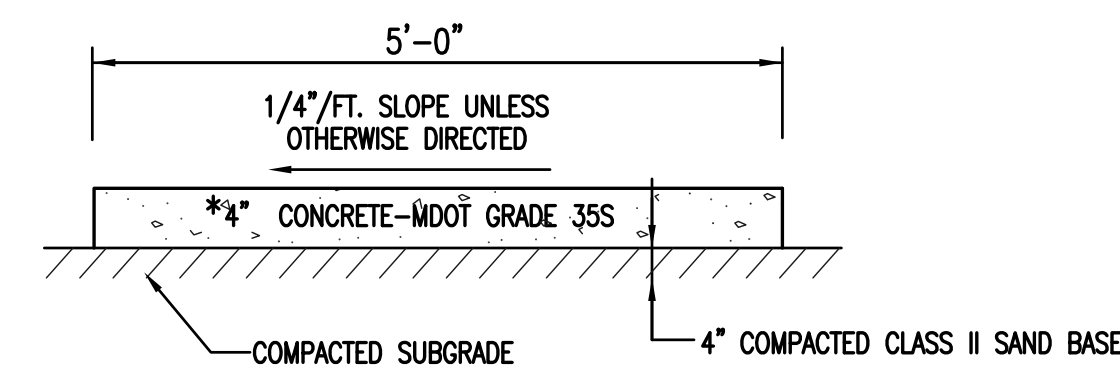
CONCRETE CURB & GUTTER (B-2 REVERSE)



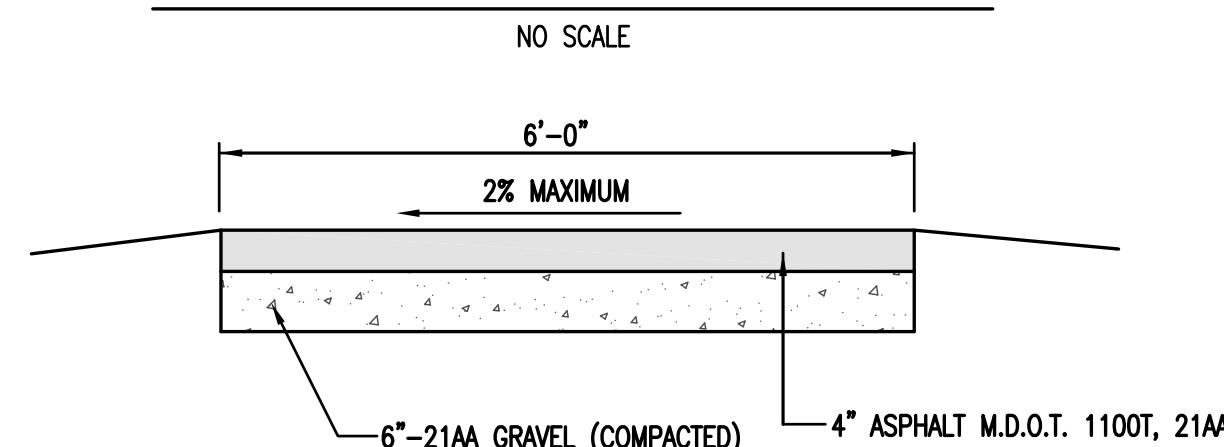
MOUNTABLE CURB AND GUTTER DETAIL



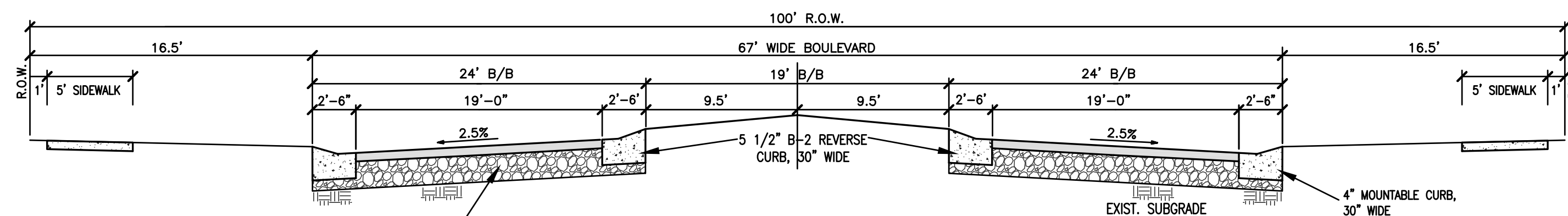
TYPICAL ROAD SECTION "A-A"



5' wd. 4" Thick Concrete Sidewalk



6' wd. 4" Thick Asphalt Path Section



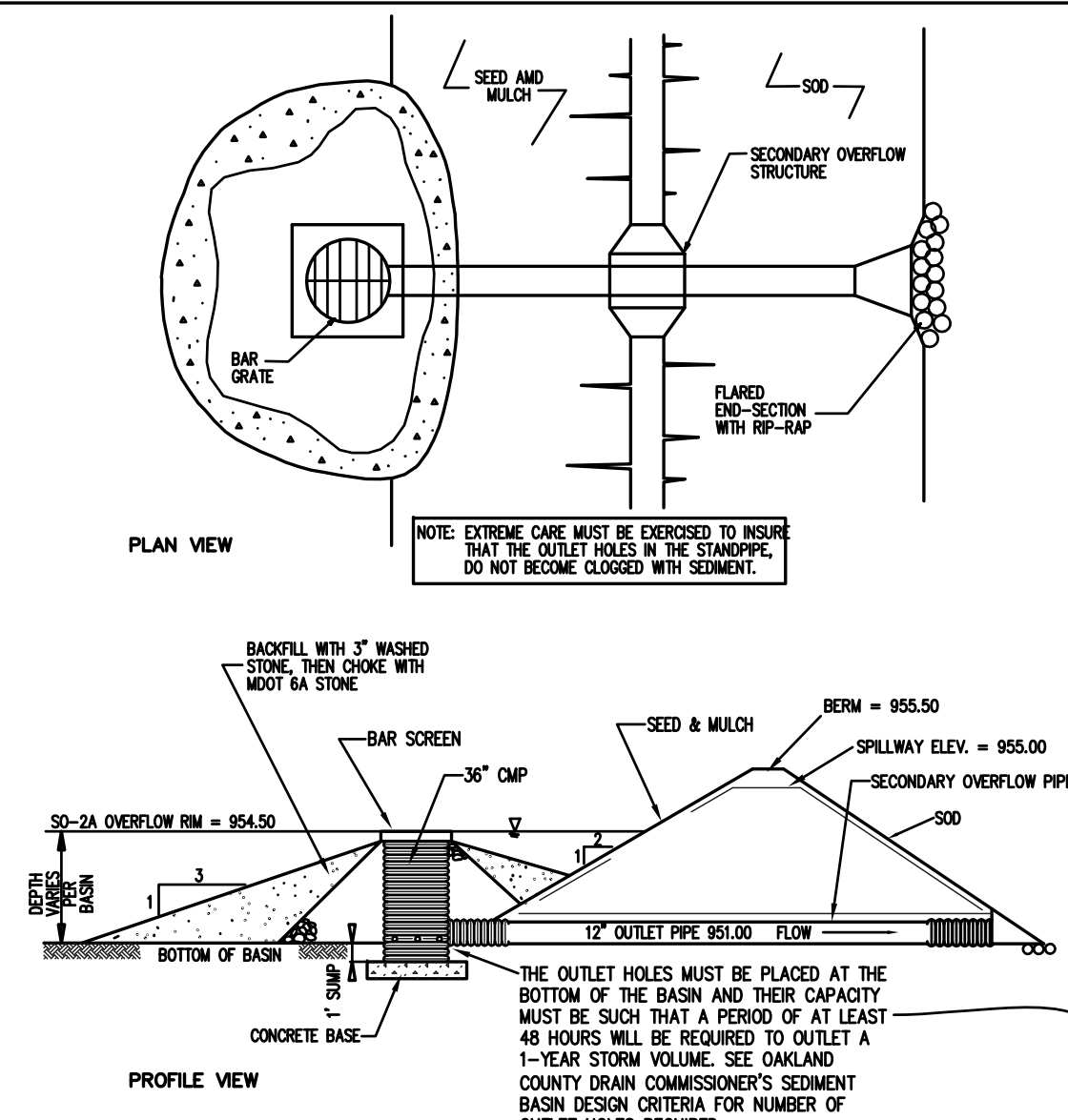
BOULEVARD ROAD SECTION "B-B"

NOTE: 4.5" ASPHALT
 1 1/2" HMA 13A OR SE
 3" HMA 3C OR 3E
 RS-1H OR SS-1H @ 0.10/GAL/SYD BETWEEN LIFTS OVER
 10"-21AA AGGREGATE, ROCC MODIFIED (6.5" UNDER CURBS)

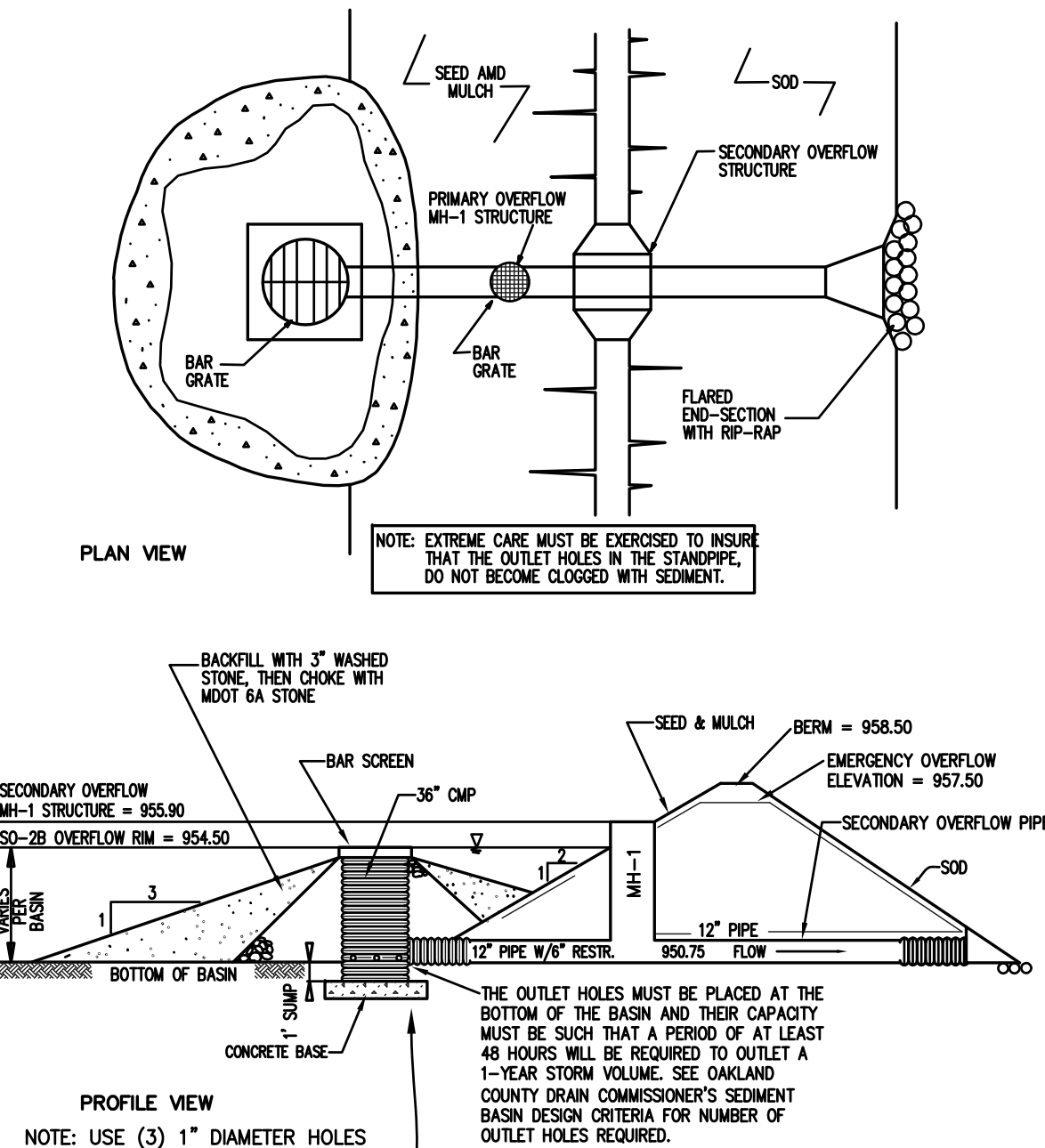
General Notes:

1. DEVELOPER: BETTER BUILT HOMES
 156 EAST MEADOW CIRCLE
 WHITE LAKE, MICHIGAN 48383
 (248) 892-0080 - CHARLES BURT
2. PROPERTY DESCRIPTION: PARCEL 12-33-100-008
 THE SOUTH 10.00 ACRES OF THE EAST 36.36 ACRES OF THE SE 1/4 OF THE NW 1/4 OF SECTION 33, T3N, R8E, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN DESCRIBED AS BEGINNING AT THE CENTER OF SECTION 33, T3N, R8E; TH N 87°18'26" W 1213.41 FT (REC. AS N 89°40'00" W 1210.80 FT) ALONG THE EAST-WEST 1/4 LINE, ALSO BEING THE NORTH LINE OF WALNUT RIDGE SUBDIVISION; A PART OF THE SW 1/4 AND SE 1/4 OF SECTION 33, T3N, R8E, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN AS RECORDED IN LIBER 272 OF PLATS, PAGES 4-9, OAKLAND COUNTY RECORDS; TH N 02°24'15" E 359.33 FT (REC. AS N 00°08'00" E 359.76 FT) TO THE SW CORNER OF "WEXFORD MANOR SUBDIVISION" A PART OF THE NORTHWEST 1/4 OF SECTION 33, T3N, R8E, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN AS RECORDED IN LIBER 286 OF PLATS, PAGES 37-40, OAKLAND COUNTY RECORDS; TH S 87°17'09" E 1213.72 FT (REC. AS S 89°40'00" E 1209.96 FT) ALONG THE SOUTH LINE OF SAID "WEXFORD MANOR SUBDIVISION" TO A POINT ON THE CENTERLINE OF BOGIE LAKE ROAD (66' WIDE); TH S 02°27'12" W 358.87 FT ALONG SAID CENTERLINE TO THE POINT OF BEGINNING. CONTAINING 10.00 ACRES. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE EAST 33 FT FOR BOGIE LAKE ROAD. ALSO SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD, IF ANY.
3. EXISTING ZONING: R-1C (SINGLE FAMILY RESIDENTIAL)
4. PROPOSED ZONING: R-1C (SINGLE FAMILY RESIDENTIAL)
5. PROPOSED USE: SINGLE FAMILY RESIDENTIAL (CONDOMINIUM)
6. SITE AREA: 10.00 ACRES
7. SETBACKS: EXISTING (R-1C)
 FRONT 35 FT
 SIDES 10 FT
 REAR 35 FT
 LOT AREAS - 16,000 SF
 LOT WIDTH - 100 FT
8. WATER SUPPLY: INDIVIDUAL WELLS (PER OAKLAND COUNTY HEALTH DEPARTMENT).
9. SEWAGE DISPOSAL: MUNICIPAL SANITARY SEWERS, GRINDER PUMPS W/FORCEMAIN SYSTEM.
10. SIGNAGE: PROPOSED PROJECT SIGNAGE ALONG BOGIE LAKE ROAD PER TOWNSHIP REQUIREMENTS.
11. OPEN SPACE AREA: 0.78 ACRES.
12. PROPOSED PUBLIC ROADWAYS: 27 FT B/B ASPHALT PAVEMENT WITH 30" MOUNTABLE CONCRETE CURB & GUTTER.
13. STORM SEWER & STORM WATER MANAGEMENT SYSTEM SHALL BE OWNED, OPERATED & MAINTAINED REGULARLY BY THE CONDOMINIUM ASSOCIATION.
14. SINCE ALL PROPOSED BUILDINGS WILL BE SINGLE FAMILY DETACHED HOUSING, THERE COULD BE MANY DIFFERENT TYPES & STYLES OF HOMES. REQUIREMENTS SUCH AS BUILDING MATERIALS & SIZING WILL BE PROVIDED WITHIN FUTURE CONDOMINIUM DOCUMENT.
15. THIS DEVELOPMENT IS PROPOSED TO BE RECORDED AS A CONDOMINIUM UNDER THE CURRENT RULES OF THE MICHIGAN CONDOMINIUM ACT.
16. LANDSCAPE PLAN PREPARED BY J. EPPINK PARTNERS, INC. ATTACHED.
17. A PROJECT SIGN WILL BE PROVIDED. SIGN DETAILS WILL BE SUBMITTED BY OTHERS.
18. THIS PROJECT DOES NOT LIE WITHIN THE 100 YEAR FLOOD PLAIN.
19. TRASH TO BE CURBSIDE PICK UP PER WHITE LAKE TOWNSHIP REQUIREMENTS.
20. THERE WILL BE A 10 FT WIDE PRIVATE EASEMENT FOR PUBLIC UTILITIES GRANTED TO THE UTILITY COMPANIES. THERE WILL BE A 20 FT WIDE EASEMENT FOR SANITARY SEWER GRANTED TO WHITE LAKE TOWNSHIP AND CENTERED ON THE UTILITY AS SHOWN. THERE WILL BE A 20 FT WIDE EASEMENT FOR STORM SEWER CENTERED ON THE UTILITY AS SHOWN.
21. NO EXTERIOR LIGHTING IS PROPOSED.

SEDIMENT FOREBAY OUTLET FILTER (36" CMP) SO-2A STANDPIPE



DETENTION BASIN OUTLET FILTER (36" CMP) SO-2B STANDPIPE



"C" Calculation

TOTAL SITE AREA = 9.51 ACRES

PAVEMENT AREAS:

ROADS: = 38,600 SF

SIDEWALKS: = 10,750 SF

FUTURE DRIVEWAYS: SAY (900 SF) x (18 DRIVES) = 16,200 SF

TOTAL PAVEMENT AREA = 65,550 SF = 1.51 ACRES @ C = 0.80

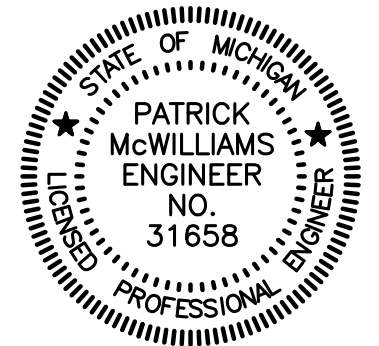
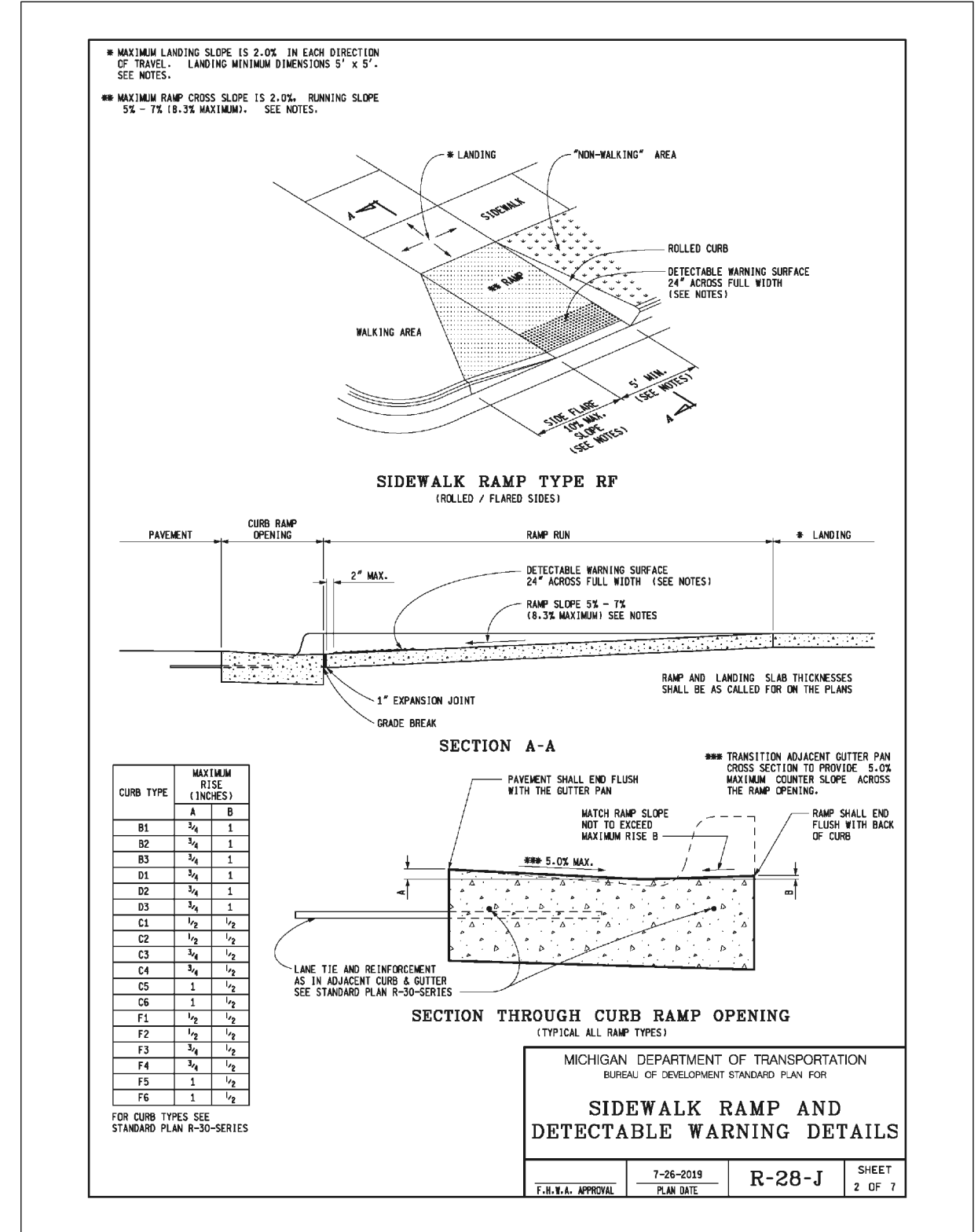
ROOF AREAS:

ASSUME (2,000 SF) x (18 HOMES) = 36,000 SF = 0.83 ACRES @ C = 0.90

DETENTION BASIN AREA: 0.20 ACRES @ C = 1.00 (AVERAGE)

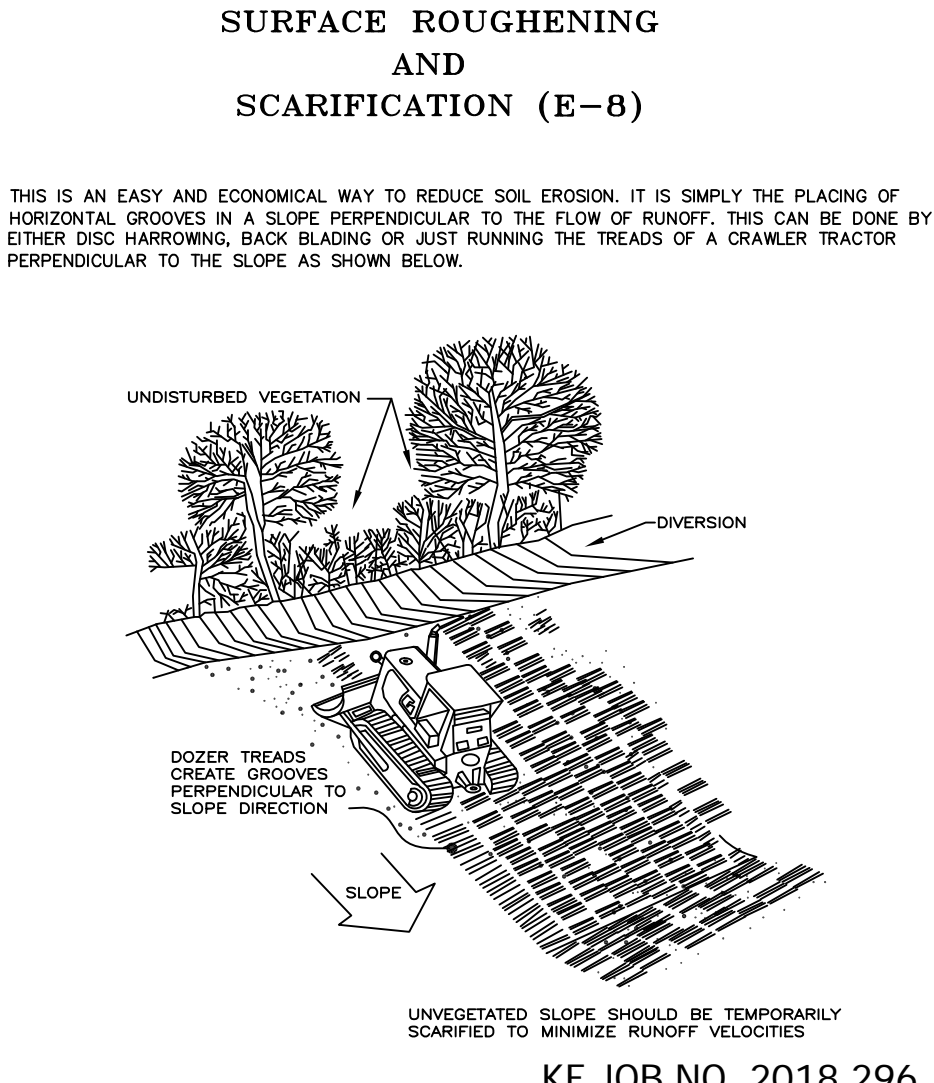
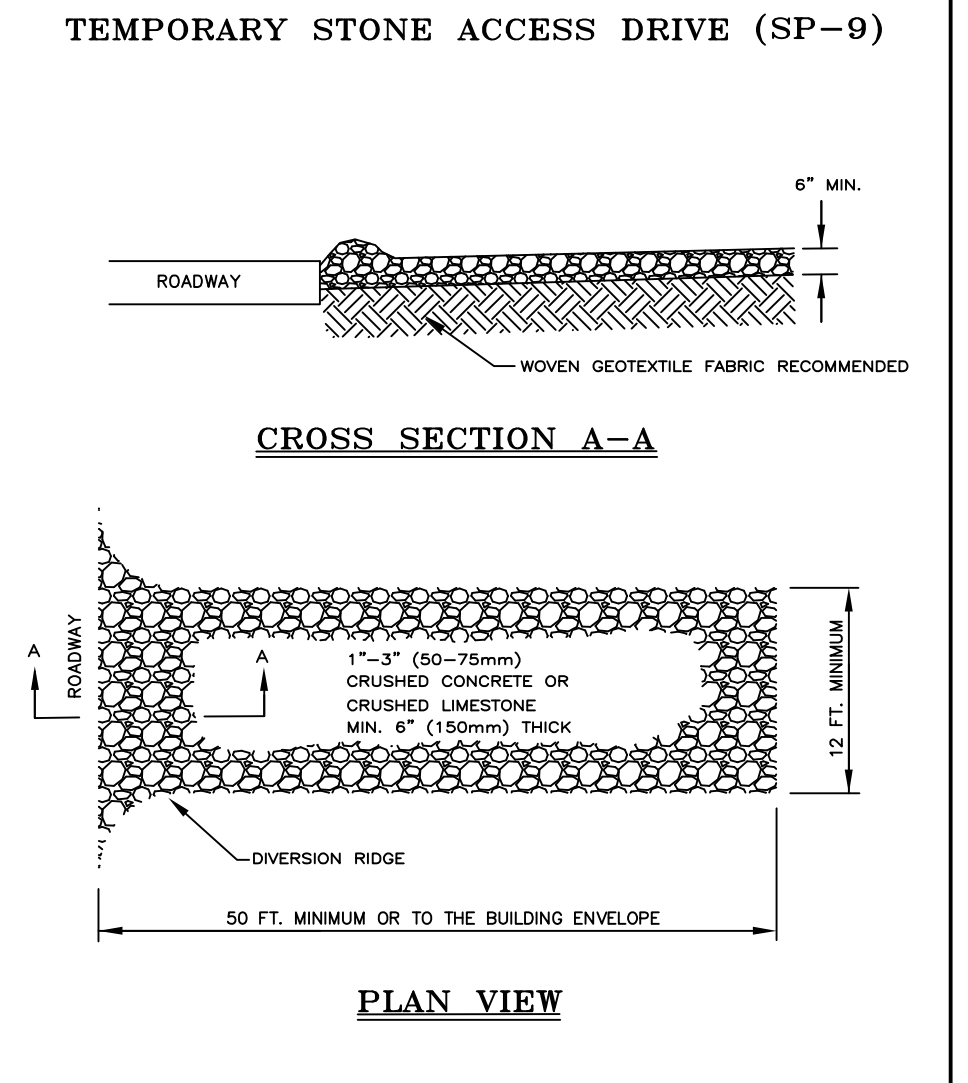
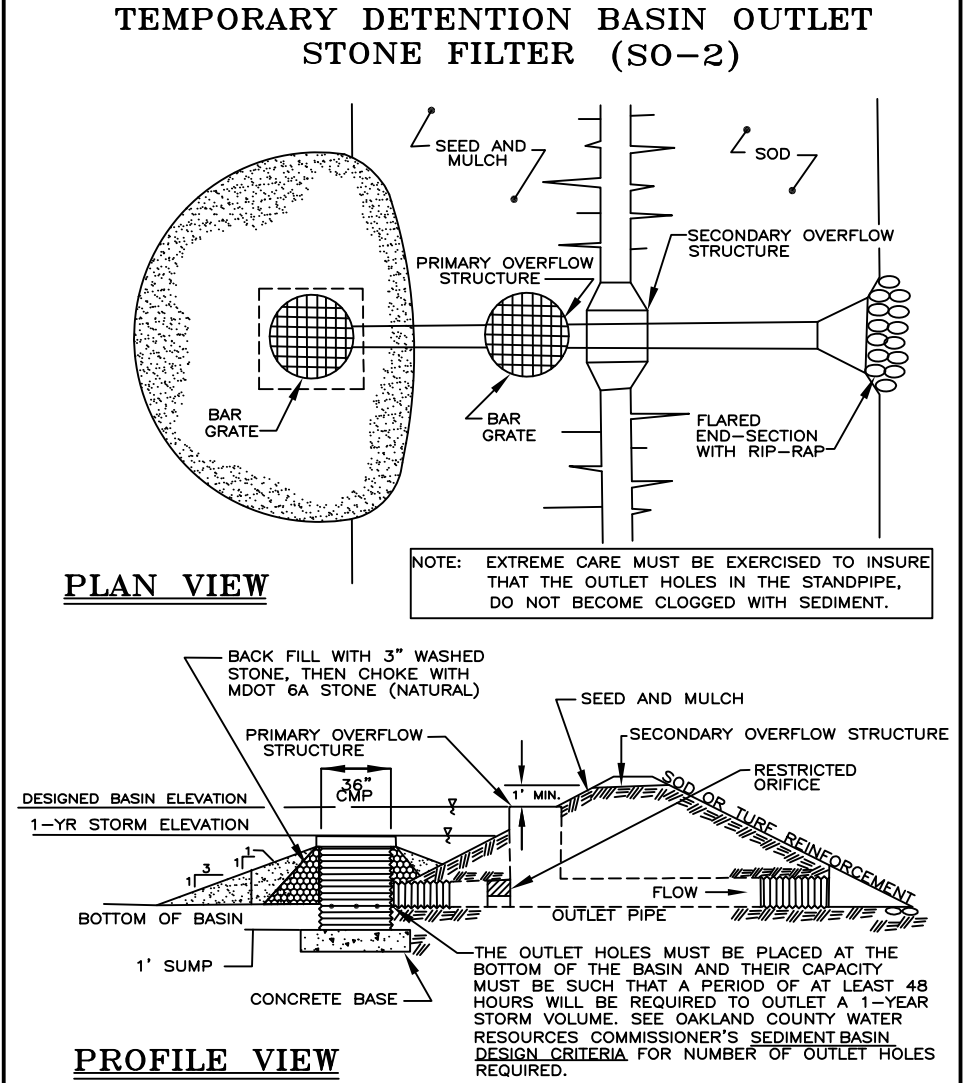
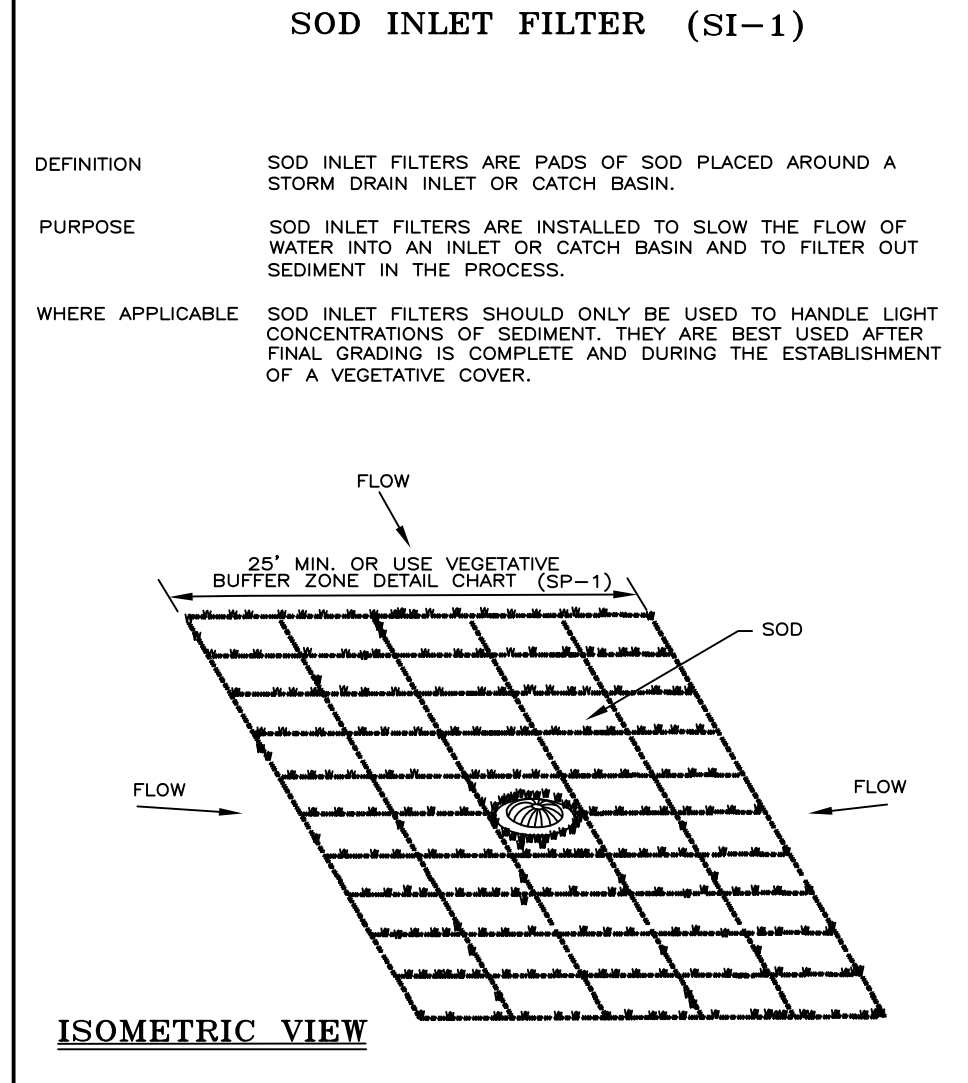
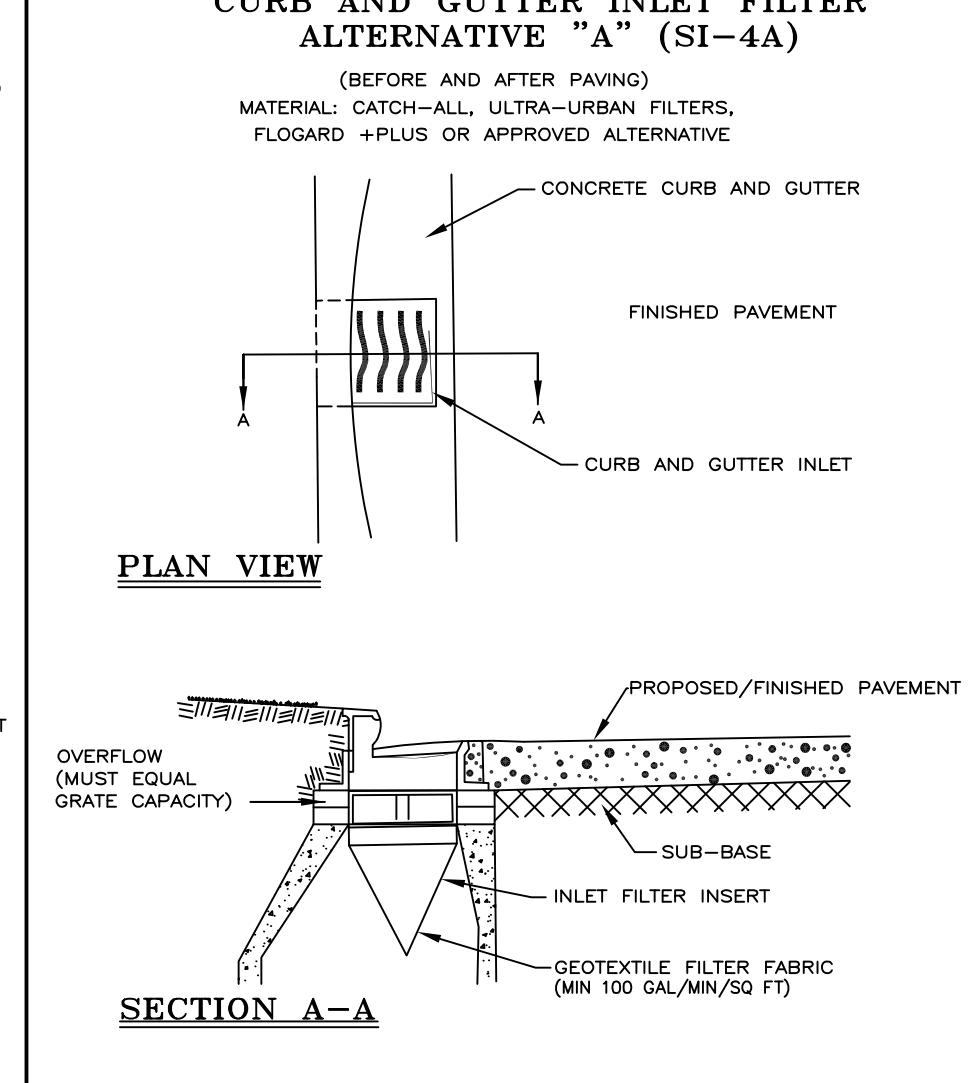
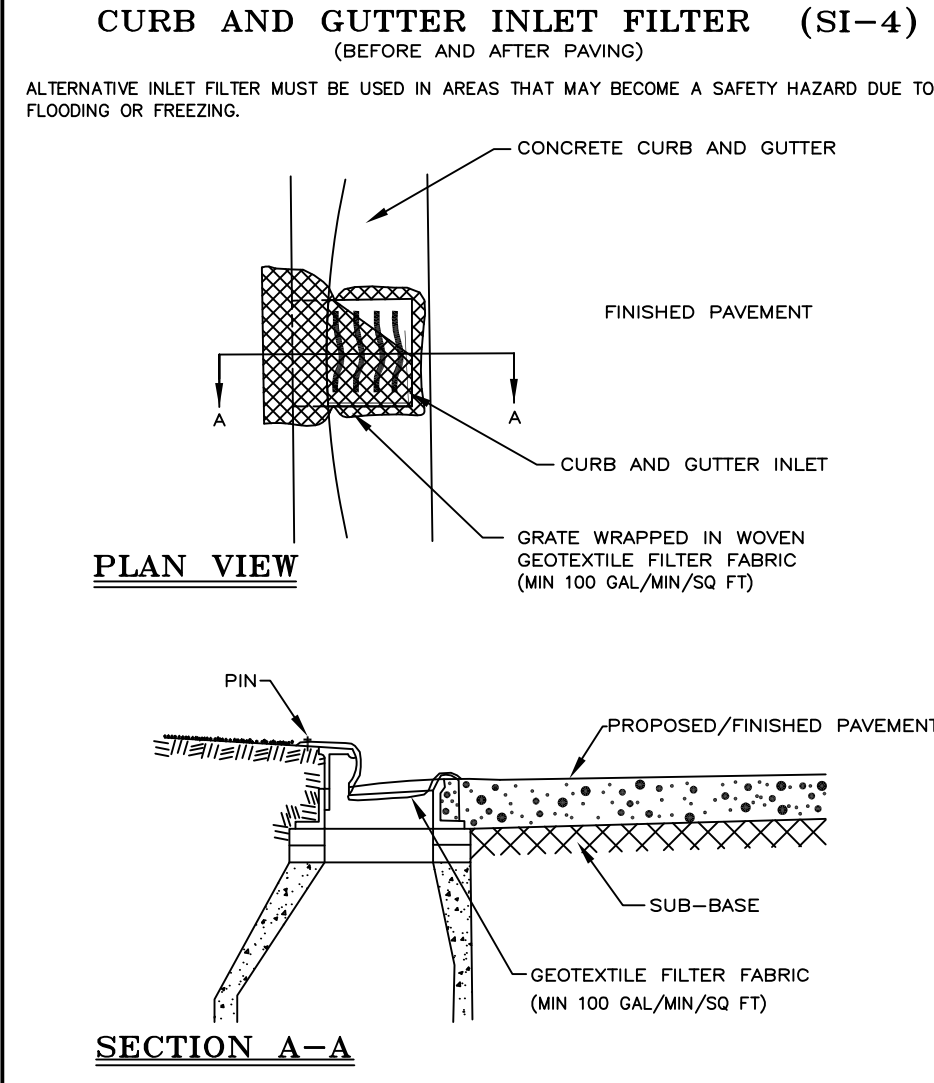
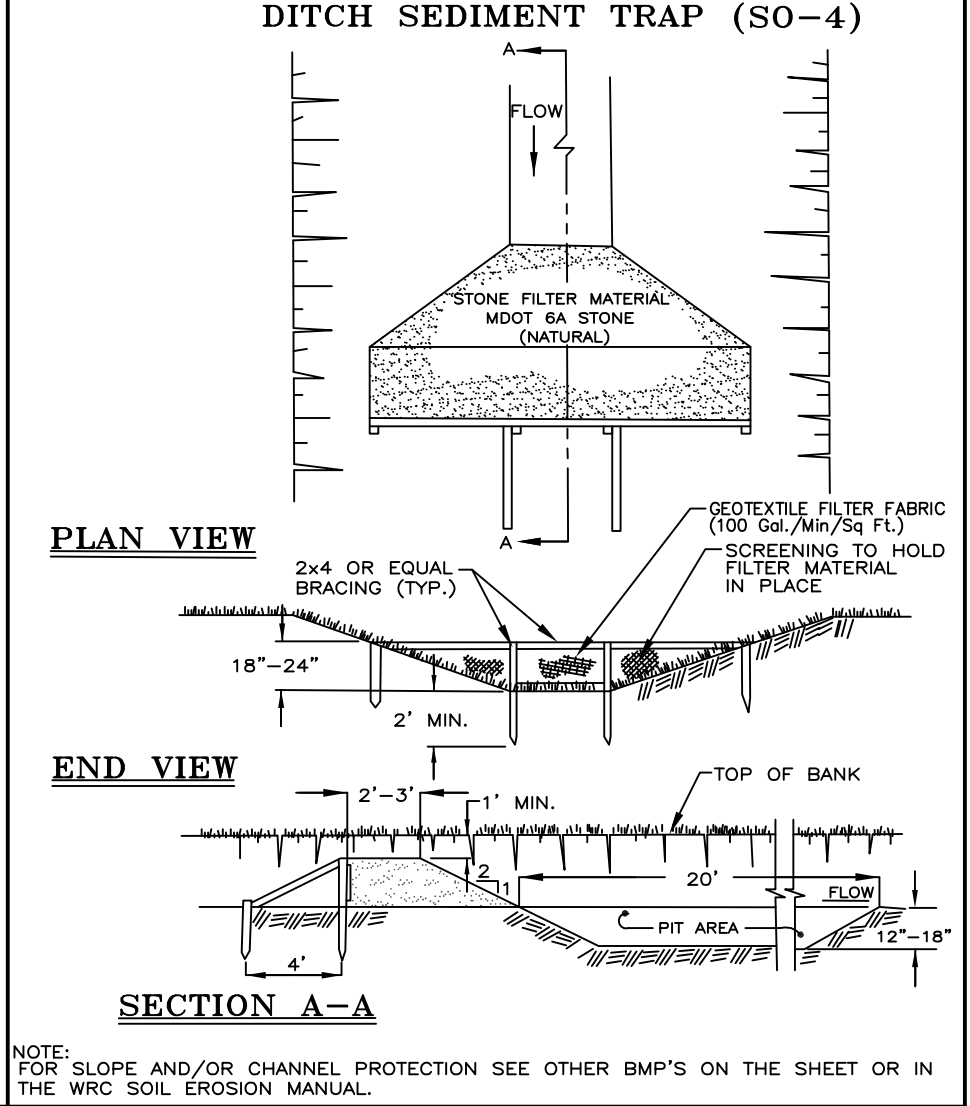
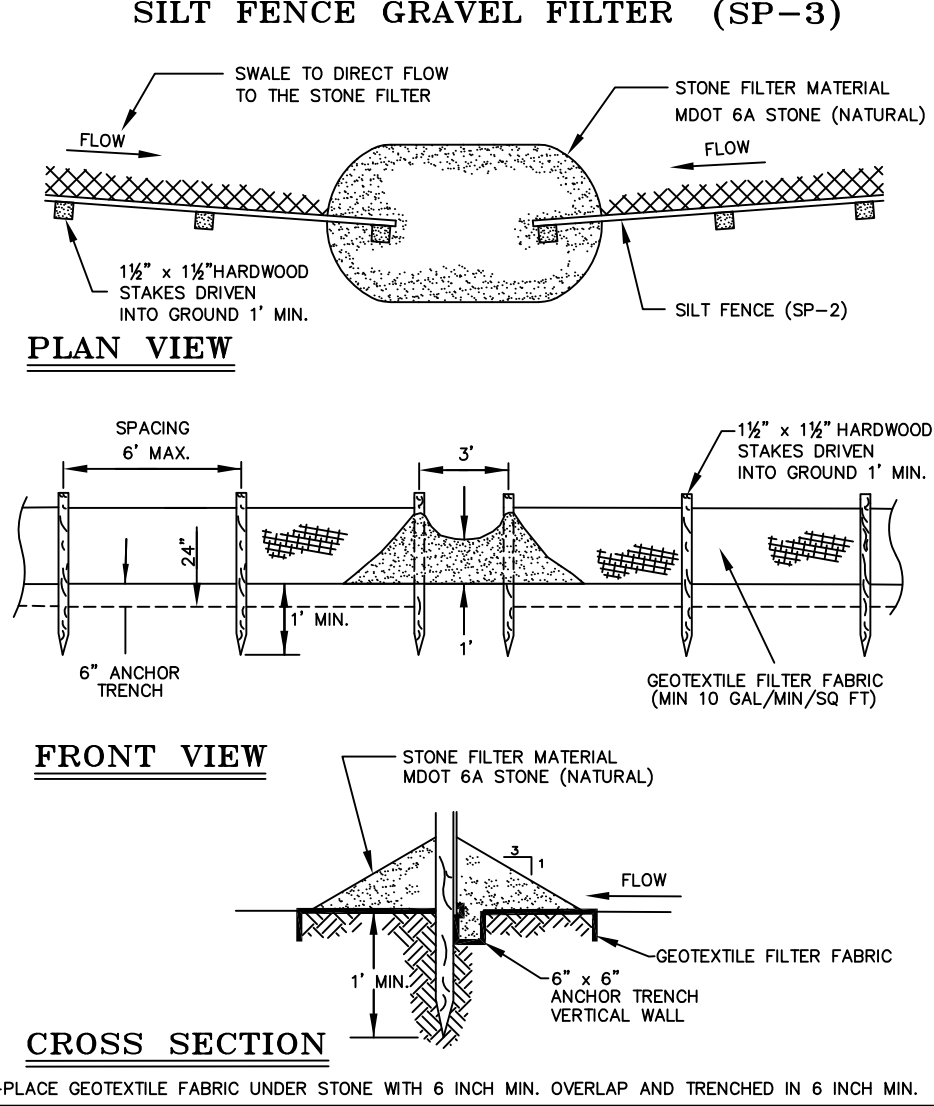
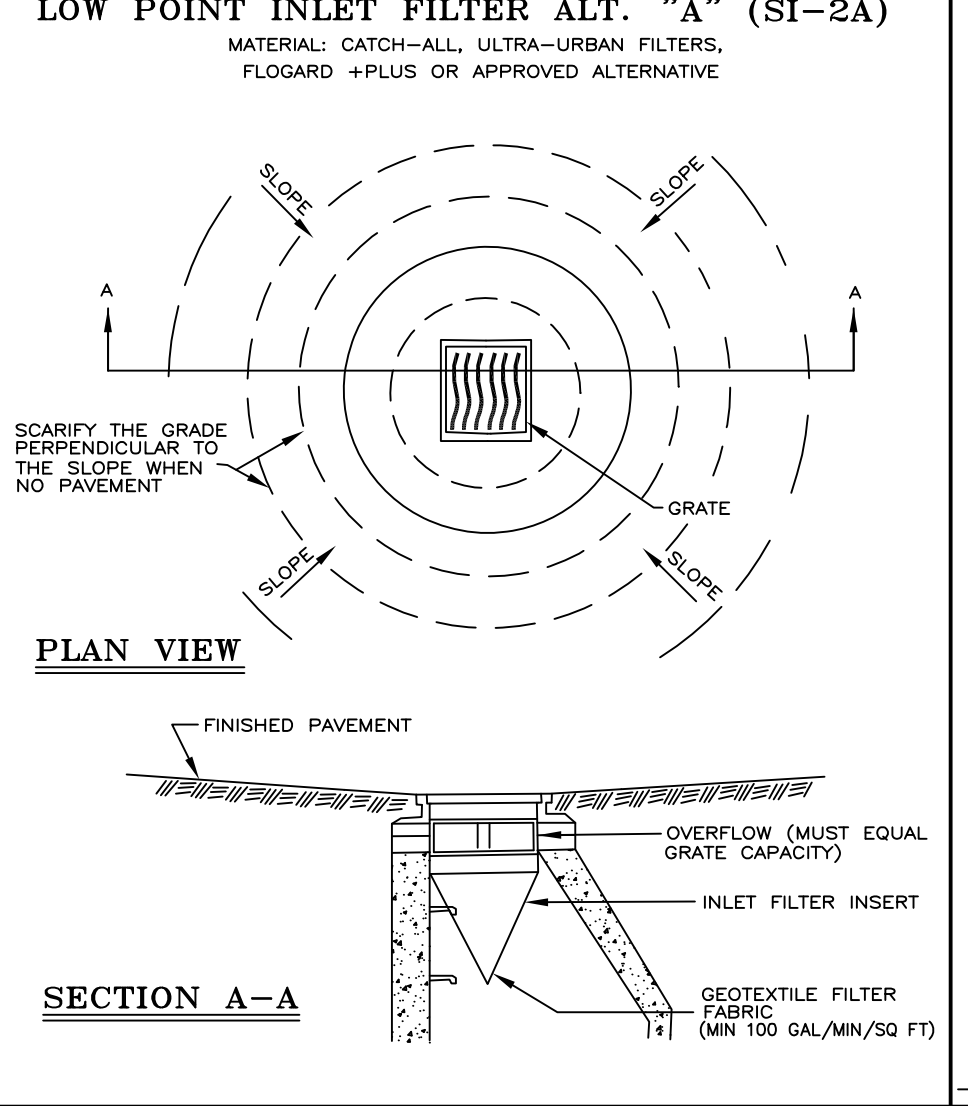
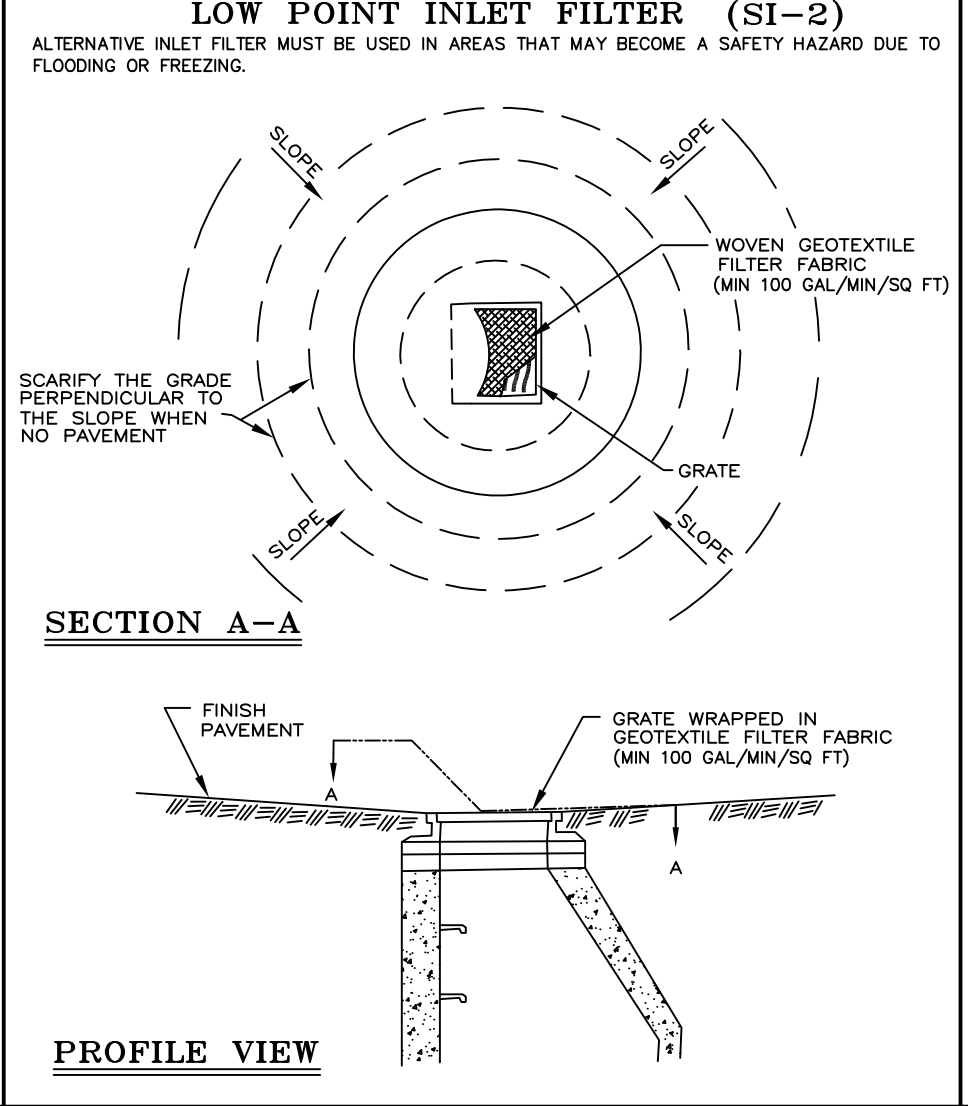
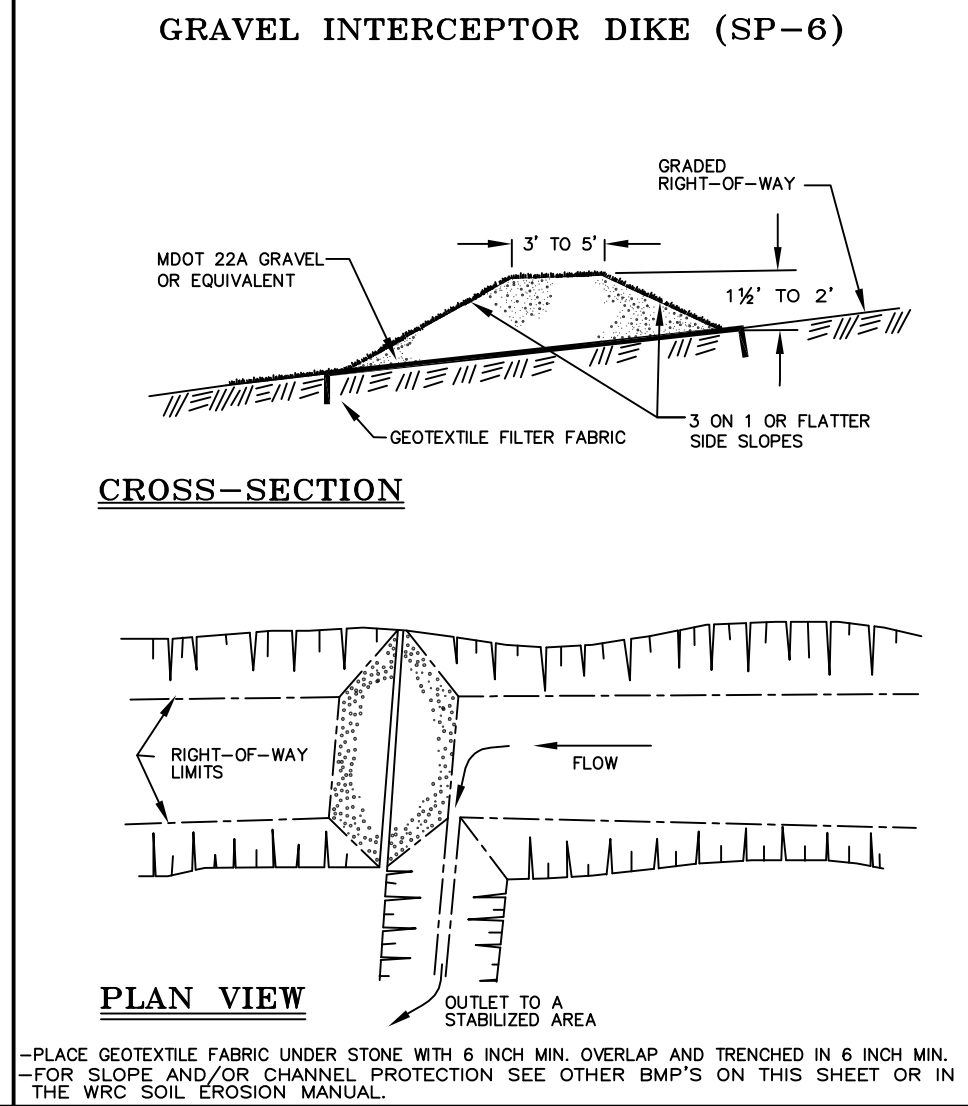
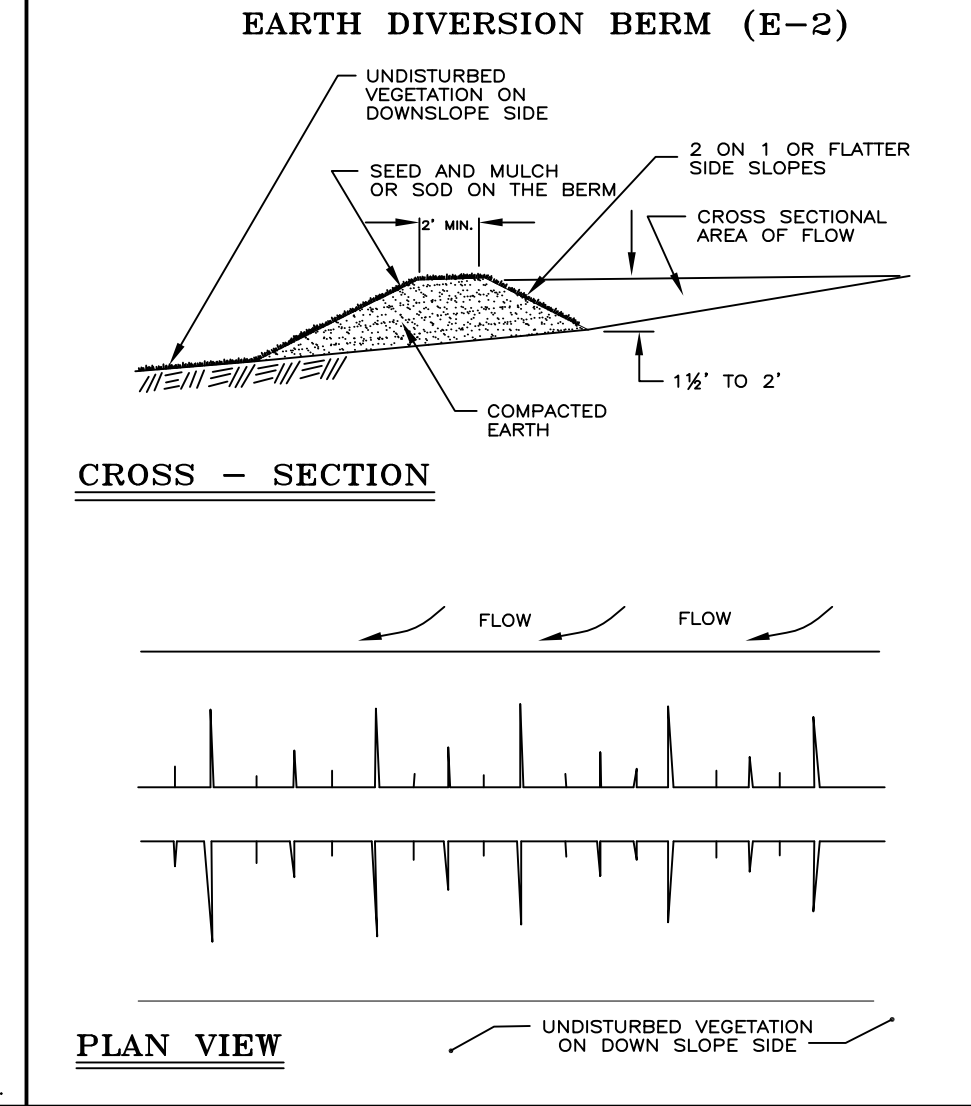
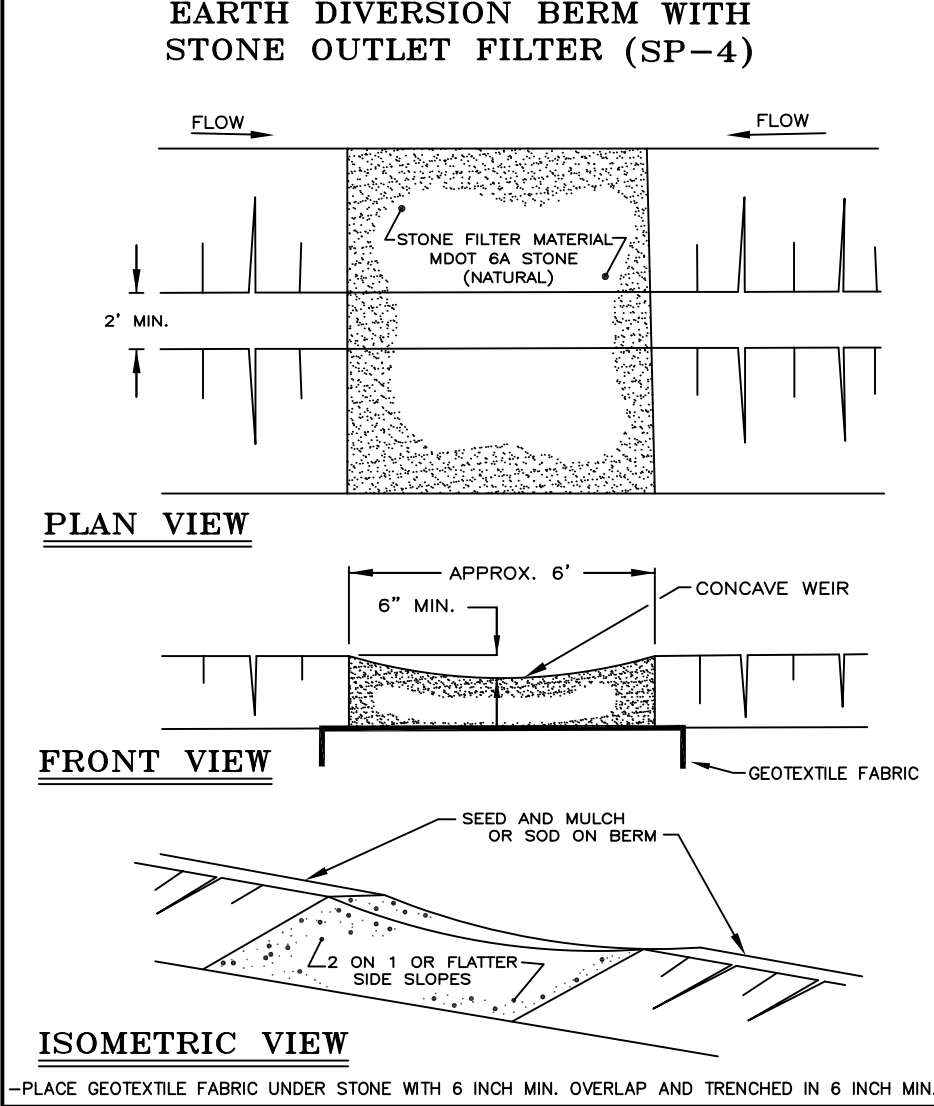
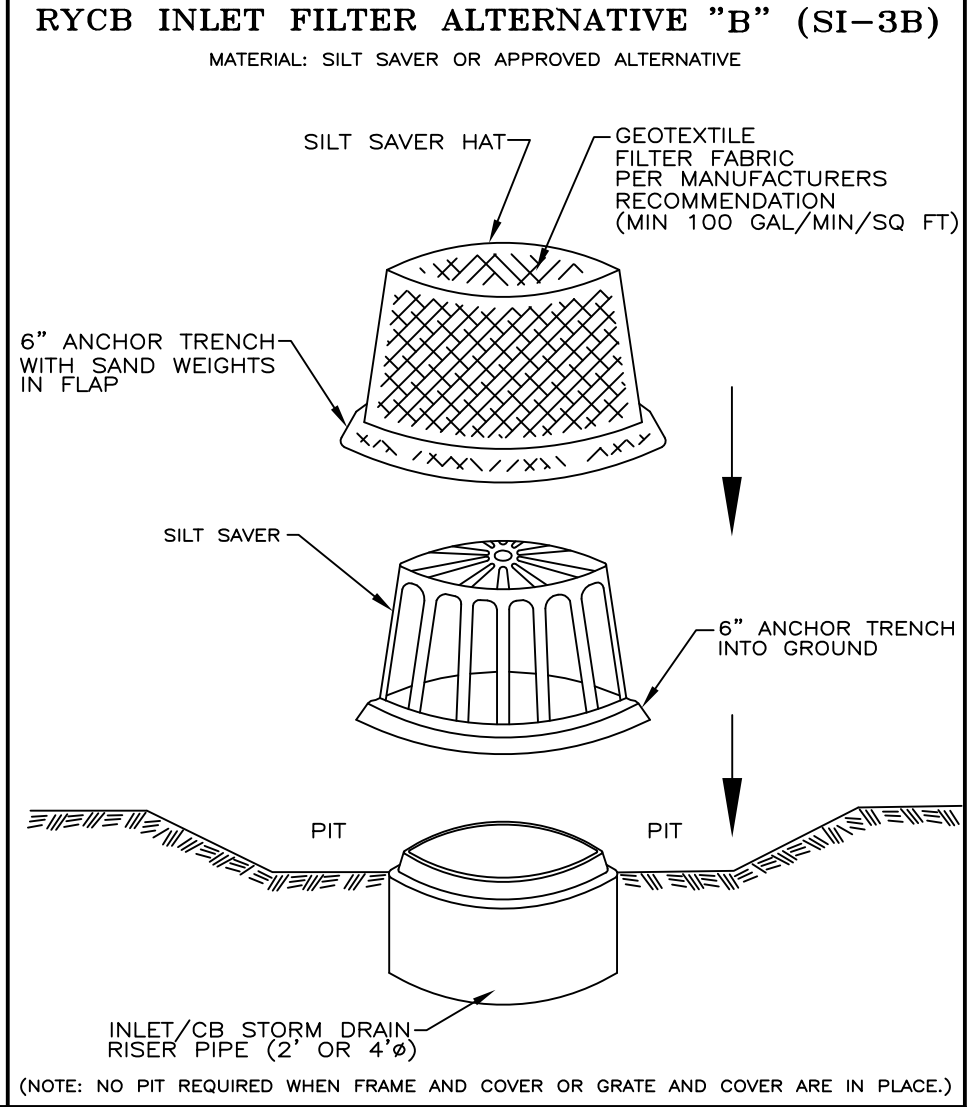
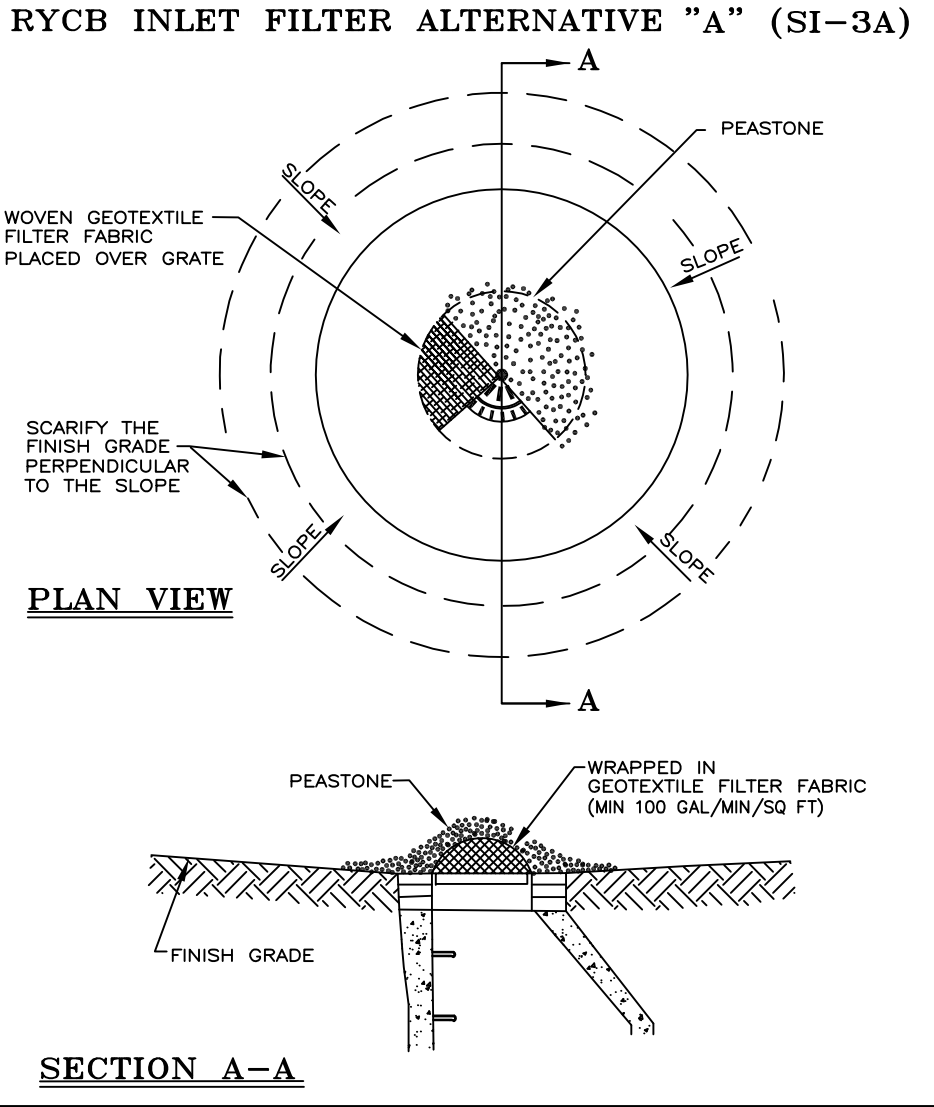
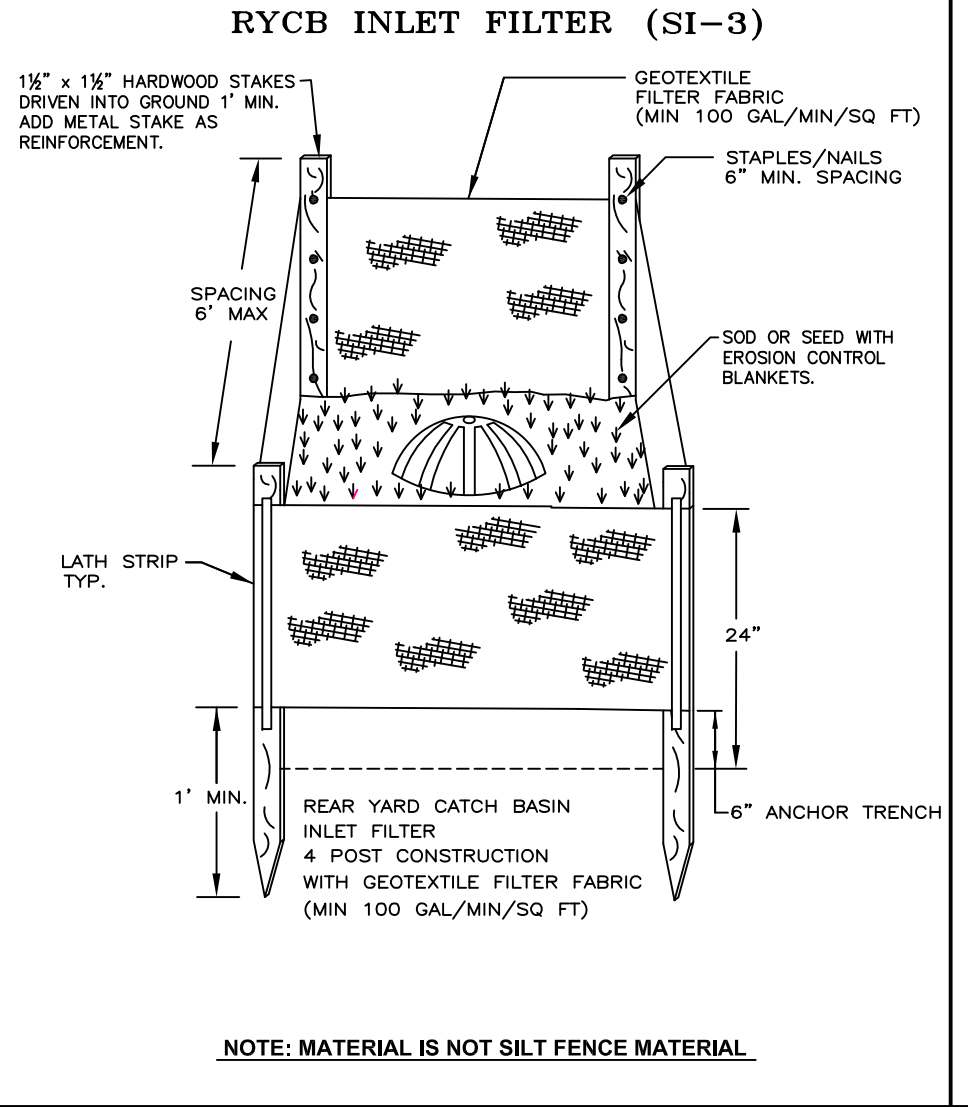
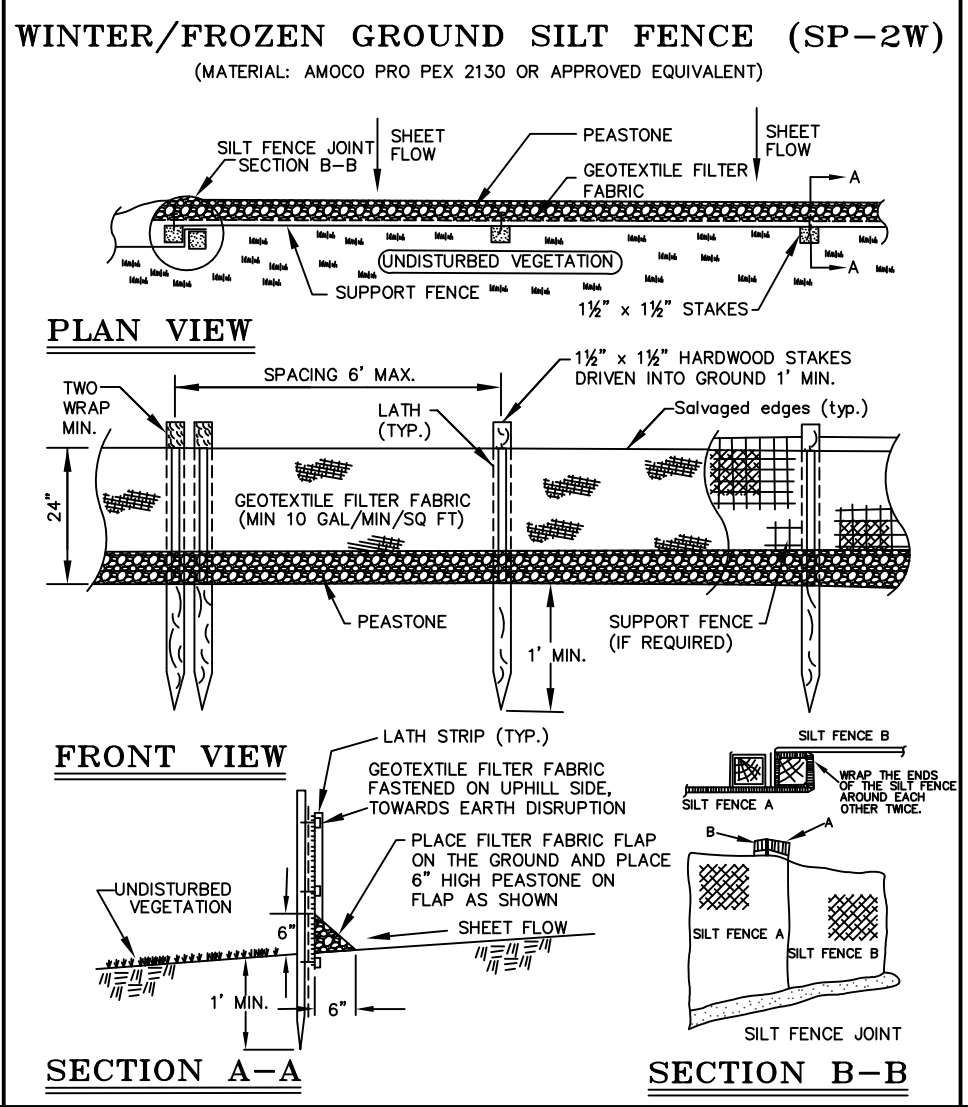
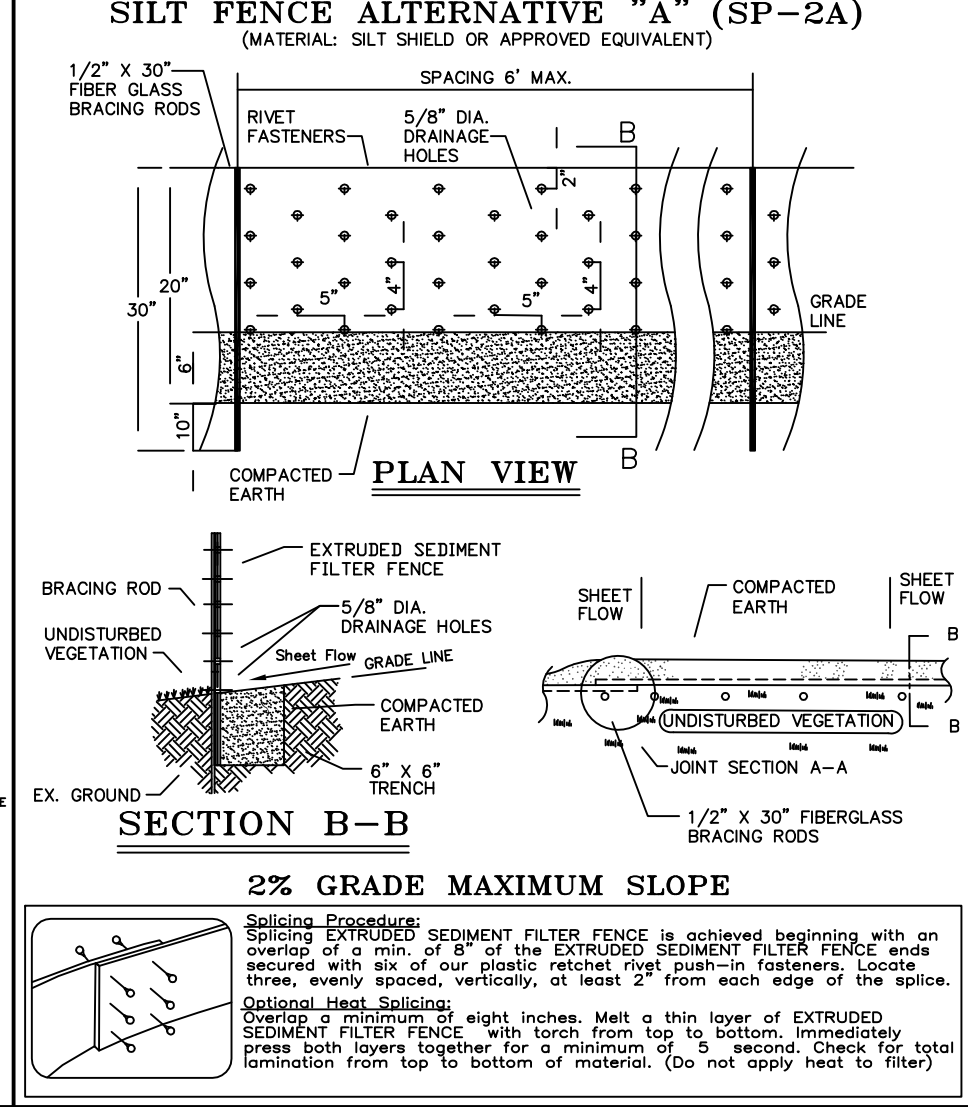
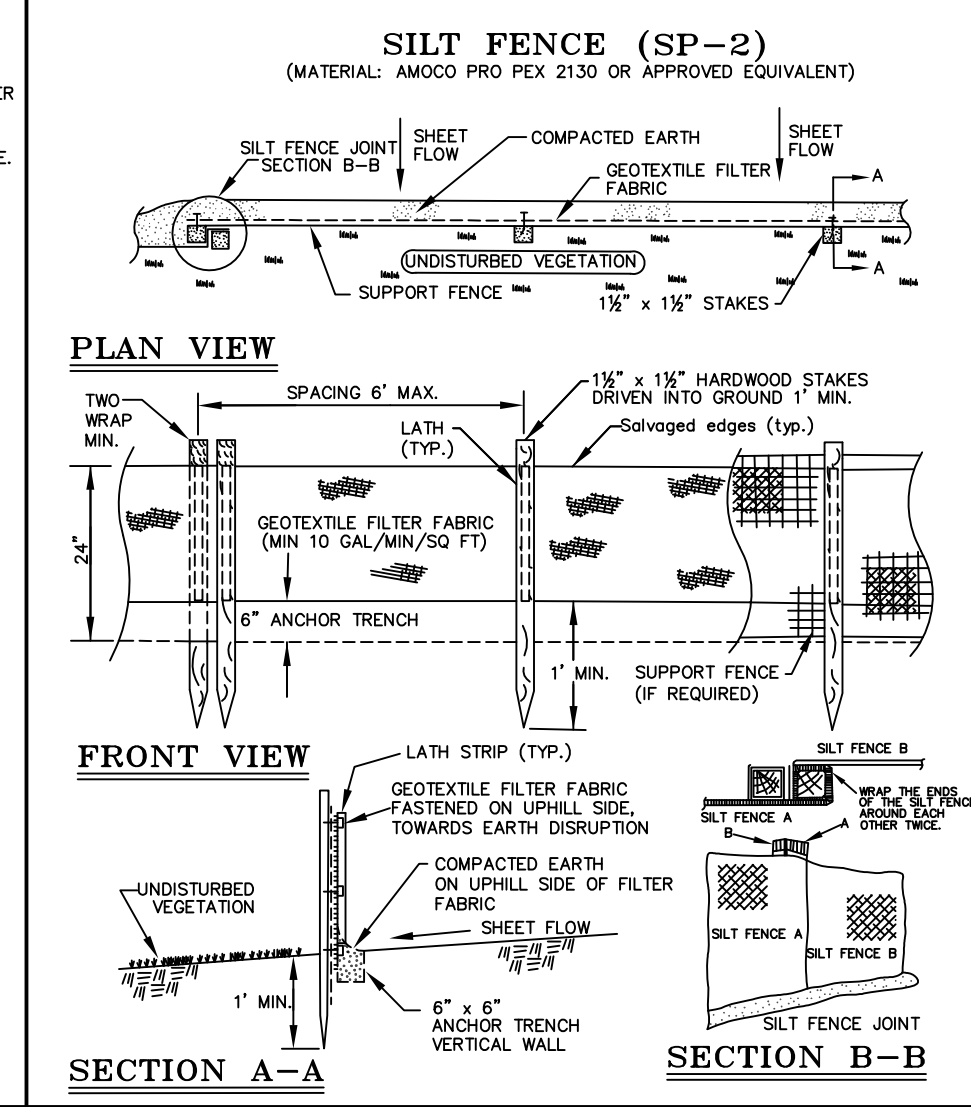
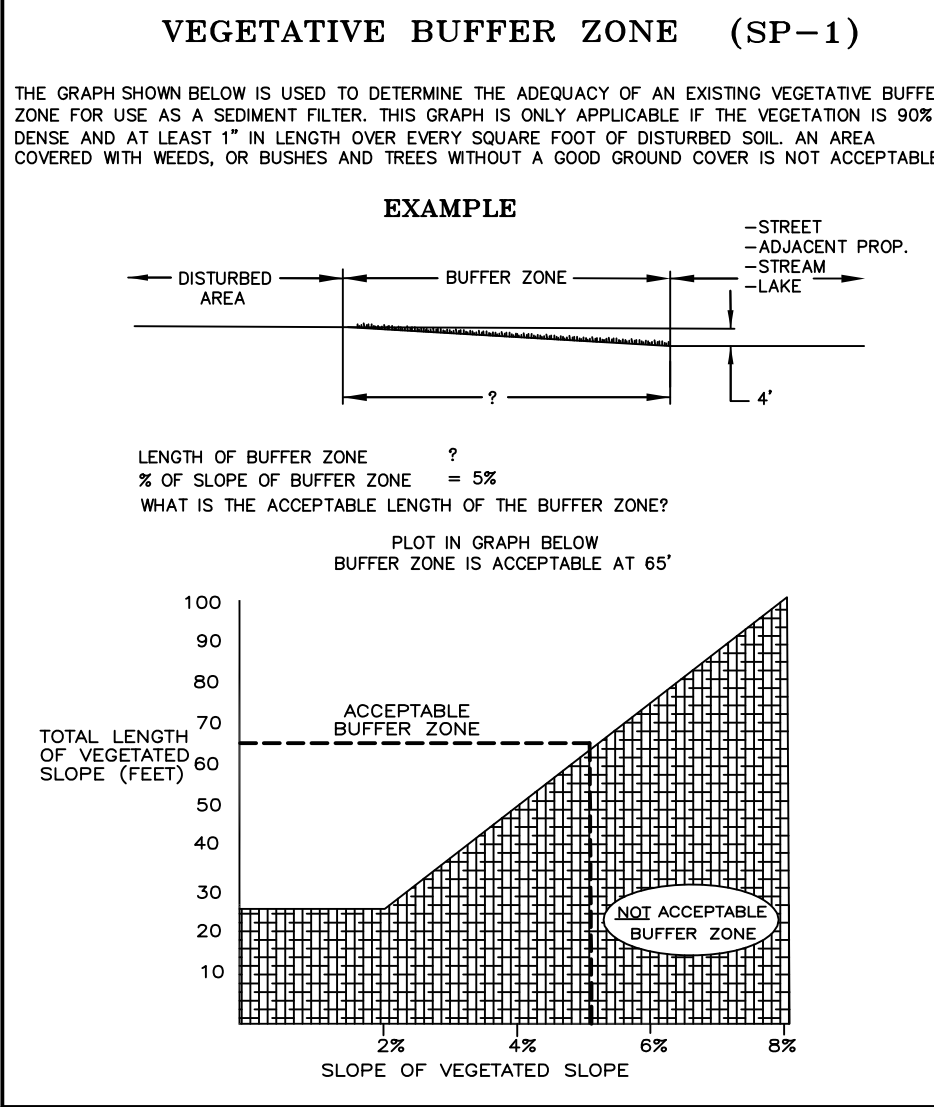
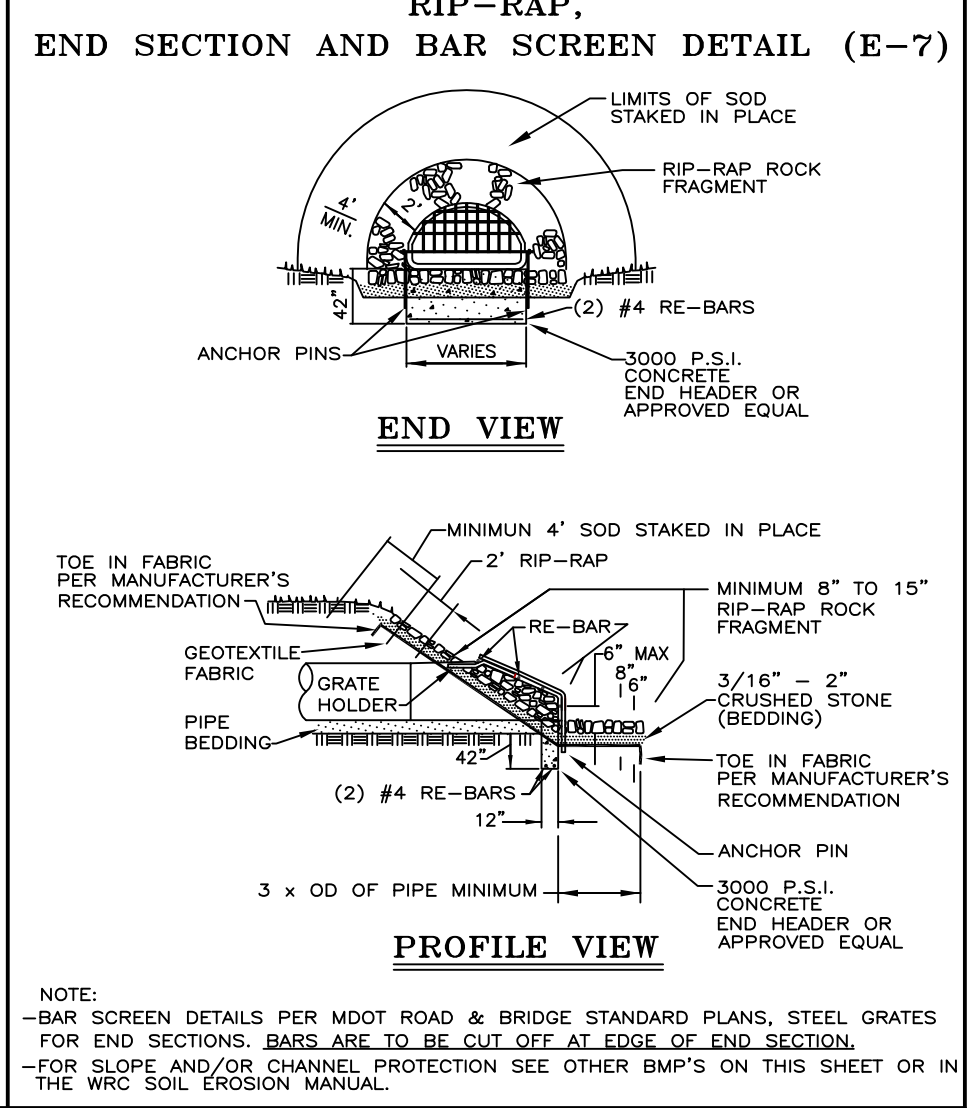
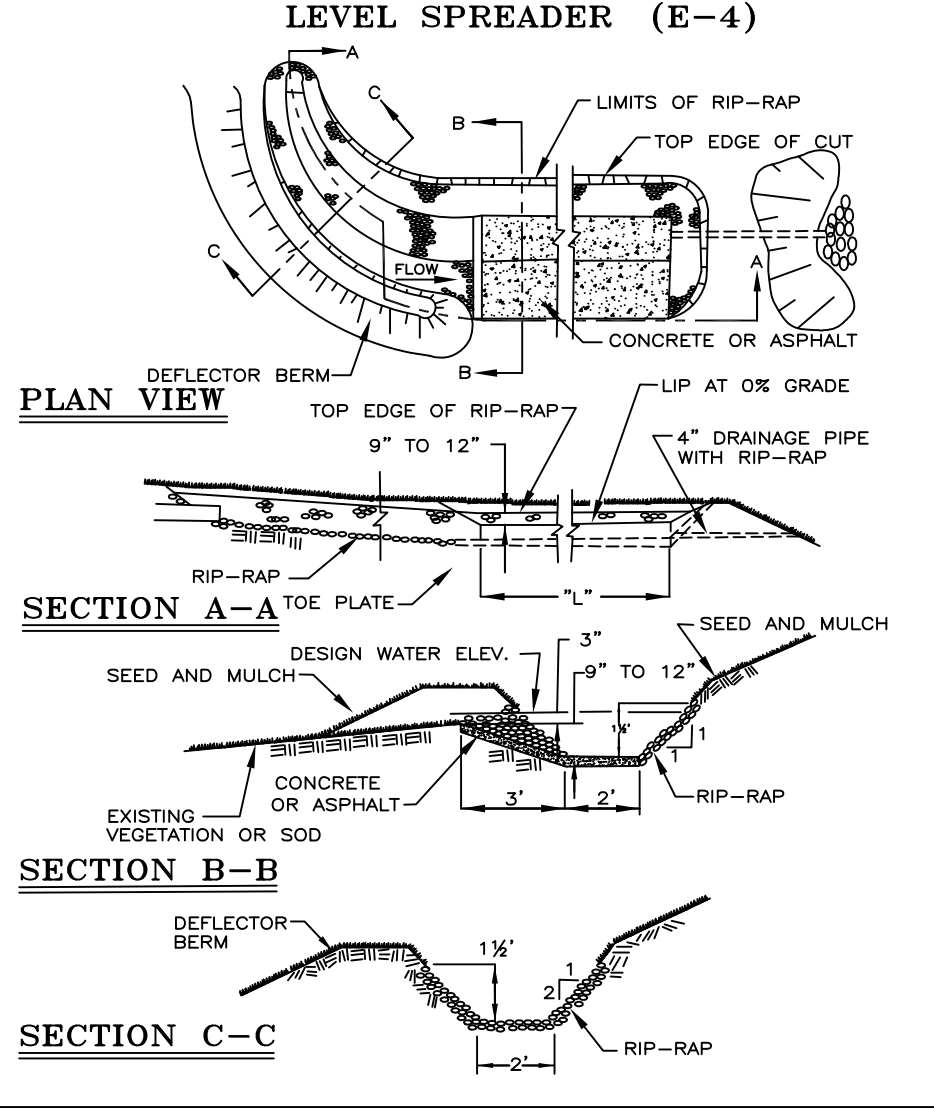
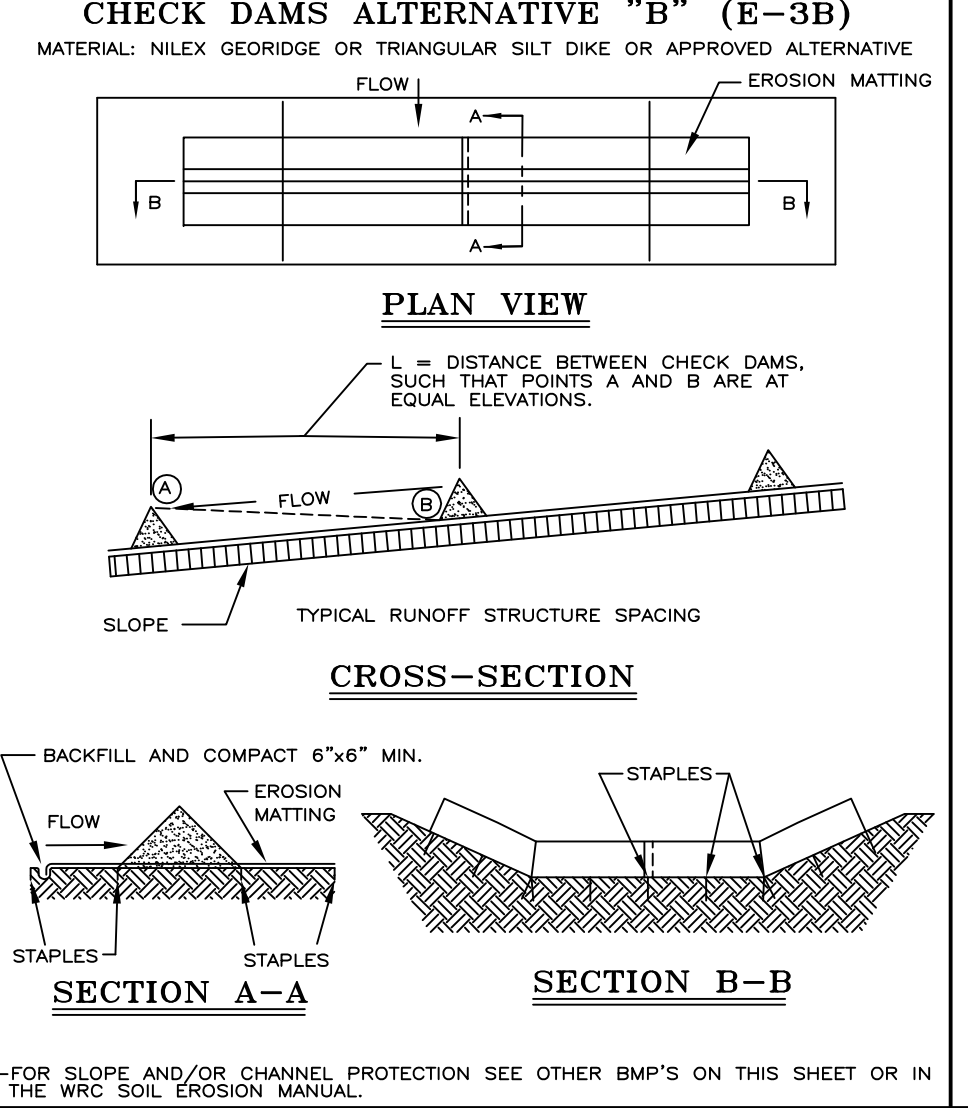
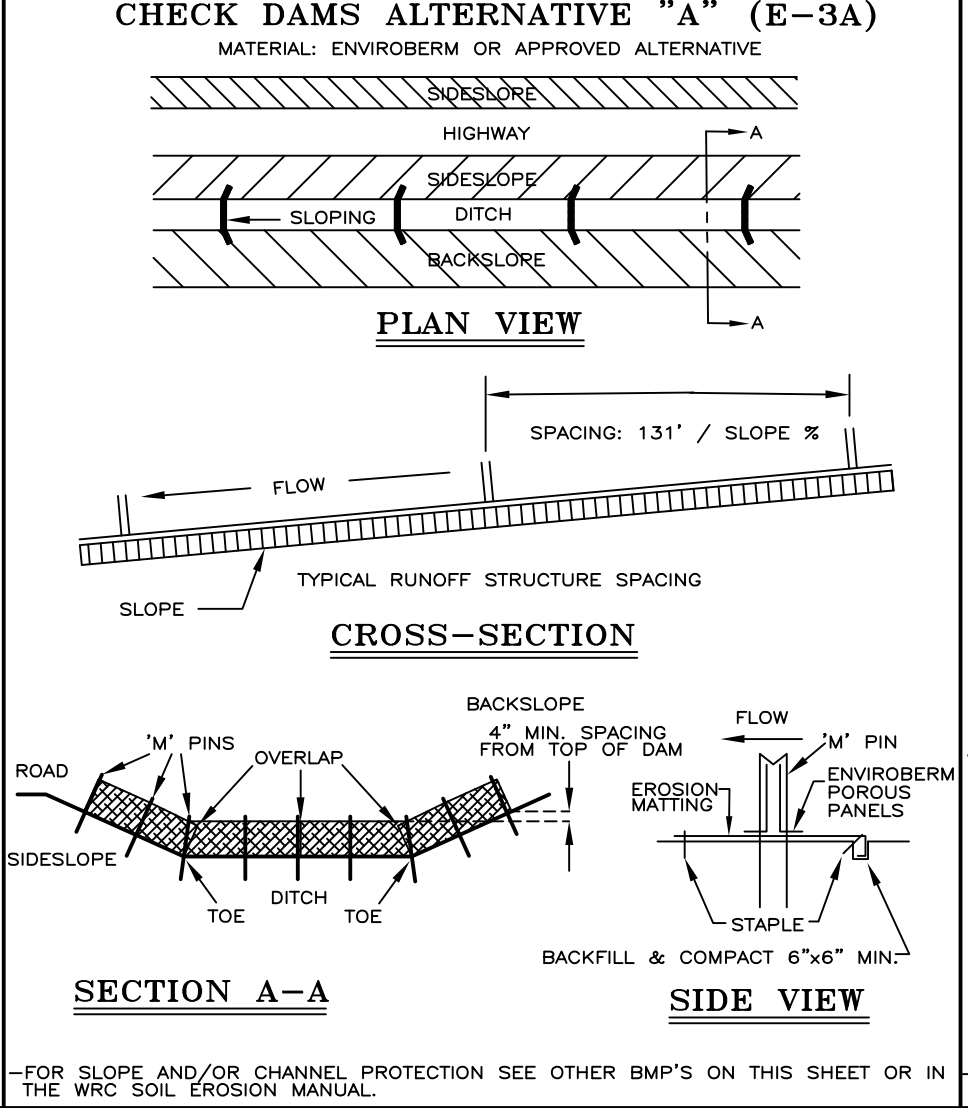
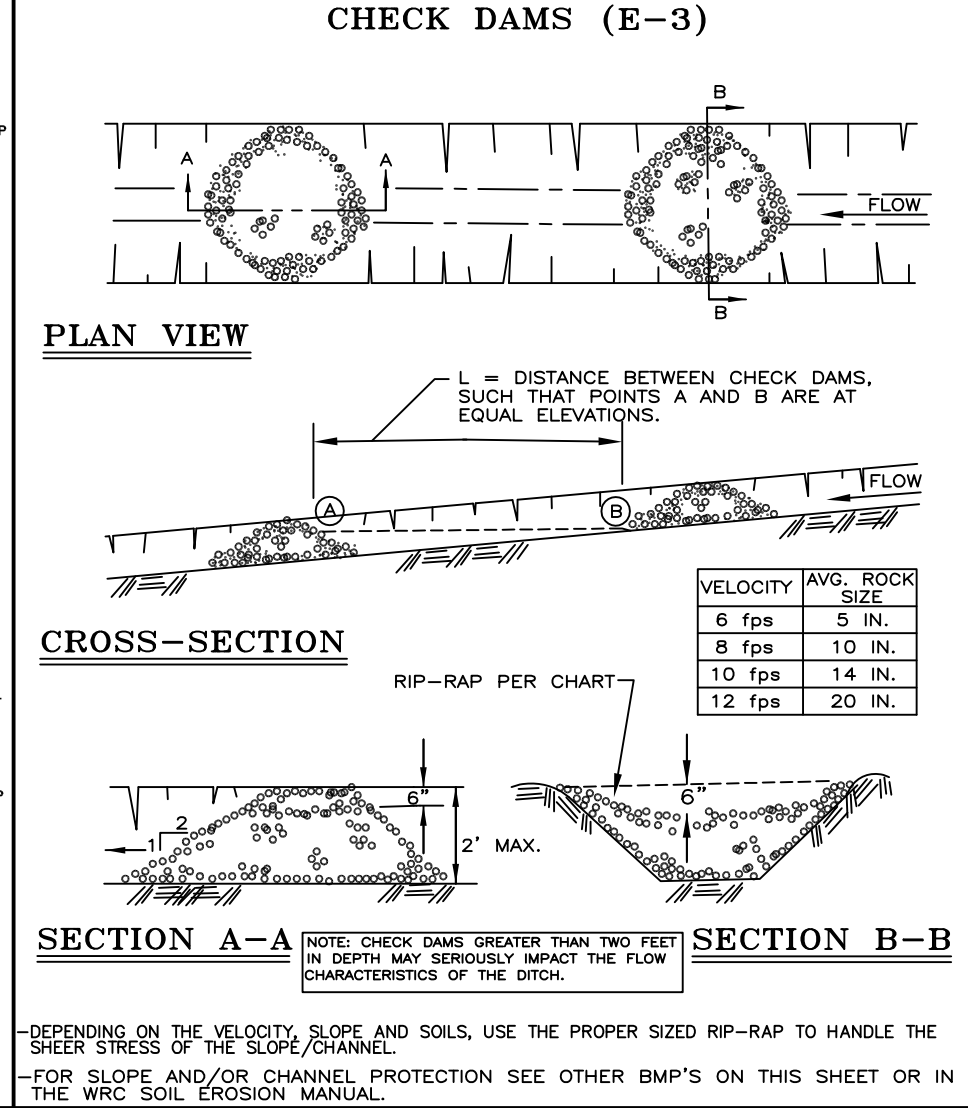
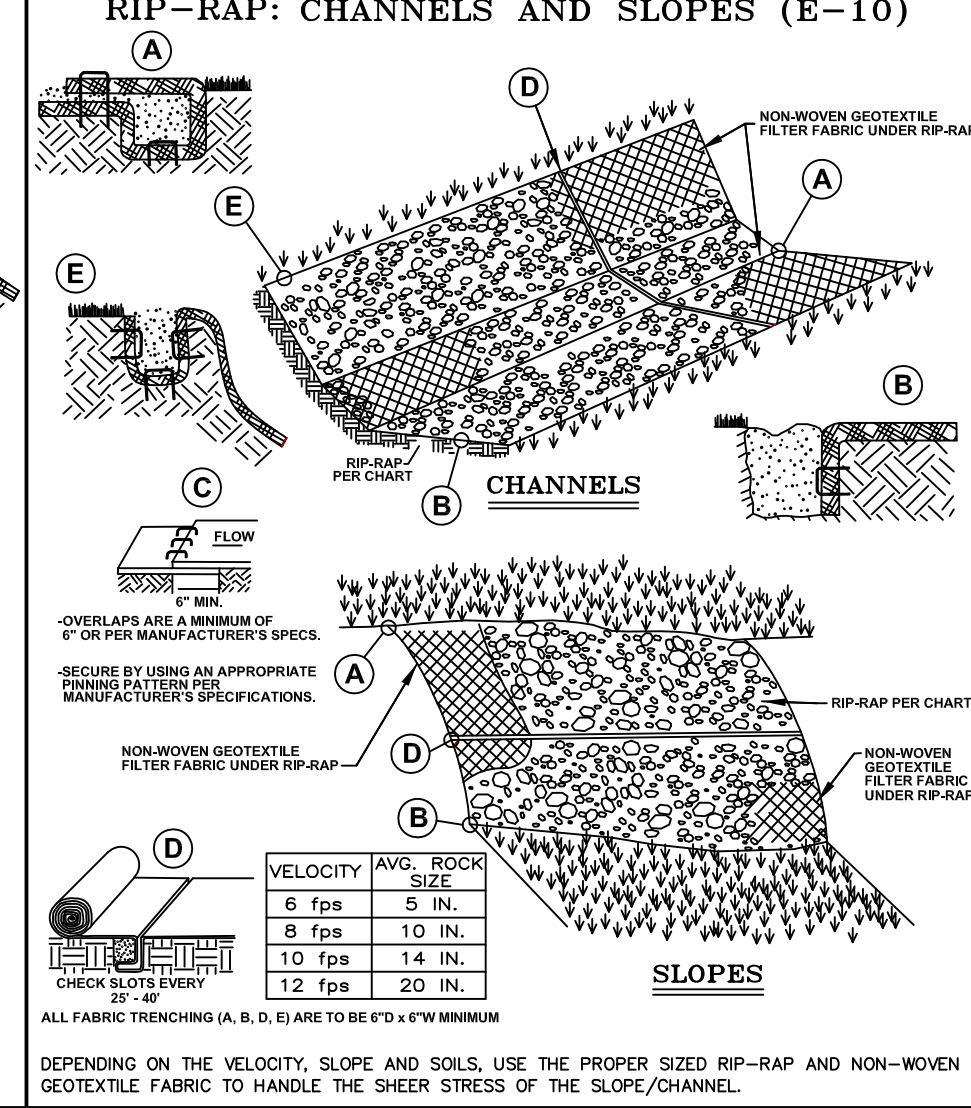
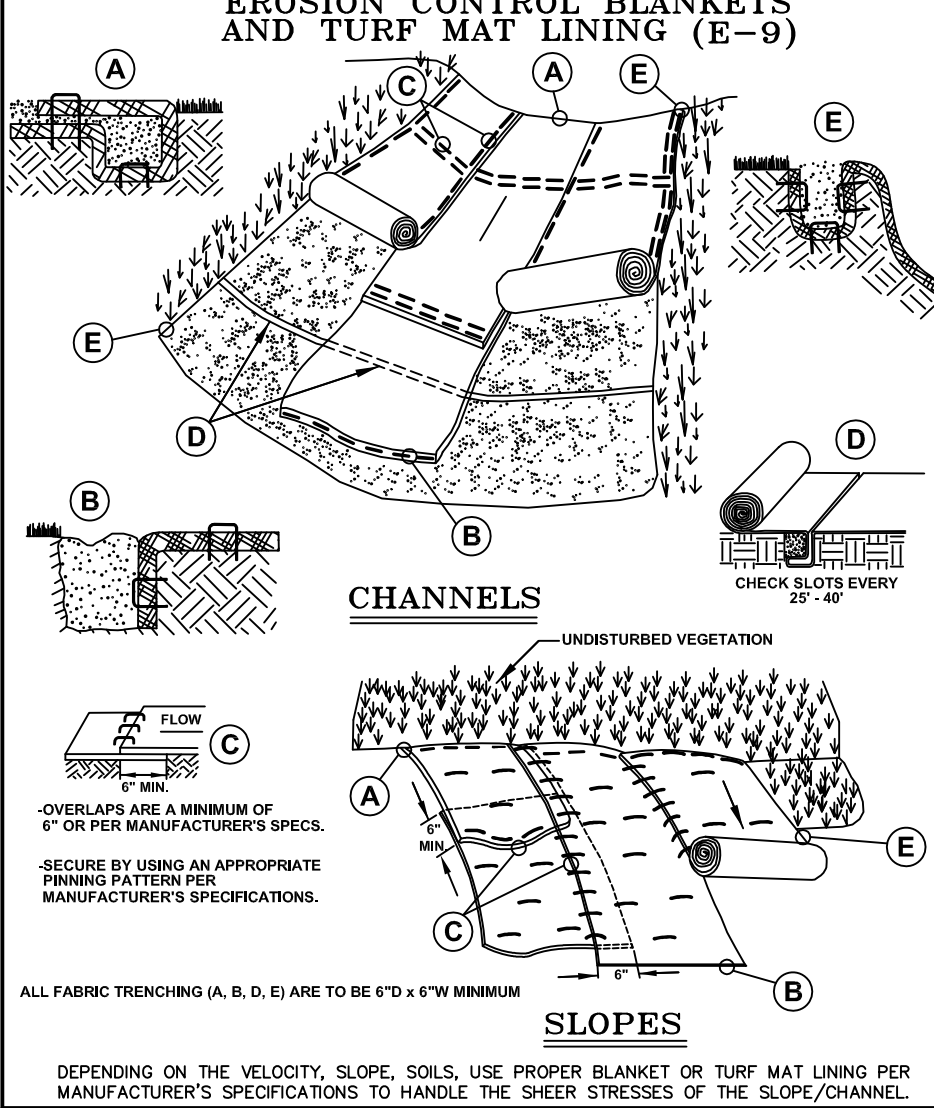
GREENBELT AREAS: 6.97 ACRES @ C = 0.20

$C^* = \left(\frac{1.51 \text{ ACRES} \times 0.80}{9.51 \text{ AC}} \right) + \left(\frac{0.83 \text{ ACRES} \times 0.90}{9.51 \text{ AC}} \right) + \left(\frac{6.97 \text{ ACRES} \times 0.20}{9.51 \text{ AC}} \right) + \left(\frac{0.20 \text{ ACRES} \times 1.00}{9.51 \text{ AC}} \right) = 0.373 = 0.37$



Detention Basin Calculations, Details & Notes
 "Eagles Landing" Site Condominium
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE N/A
 SHEET 12 OF 19
 KE 2018.296



NOTE:

WHILE PERFORMING WORK INVOLVING GROUNDS MAINTENANCE AND/OR THE CONSTRUCTION/MAINTENANCE OF ANY INFRASTRUCTURE, INCLUDING ROADS, WATER MAINS, SANITARY SEWERS, STORM DRAINS AND STORM WATER BEST MANAGEMENT PRACTICES (BMPs), CONTRACTORS SHALL MINIMIZE POLLUTION FROM STORM WATER RUNOFF THAT CAN AFFECT WATER QUALITY RELATED TO WORK ACTIVITIES. POLLUTANTS THAT COULD IMPAIR WATER QUALITY MAY INCLUDE FUEL, GREASE AND OIL, NUTRIENTS, BACTERIA AND PATHOGENS, LITTER AND DEBRIS, AND SOIL EROSION AND SEDIMENTATION. APPLICABLE BMPs SHALL BE IMPLEMENTED BY THE CONTRACTOR TO THE MAXIMUM EXTENT PRACTICABLE TO PROTECT WATER QUALITY AND WILDLIFE HABITAT.

SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

REV.	DATE	DESCRIPTION
1	01/10/19	ISSUED FOR PERMITS
2	02/05/19	PROPOSED DETAIL REVISIONS
3	02/05/19	PERMITS COMMITTEE APPROVAL, NAME CHANGES
4	02/05/19	PERMITS COMMITTEE APPROVAL, DETAIL REVISIONS
5	02/05/19	PERMITS COMMITTEE APPROVAL, PERMITS SUBMITTAL

ORIG. DATE: 01/10/19

SCALE: NONE

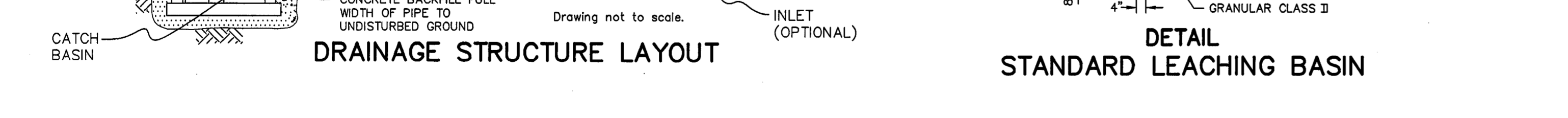
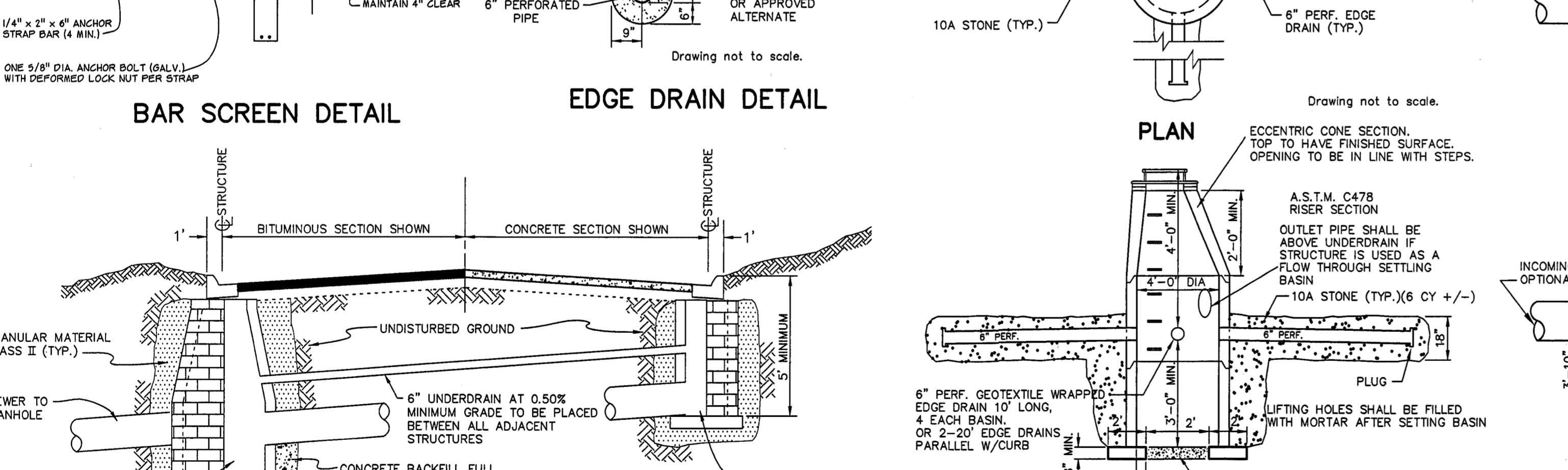
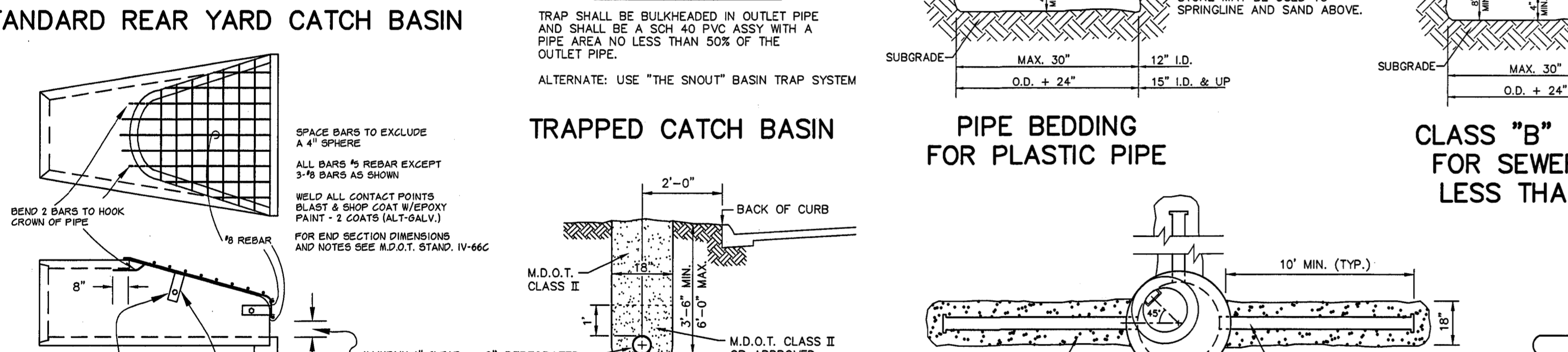
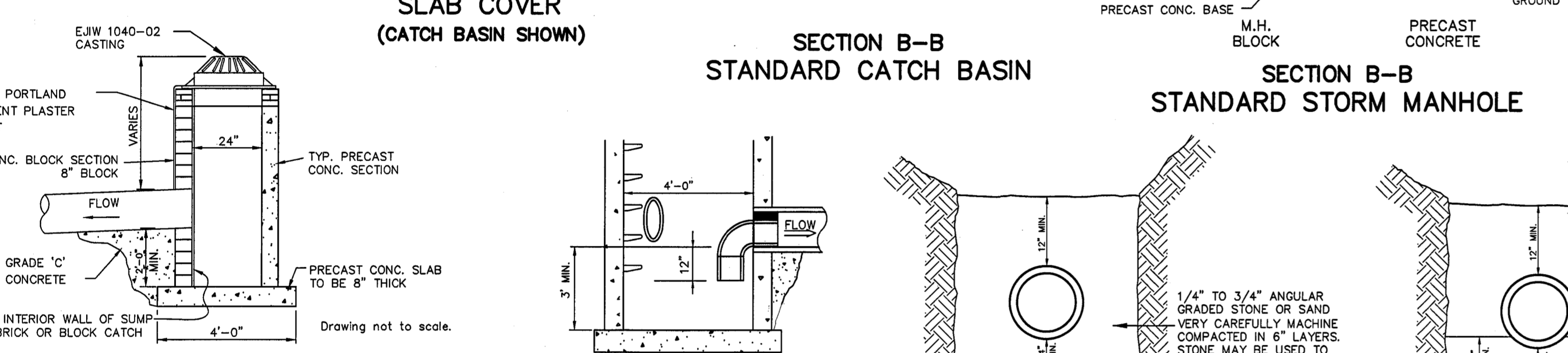
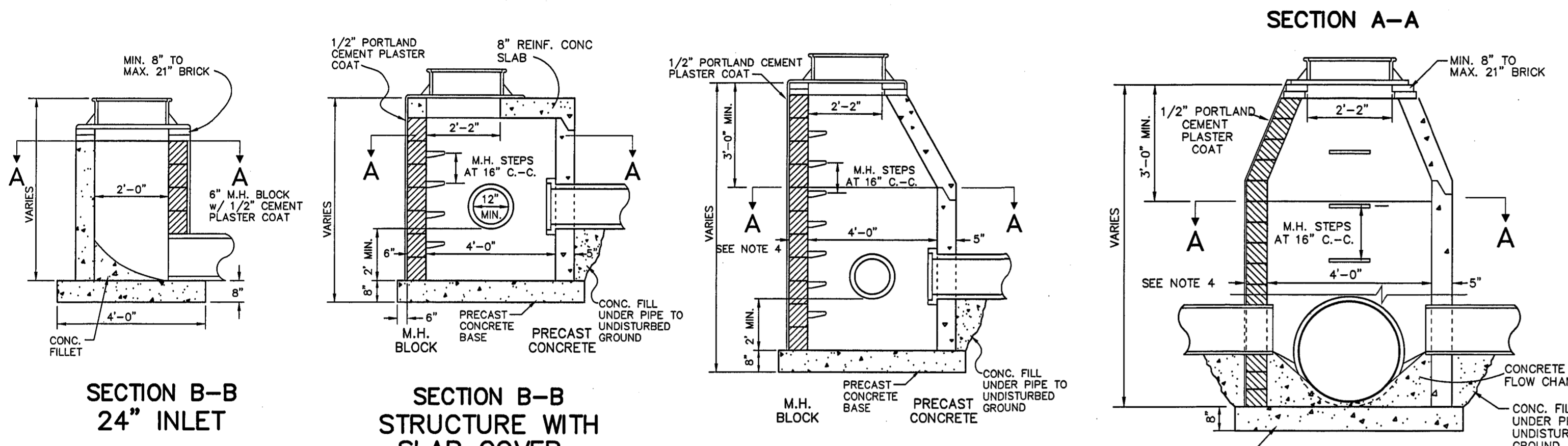
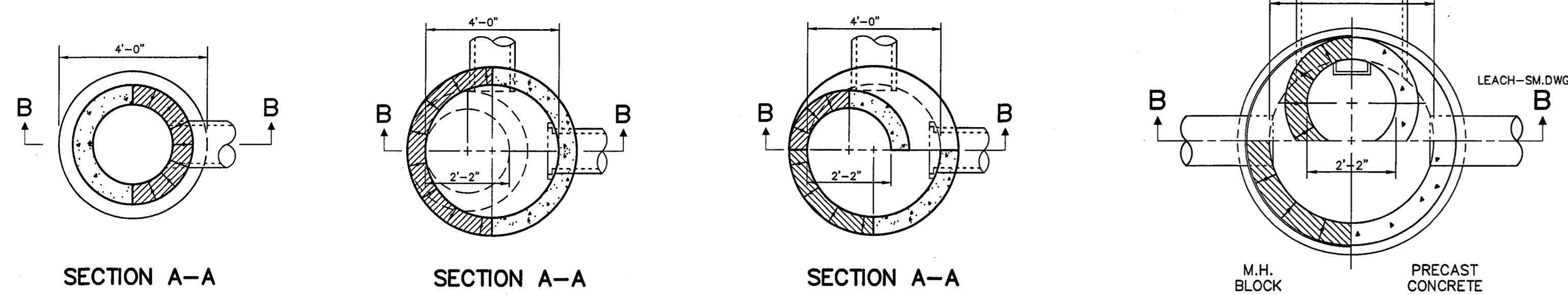
DESIGNED BY: WRC

DRAWN BY: Mapping

WRC WATER RESOURCES COMMISSIONER Jim Nails

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907

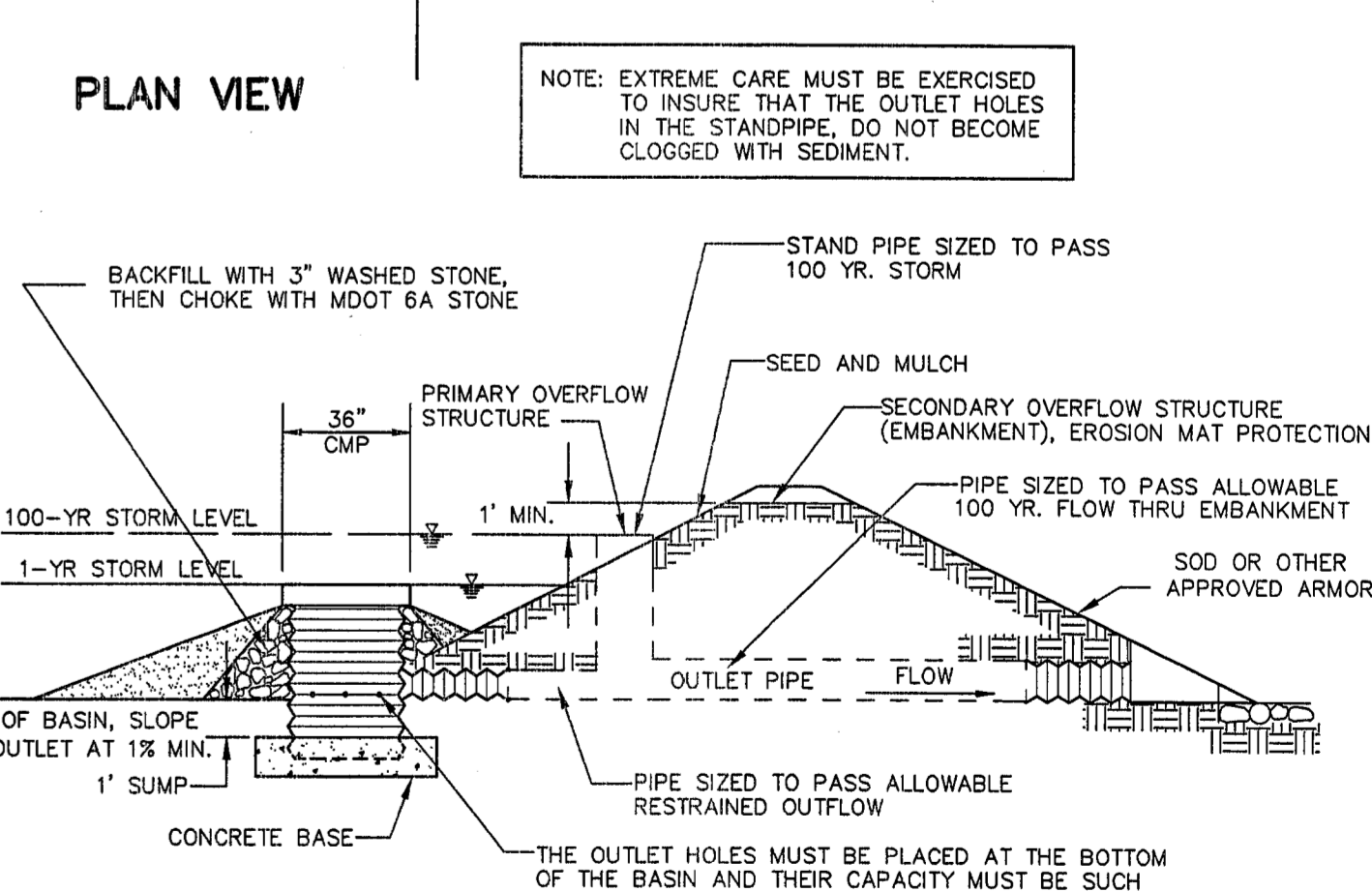
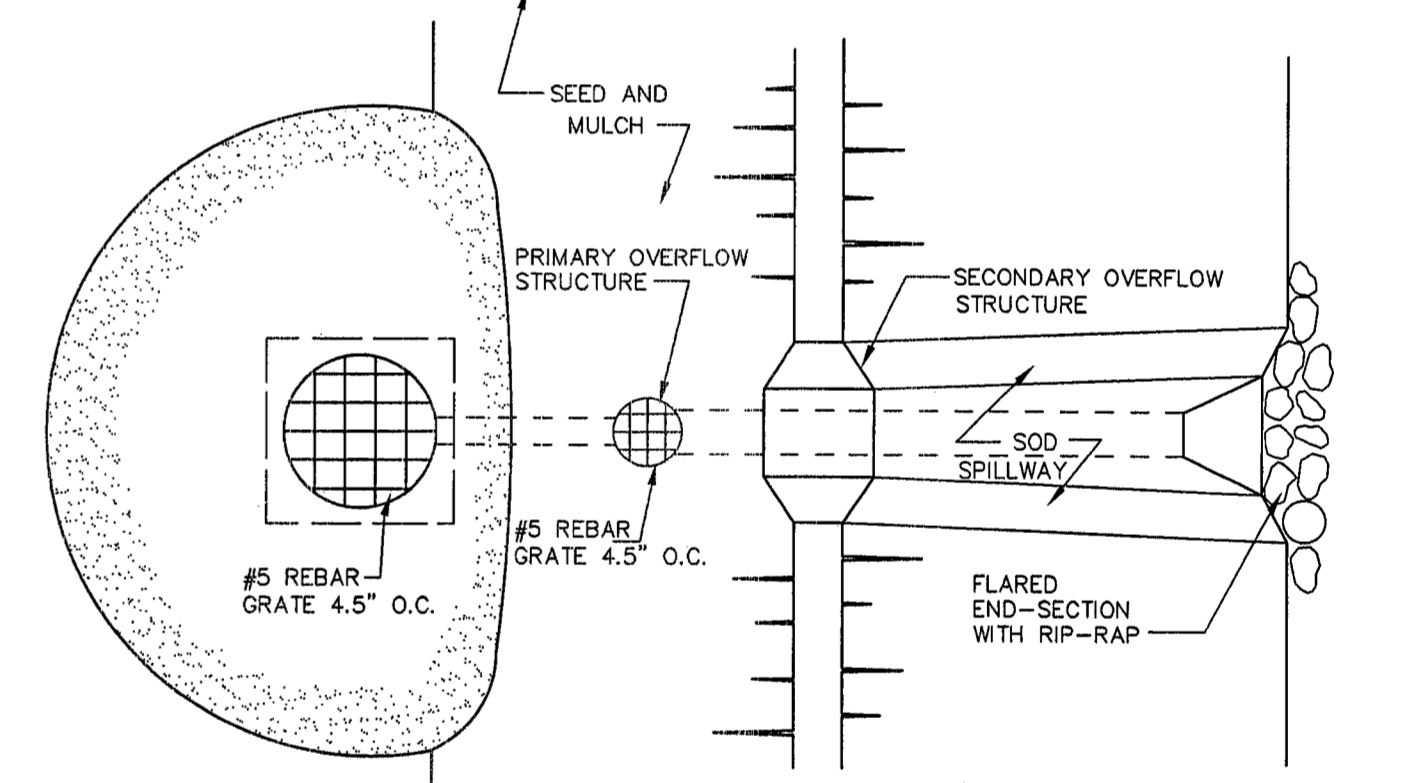
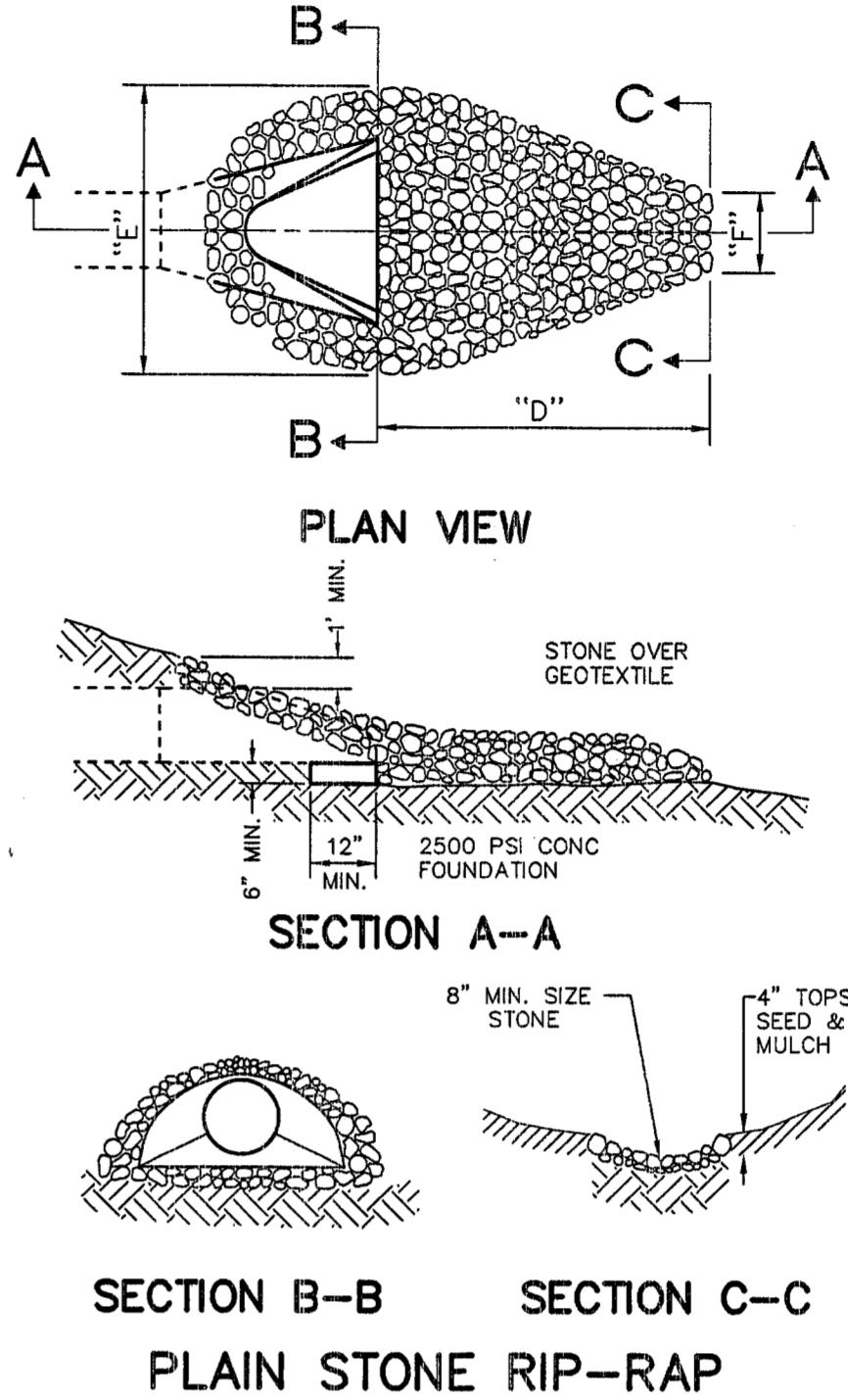
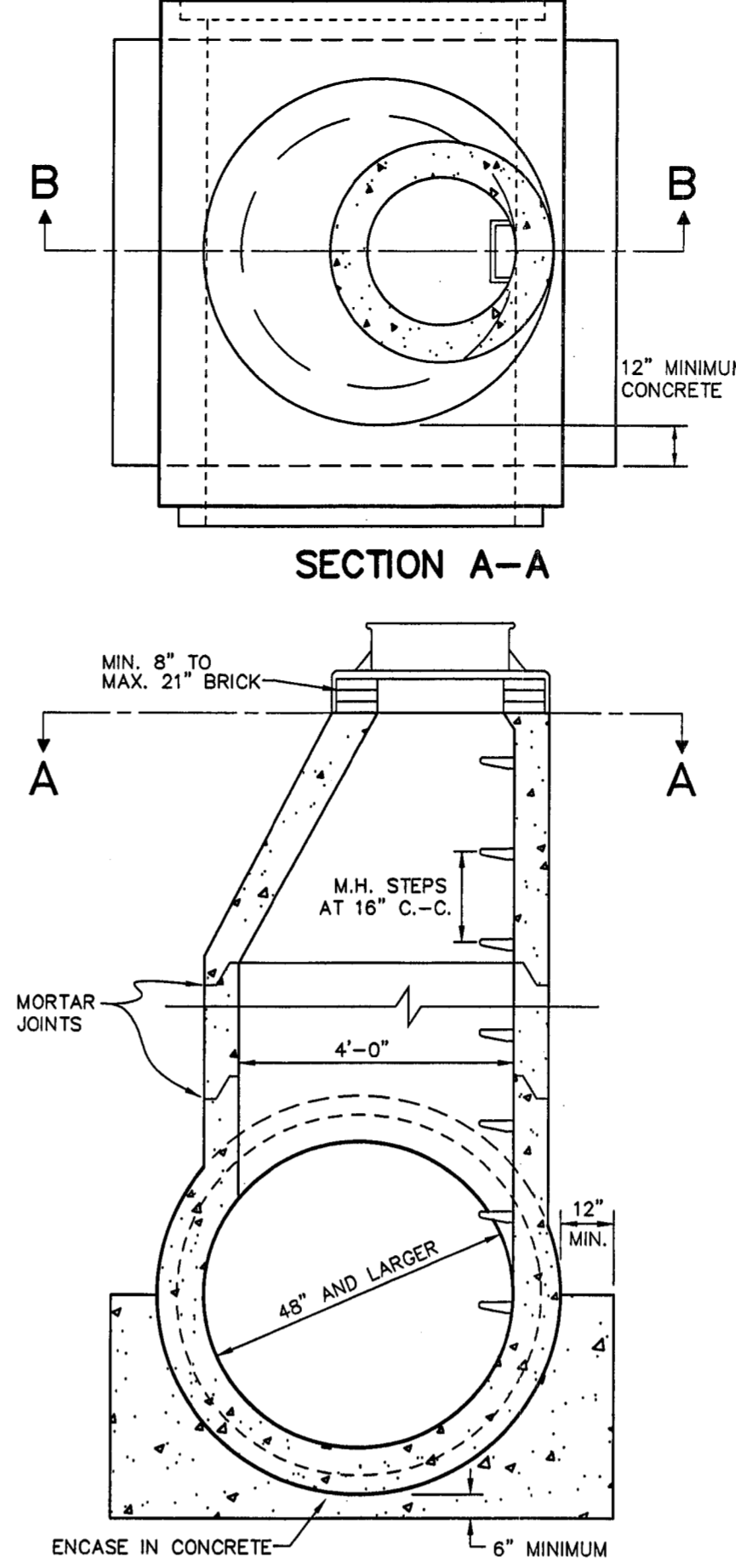
SHEET NO.: 14 OF 19



PIPE DIA.	"D"	"E"	"F"	S.Y.
12"	5'-0"	6'-6"	3'-0"	4
15"	5'-0"	7'-0"	3'-0"	4
18"	5'-0"	7'-6"	3'-6"	4
21"	5'-0"	8'-0"	4'-0"	5
24"	5'-0"	8'-6"	4'-6"	6
27"	5'-0"	9'-0"	5'-0"	7
30"	5'-0"	9'-6"	5'-6"	8
33"	5'-0"	10'-3"	6'-3"	9
36"	5'-0"	10'-9"	6'-9"	10
42"	5'-0"	11'-9"	7'-9"	12
48"	5'-0"	13'-0"	9'-0"	14

- ### STORM SEWER NOTES
- PRECAST CONC. RISERS SHALL MEET A.S.T.M. C478
 - DIAMETER OF CONC. BASE: I.D. + 2(WALL) + 8"
 - MANHOLE STEP SPACING SHALL MEET MOSHA REQUIREMENTS. NO MORE THAN 21" FROM RIM TO FIRST STEP. MAX. 18" O.C. STEPS SHALL BE CAST POLYPROPYLENE REINFORCED WITH A 1/2" STEEL ROD.
 - WALL THICKNESS OF BLOCK STRUCTURES SHALL BE:

0-8"	6"
8-15"	8"
OVER 15'	12"
 - MINIMUM I.D. OF STRUCTURE FOR: 36" to 42" = 5'-0" 48" to 54" = 6'-0"
 - LARGER DIAMETER STRUCTURES MAY BE REQUIRED DEPENDING ON PIPING CONFIGURATION.
 - ALL LIFTING HOLES AND VOIDS IN INTERIOR JOINTS SHALL BE FILLED BY MORTAR.
 - THE FINGER DRAIN DETAIL SHALL BE USED AT ALL LOW POINT CATCH BASINS IN PAVEMENT AREAS. THE DETAIL MAY BE OMITTED WITH THE APPROVAL OF THE TOWNSHIP ENGINEER IN AREAS WITH VERY POROUS SOILS AND NO GROUNDWATER PROBLEMS.
 - PRECAST ONE PIECE BASES AND RISERS ARE ACCEPTABLE FOR INLETS, CATCH BASINS AND MANHOLES
 - FRAMES & COVERS WITH INLET CAPACITY (1.0 CFS/90 SQ IN)
 - TRAFFIC AND PARKING AREAS: MDOT "D" (EJW 5105) 1.9 CFS*
 - REAR YARD AND DITCH INLETS: (EJW 1040-02) 2.1 CFS*
 - MANHOLES: MDOT "A" (EJW 1060)
 - CURB AND GUTTER INLETS: MDOT "K" (EJW 7045) 1.8 CFS*
 - MOUNTABLE CURB & GUTTER: (EJW 7065) 2.2 CFS*
 - *MAY VARY DUE TO MANUFACTURER CHANGES
 - CONTACT THE TOWNSHIP ENGINEER 48 HOURS PRIOR TO CONSTRUCTION TO SCHEDULE INSPECTION. FULL TIME INSPECTION WILL BE REQUIRED FOR ALL UNDERGROUND STORM SEWER CONSTRUCTION. PHONE (248) 334-9901
 - PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL HAVE IN HIS POSSESSION A CURRENT SOIL EROSION CONTROL PERMIT AS ISSUED BY WHITE LAKE TOWNSHIP.
 - A 2' DEEP SUMP SHALL BE USED IN ANY STRUCTURE SUBJECT TO A WATER DROP GREATER THAN 2.0' FROM AN INLET PIPE.
 - ALLOWABLE STORM SEWER PIPE TYPES:
 - 12" AND UP: RCP ASTM C-76 MIN. CLASS 3, MIN CLASS 4 UNDER TRAFFIC AREAS, RUBBER JOINT
 - 6" TO 15": SCH 40 PVC OR SDR 23.5 PVC WITH RUBBER OR GLUE JOINT
 - 6" TO 48": SMOOTH BORE CORRUGATED HIGH DENSITY POLYETHYLENE WITH NEOPRENE LINED JOINTS OR BETTER
 - THE MINIMUM PIPE SIZE IN PUBLIC RIGHT-OF-WAY OR EASEMENTS AND FOR PIPES CARRYING OFF-SITE STORM WATER SHALL BE 12"
 - ALL PIPE ENDS NOT WITHIN A STRUCTURE SHALL HAVE A CONCRETE OR METAL FLARE END SECTION (FES) WITH A BAR SCREEN ON PIPES 18" AND LARGER EXCEPT THOSE WITHIN A SECURE FENCED AREA NEED NO BAR SCREEN.
 - ALL DRAINAGE STRUCTURES WITHIN THE ROAD SHALL BE SEALED WITH WRAPPED GEOTEXTILE PER ROCC STANDARDS



DRAWN: CAD DESIGN: OA CHECKED: -

SCALE: VERT. - HORZ. AS NOTED

MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
	FIRST ISSUE	08/16/95		REVISE	10-03-02		REVISE	06-01-07
	ADD SO-1	06-17-96		REVISE	12-17-03		UPDATED TITLE BLOCK	04/30/13
	NEW BAR GRATE	11-03-97		SEC. REFERENCE	05-17-05			

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4494 Elizabeth Lake Road Waterford, Michigan 48388 tel (248) 951-7900 fax (248) 681-2860

1060 W. Norton Avenue, Suite 7 Muskegon, Michigan 49441 tel (231) 793-3100 fax (231) 793-3115

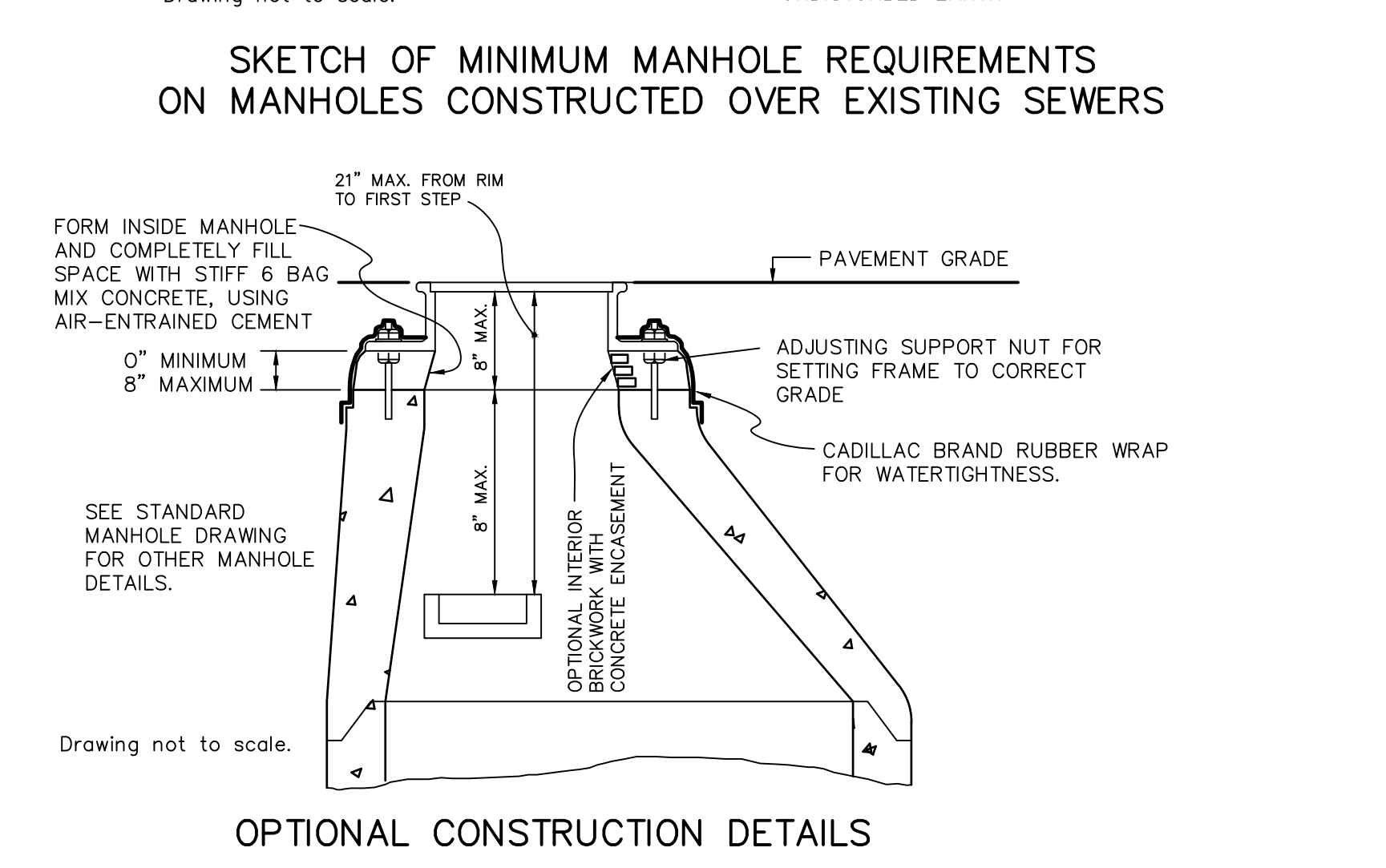
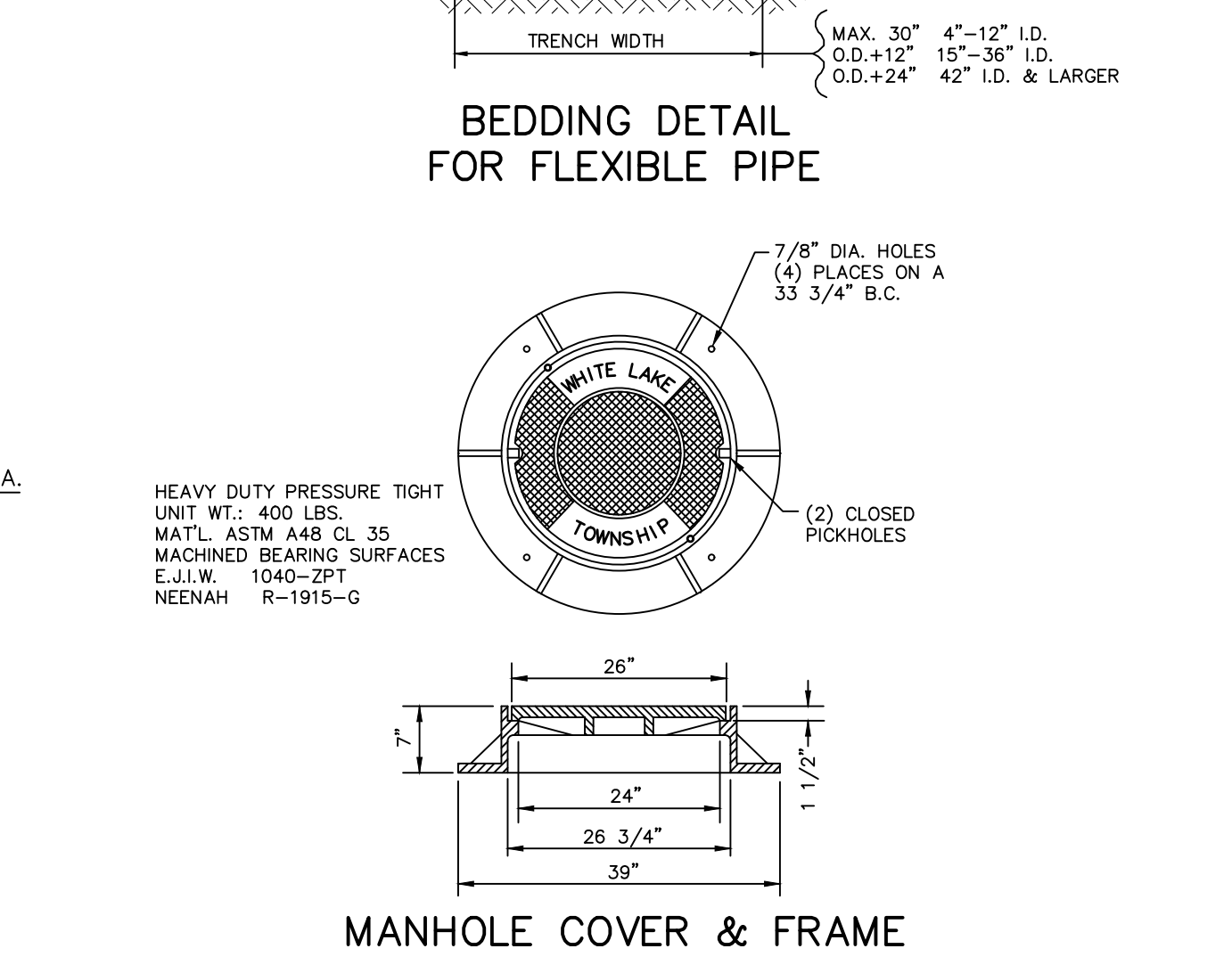
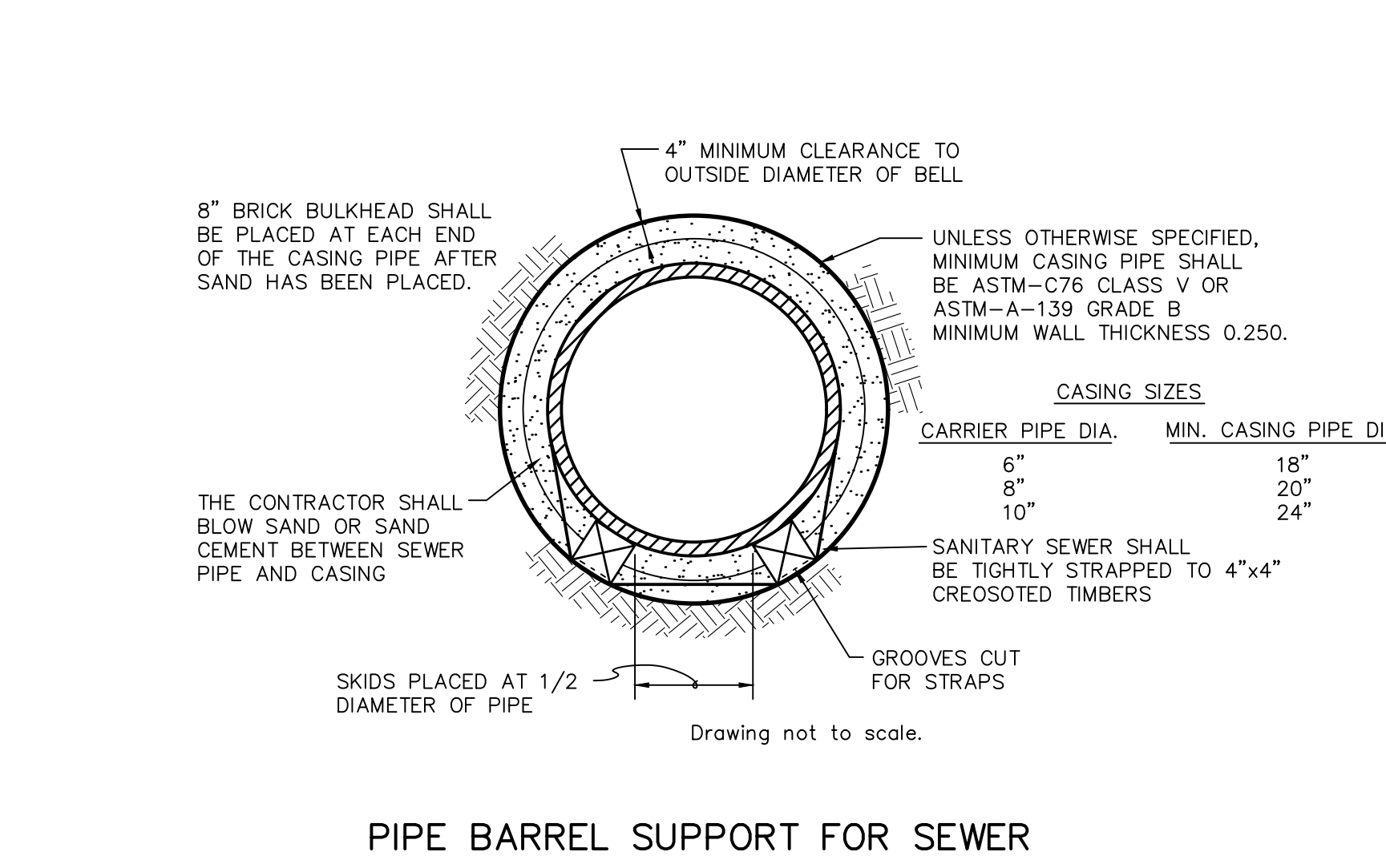
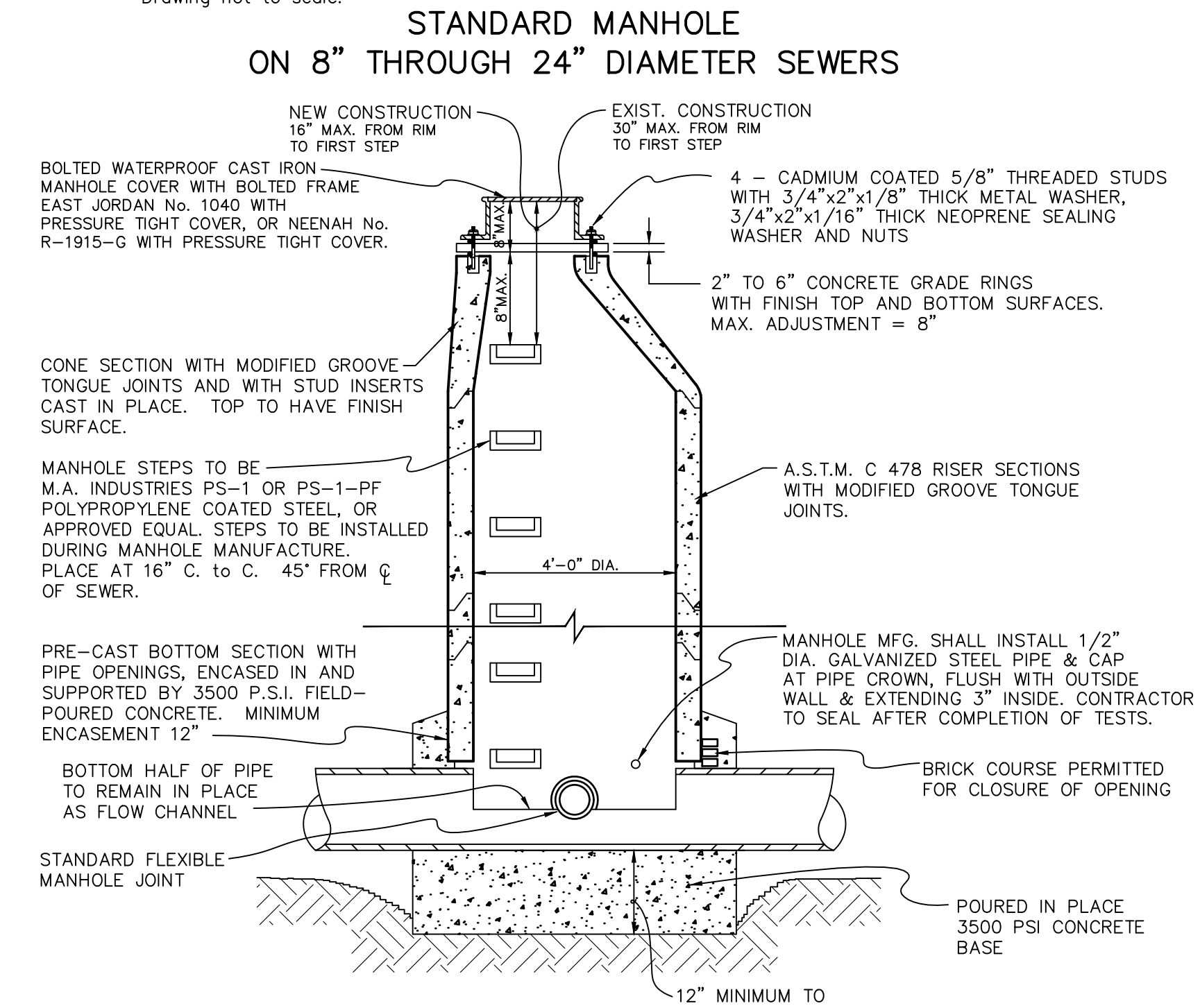
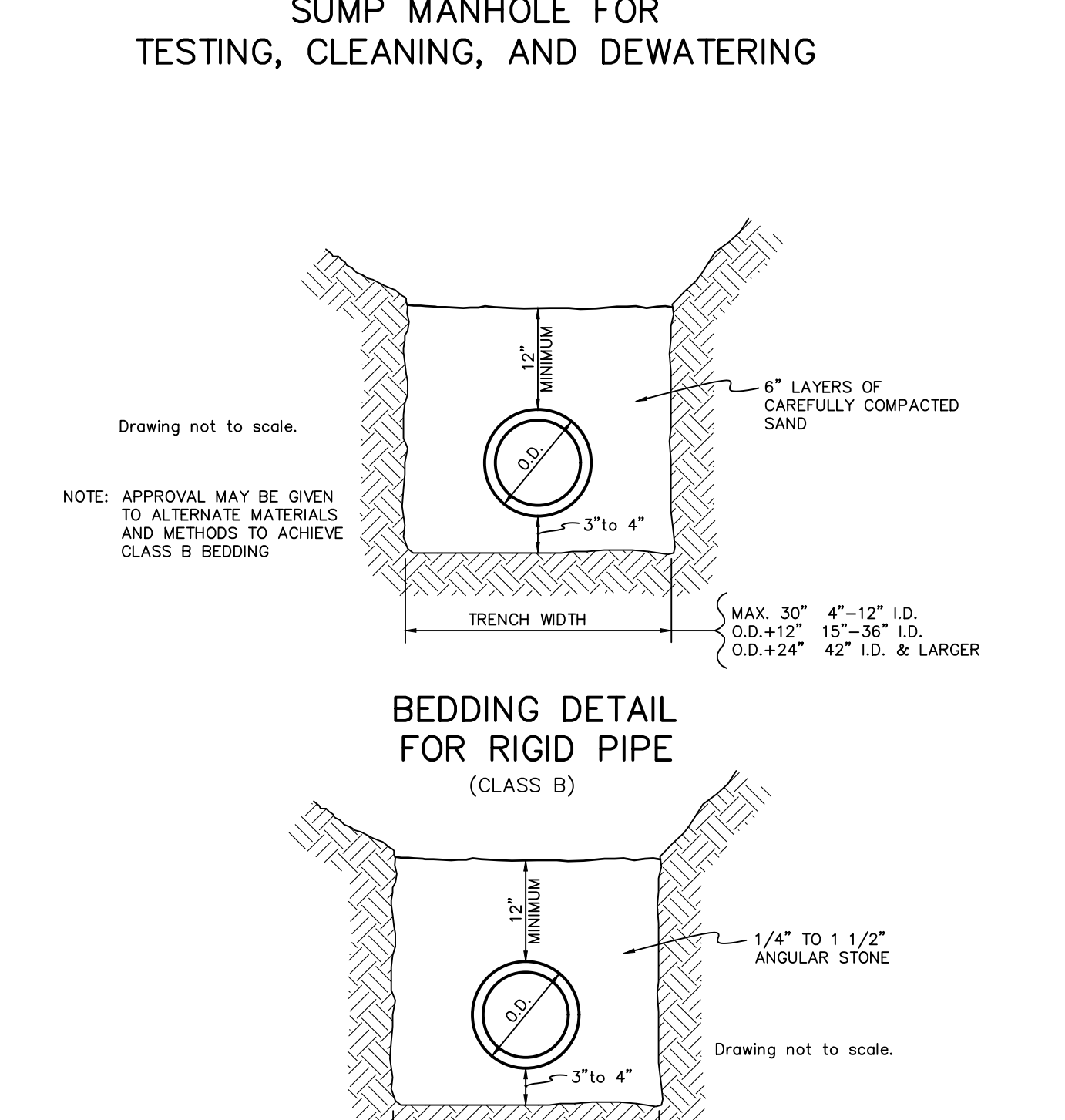
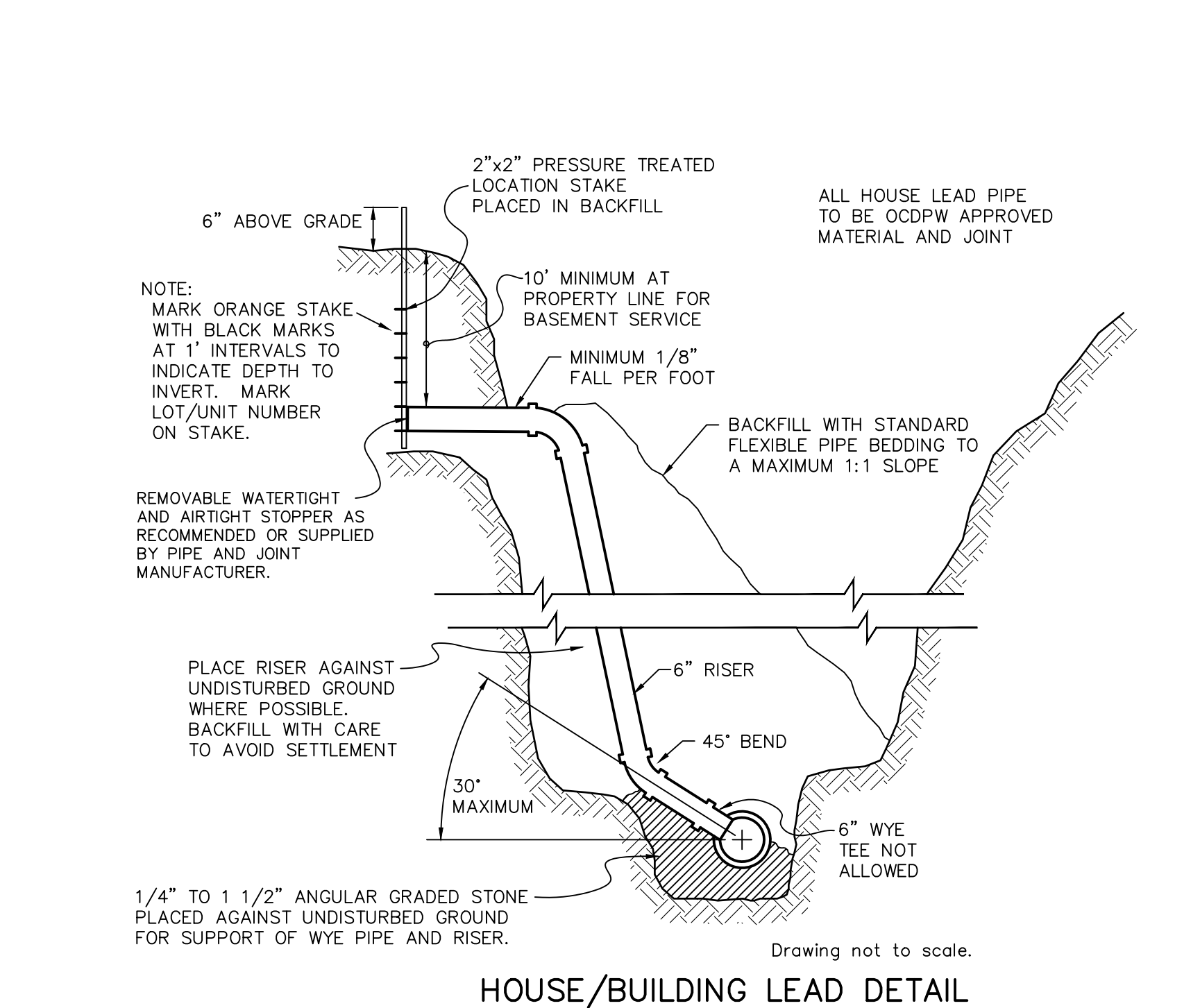
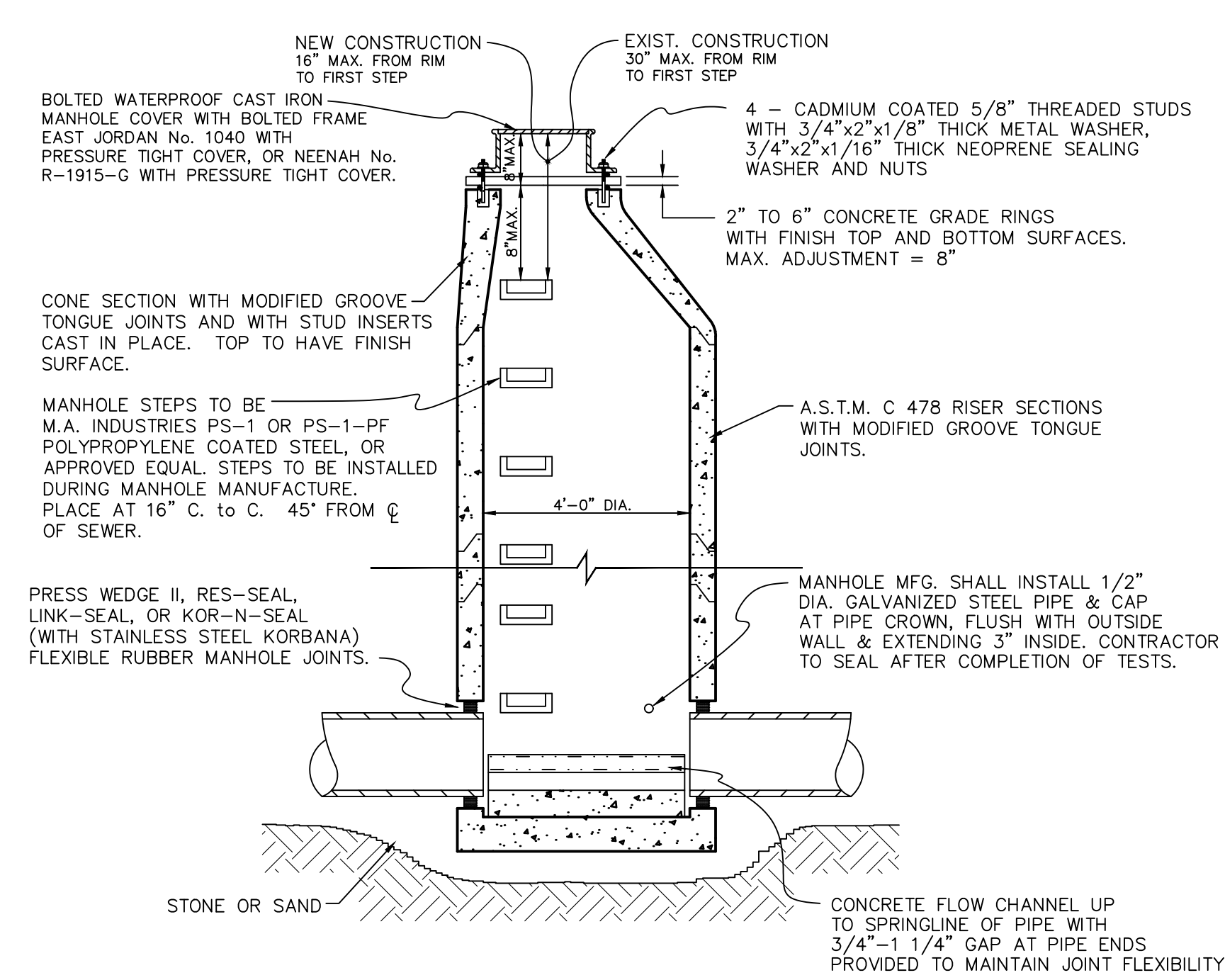
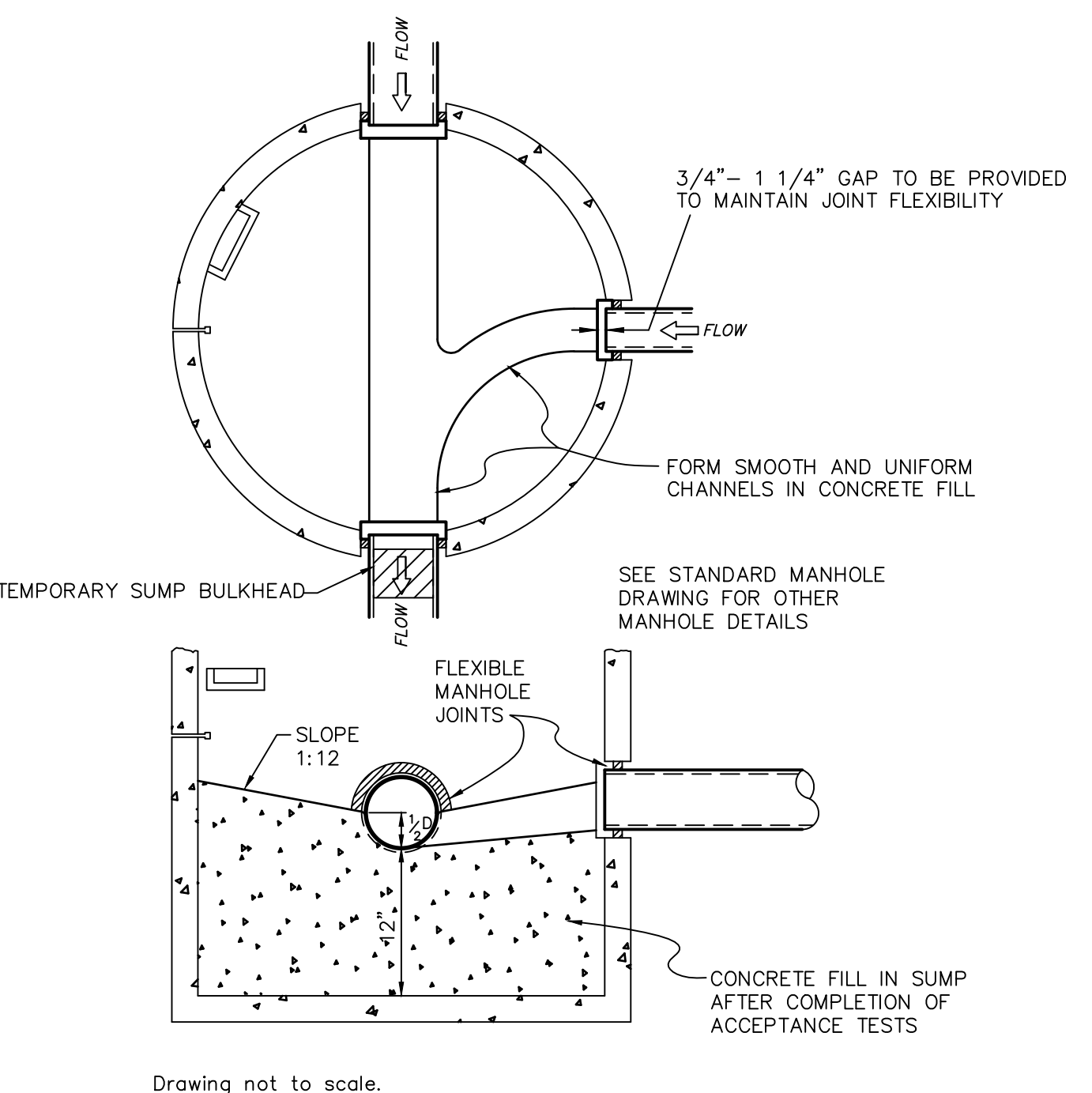
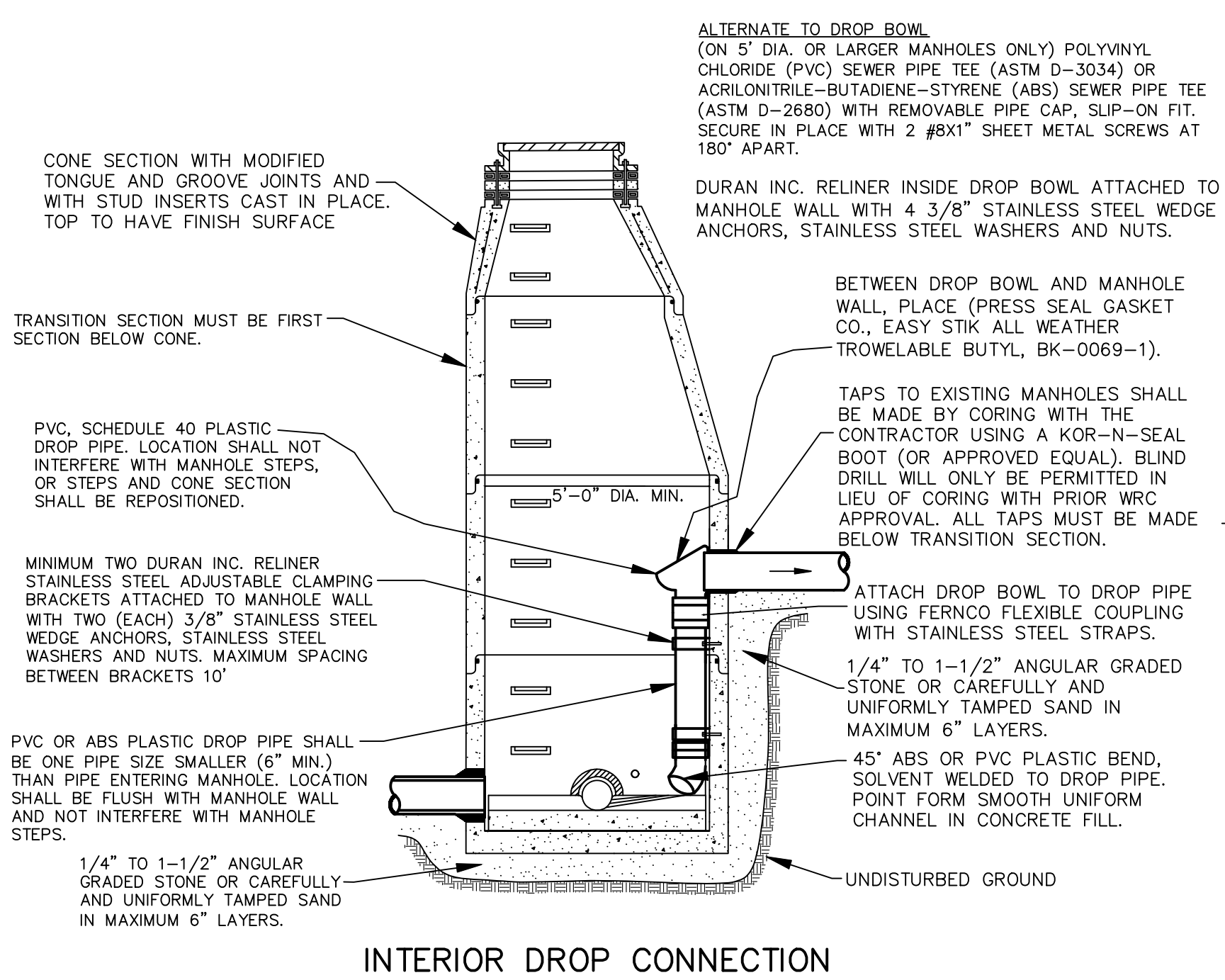
3910 Lapeer Road Port Huron, Michigan 48060 tel (810) 987-7620 fax (810) 987-7895

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

STORM SEWER STANDARD DETAILS

DATE ISSUED: 08/16/95
JOB NO.: 2018.296
SHEET NO.: 15 OF 19

- All construction shall conform to the current standards and specifications of the local unit of government and the Oakland County Water Resources Commissioner (OCWRC). All sanitary sewer construction shall have full time inspection supervised by a professional engineer provided by or caused to be provided by the local unit of government.
- At all connections to Oakland County Water Resources Commissioner's sewers or extensions, and before start of construction, the Contractor must obtain a Sewer Inspection Permit issued by the OCWRC. Gravity sewer permit charges are \$250.00 for each connection plus \$25.00 for each manhole constructed. Pressure sewer permit charges are \$250.00 per 2460 L.F. of force main with a minimum permit fee of \$250.00. Failure to pass any test segment will result in an additional charge to the Contractor for each retest, in accordance with the above price schedule. The Contractor shall also have posted with the OCWRC a \$5,000.00 surety bond and \$500.00 cash deposit. The Contractor shall notify the local unit of government and the OCWRC (248-858-1110) 24 hours prior to the beginning of any construction. Final acceptance tests must be witnessed by County personnel and must be scheduled by Municipality or its consultant in advance with 24 hour notice at 248-858-1110.
- No sewer installation shall have an infiltration or exfiltration exceeding 100 gallons per inch diameter per mile of pipe in a 24 hour period, and no single run of sewer between manholes shall exceed 100 gallons per inch diameter per mile. Air tests in lieu of infiltration tests shall be as specified in the OCWRC "Acceptance Tests", dated September, 1972. Only pipe and pipe joints approved by the Oakland County Water Resources Commissioner may be used for sanitary sewer construction.
- Located in the first manhole upstream from the point of all connections to an existing OCWRC sewer, or extension thereto, a temporary 12-inch deep sump shall be provided in the first manhole above the connection which will be filled in after such successful completion of any acceptance test up to the standard fill provided for the flow channel. A watertight bulkhead shall be provided on the downstream of the sump manhole.
- All building leads and risers shall be 6-inch S.D.R. 23.5 ABS OR PVC pipe with chemically fused joints, or an approved equal pipe and joint. Sewer pipe wye shall contain factory installed premium joint material of an approved type compatible with that of the building lead pipe used. Building leads to be furnished with removable air tight and water-tight stoppers.
- All rigid sewer pipe shall be installed in Class "B" bedding or better. All flexible, semi-flexible or composite sewer pipe shall be installed in conformance to the Oakland County Water Resources Commissioner specifications.
- All new manholes shall have Oakland County Water Resources Commissioner approved flexible, water-tight seals where pipes pass through walls. Manholes shall be of precast sections with modified groove tongue and rubber gasket type joints. Precast manhole cone sections shall be Oakland County Water Resources Commissioner approved modified eccentric cone type. All manholes shall be provided with bolted, water-tight covers.
- At all connections to manholes on Oakland County Water Resources Commissioner's sewers or extensions thereto drop connections will be required when the difference in invert elevations exceeds 18-inches. Outside drop connections only will be approved.
- Taps to existing manholes shall be made by coring. The Contractor shall place a KOR-N-SEAL boot (or OCWRC approved equal) after coring is completed. Blind drilling will not be permitted in lieu of coring.
- New manholes constructed directly on Oakland County Water Resources Commissioner's sewers shall be provided with covers reading "Oakland County - Sanitary" in raised letters. New manholes built over an existing sanitary sewer shall have monolithic poured bottoms.
- No ground water, storm water, construction water, downspout drainage or weep tile drainage shall be allowed to enter any sanitary sewer installation.
- Prior to excavation, the Contractor shall telephone MISS DIG (647-7344) for the location of underground pipeline and cable facilities, and shall also notify representatives of other utilities located in the vicinity of the work.
- 18" minimum vertical separation and 10' minimum horizontal separation must be maintained between sanitary sewer and water main.
- Manhole frame and cover shall be as follows: East Jordan heavy manhole cover, base flange type #1040 or Neenah Foundry heavy duty #R-1642 manhole frame. Solid lid cover shall be non-rocking and marked "WHITE LAKE TOWNSHIP SEWER DEPARTMENT."



DRAWN:CAD
DESIGN:OA
CHECKED:--

SCALE: VERT. -
HORZ. AS NOTED

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

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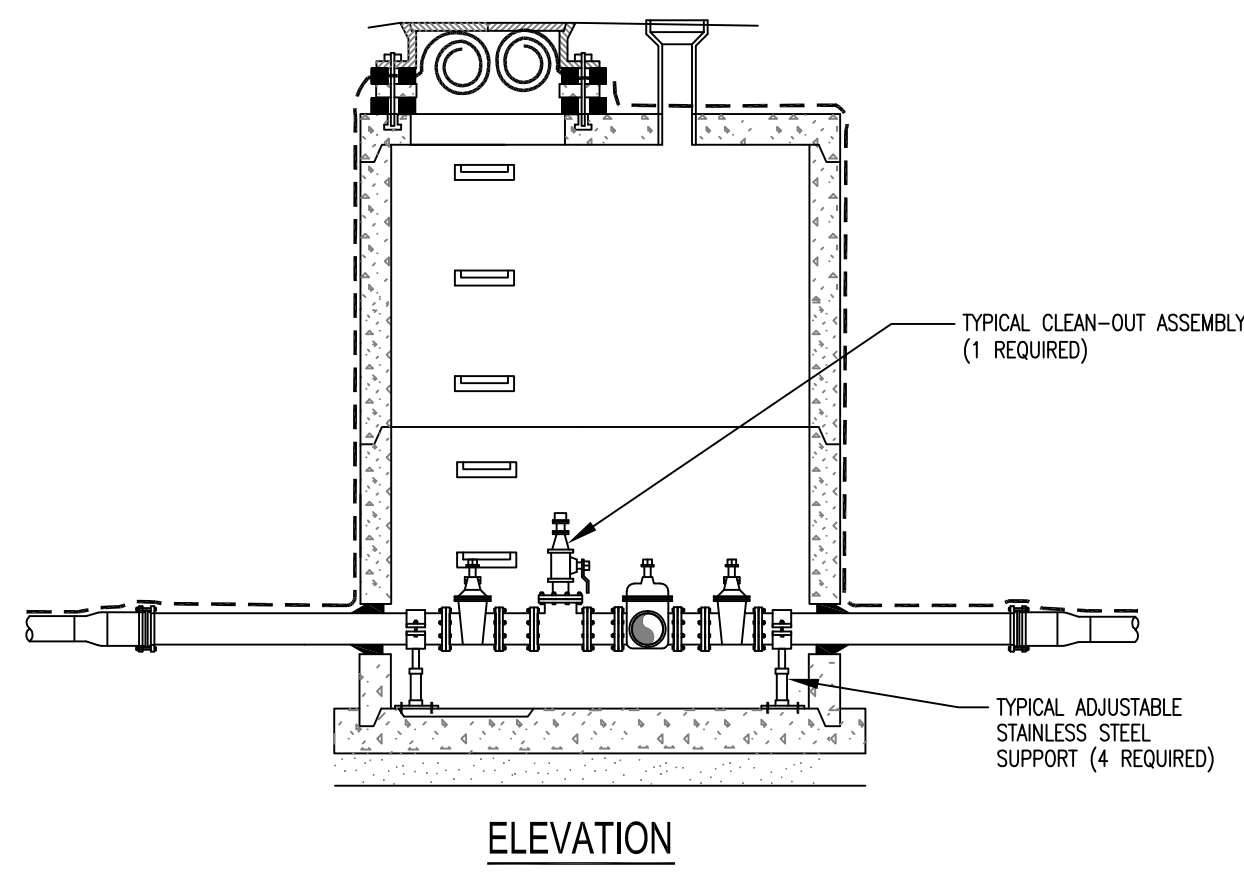
2291 Water Street, Suite 6 Port Huron, Michigan 48060 tel (810) 987-7820 fax (810) 987-7895

White Lake Township

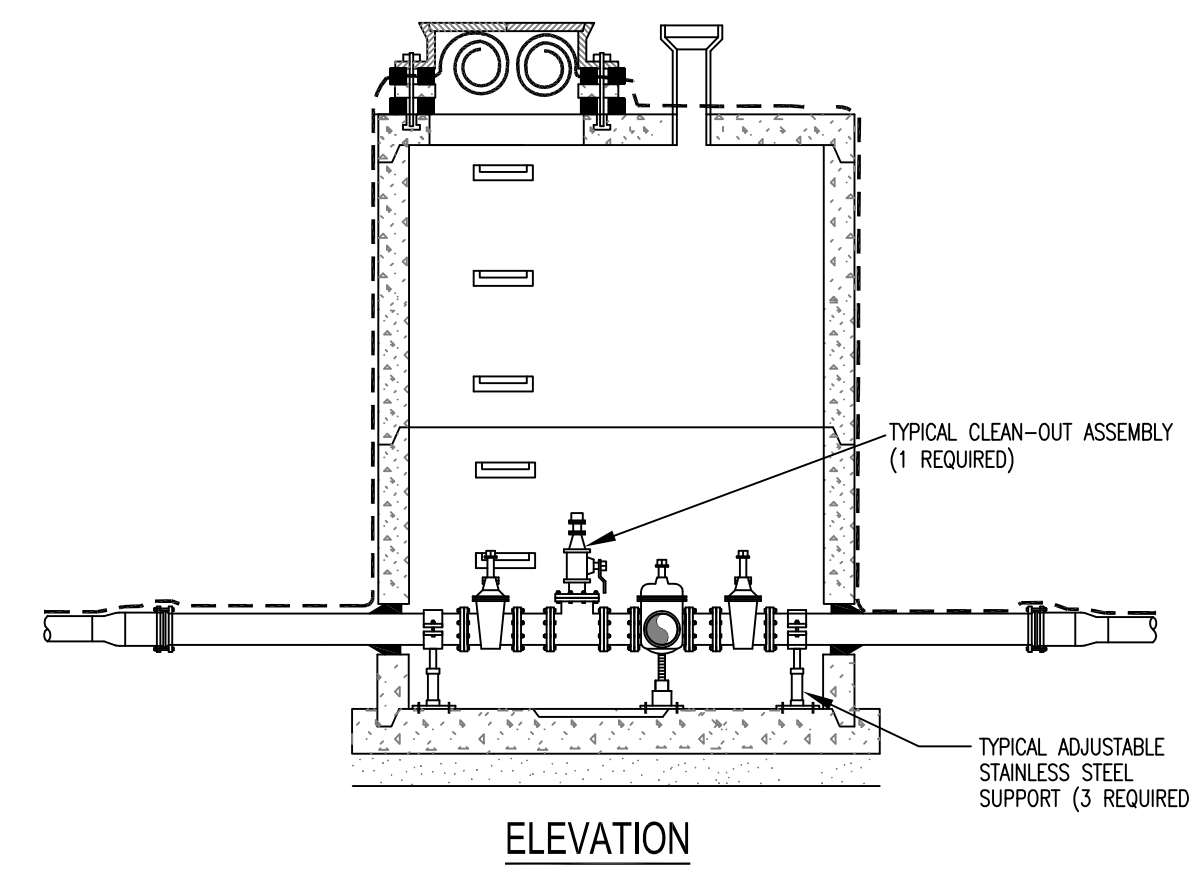
7525 Highland Road (M-59)
White Lake, Michigan 48383
248-698-3300

SANITARY SEWER STANDARD DETAILS

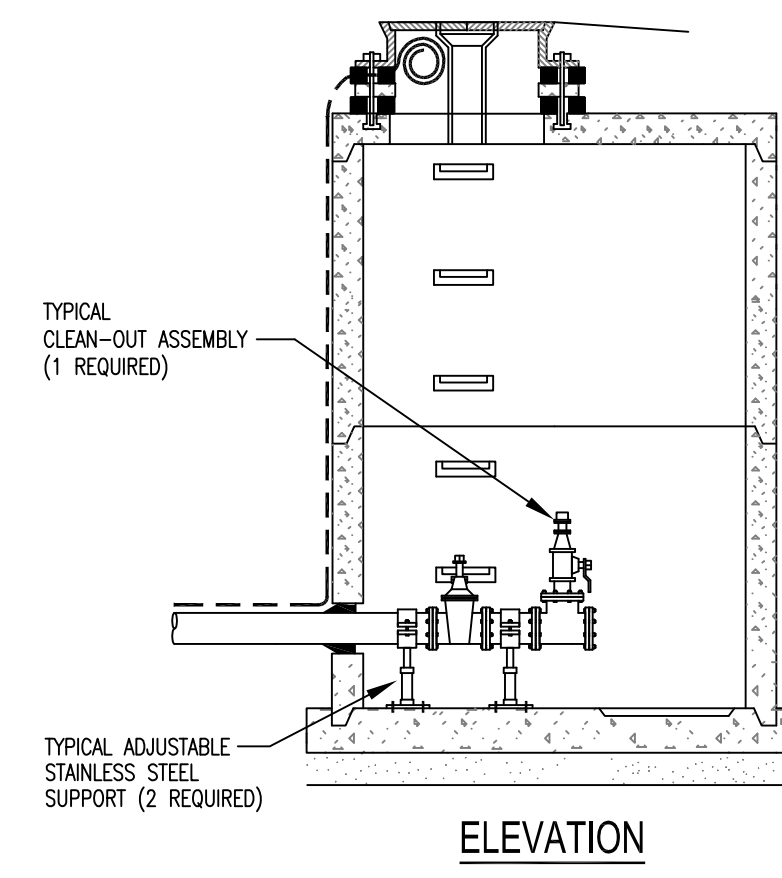
JOB NO. 2018.296
DATE ISSUED 09/11/97
SHEET NO. 16 of 19



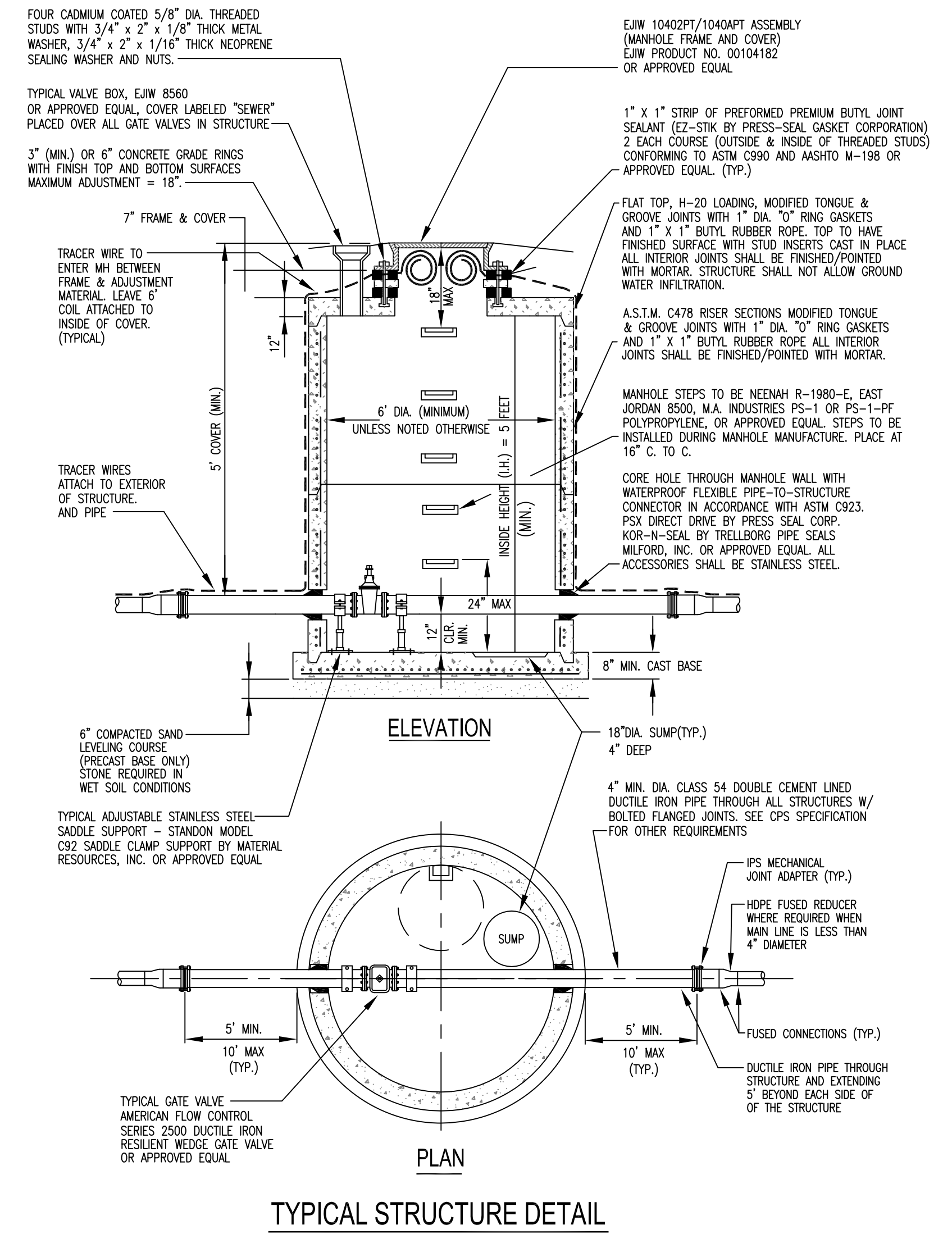
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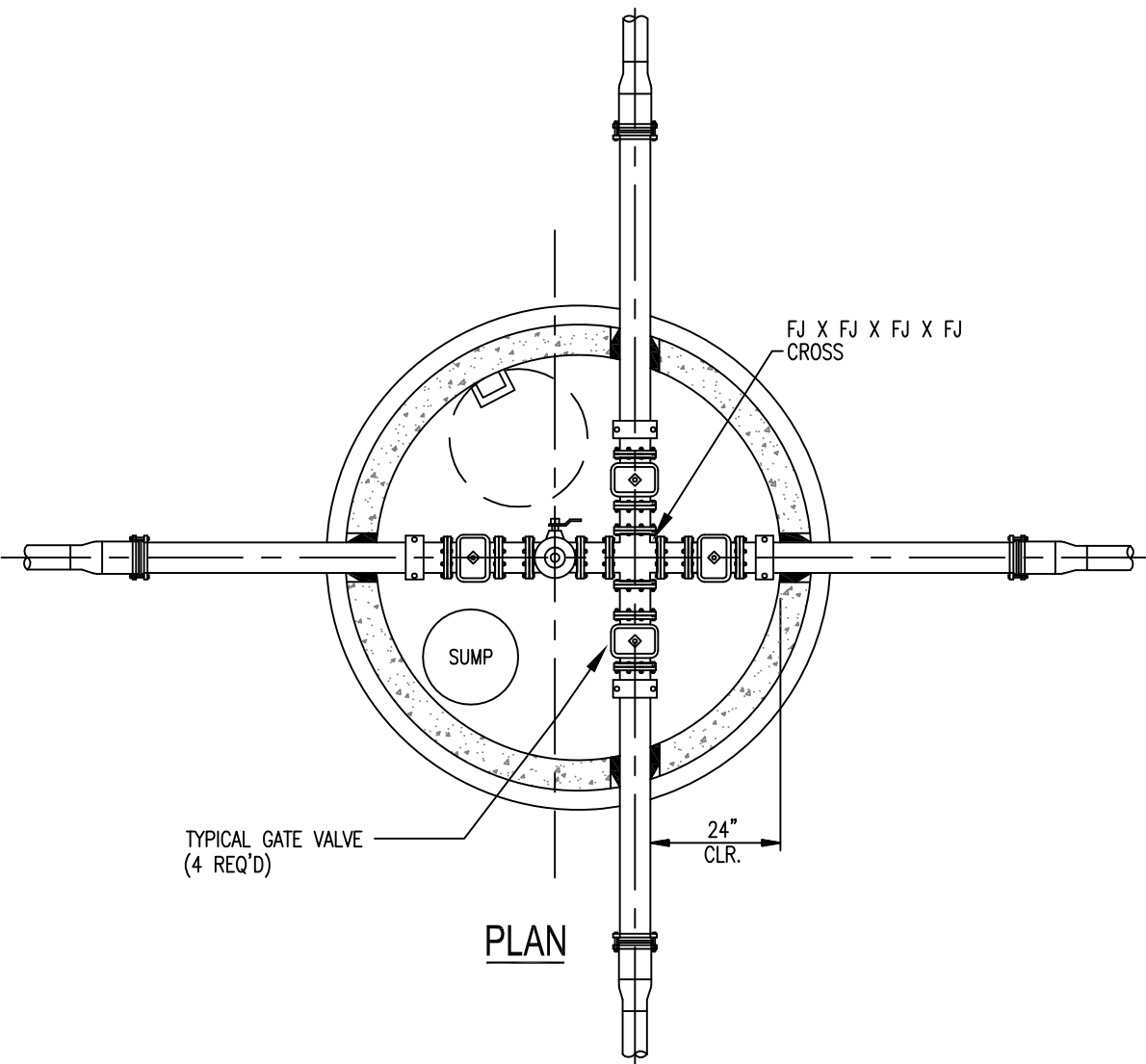
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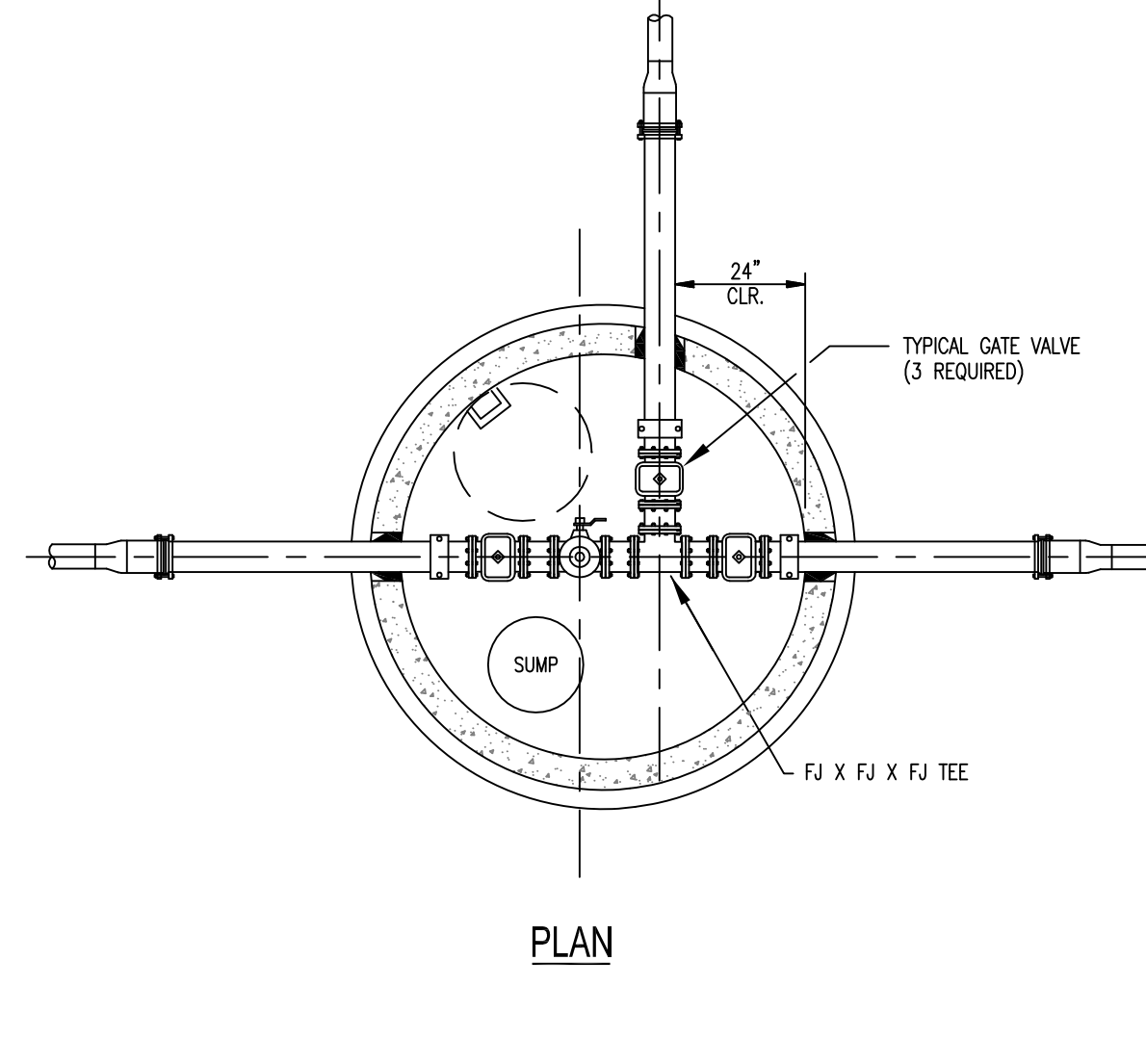
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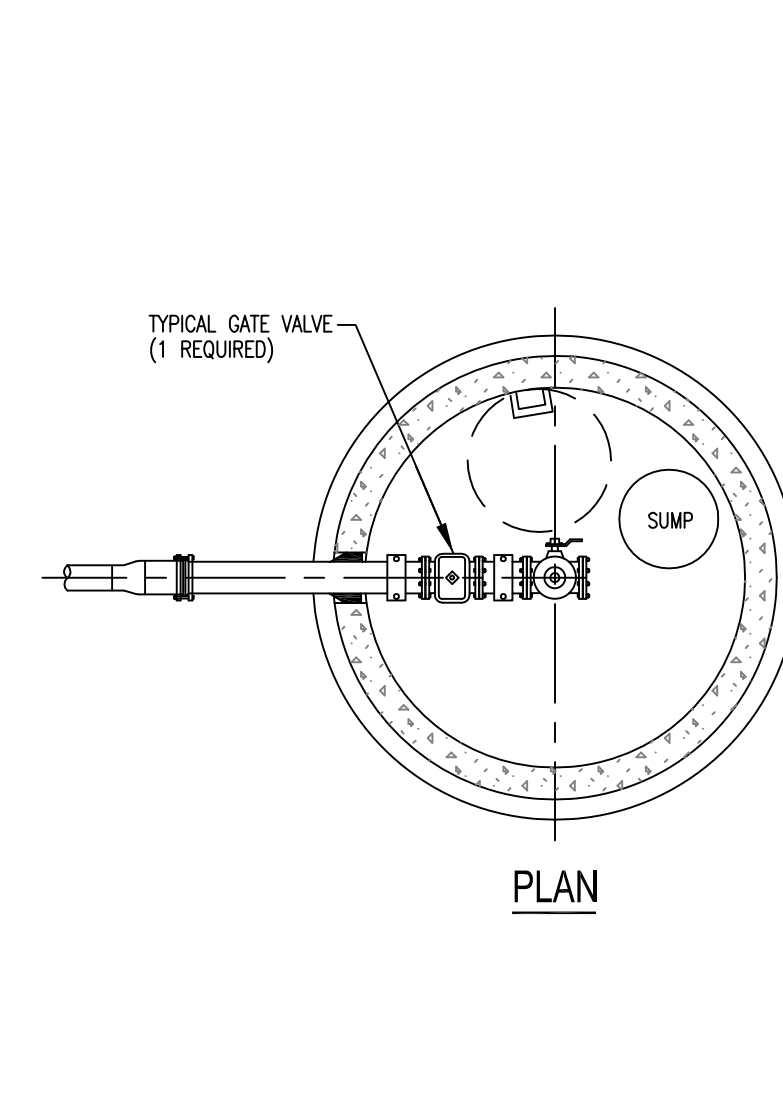
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PLAN



PLAN



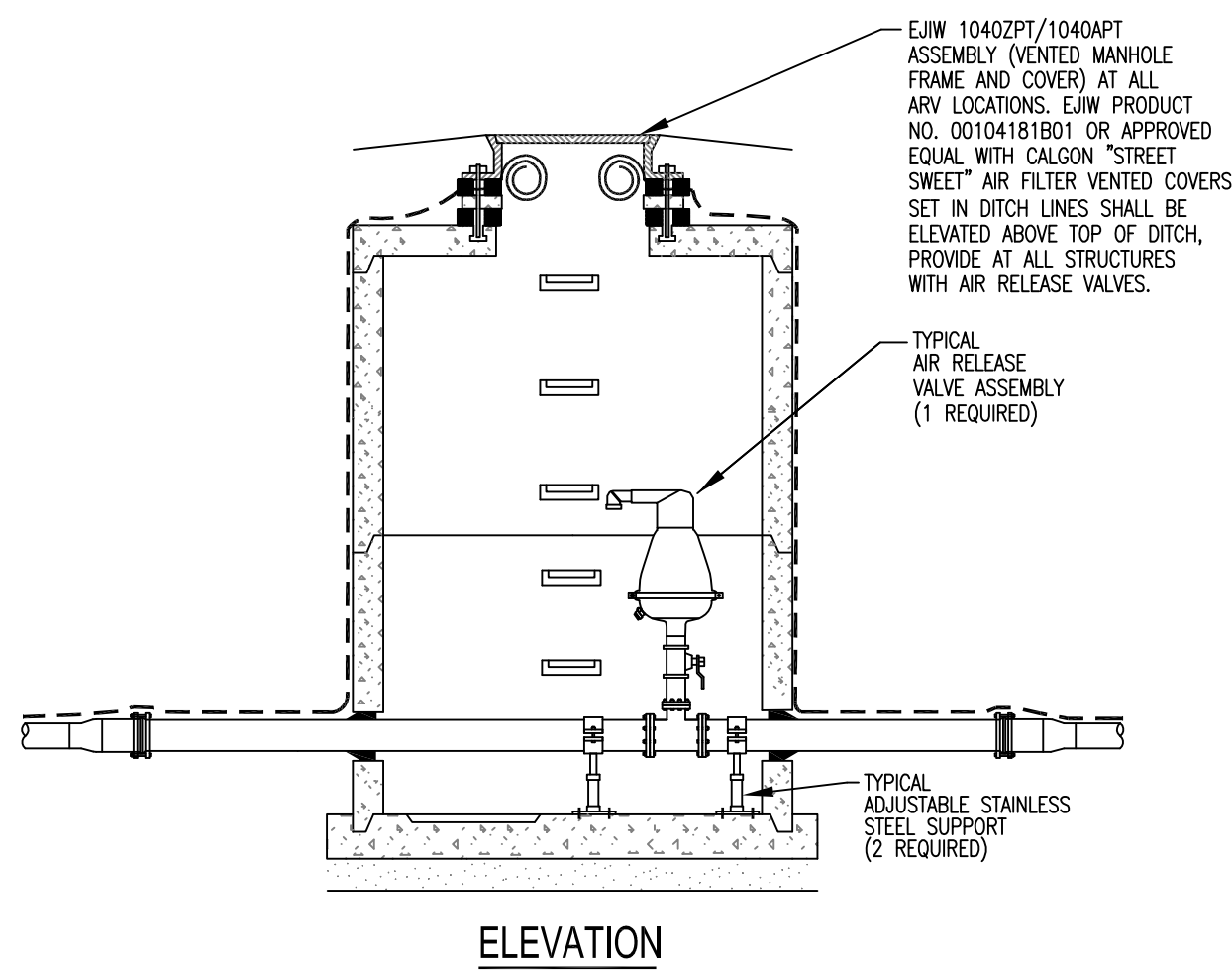
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TYPICAL STRUCTURE DETAIL

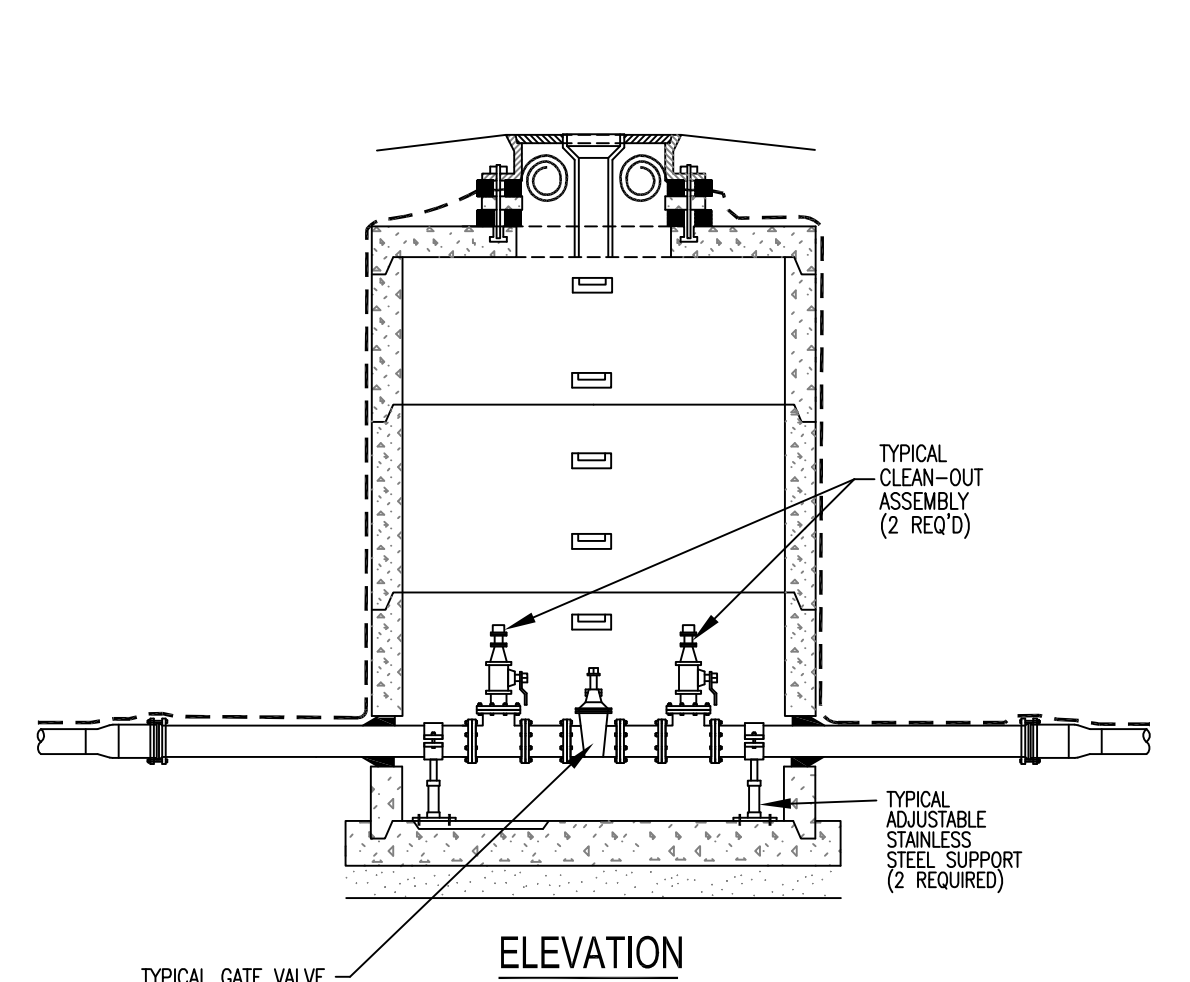
BRANCH FLUSHING CONNECTION (BFC)
4 WAY IN WELL

BRANCH FLUSHING CONNECTION (BFC)
3 WAY IN WELL

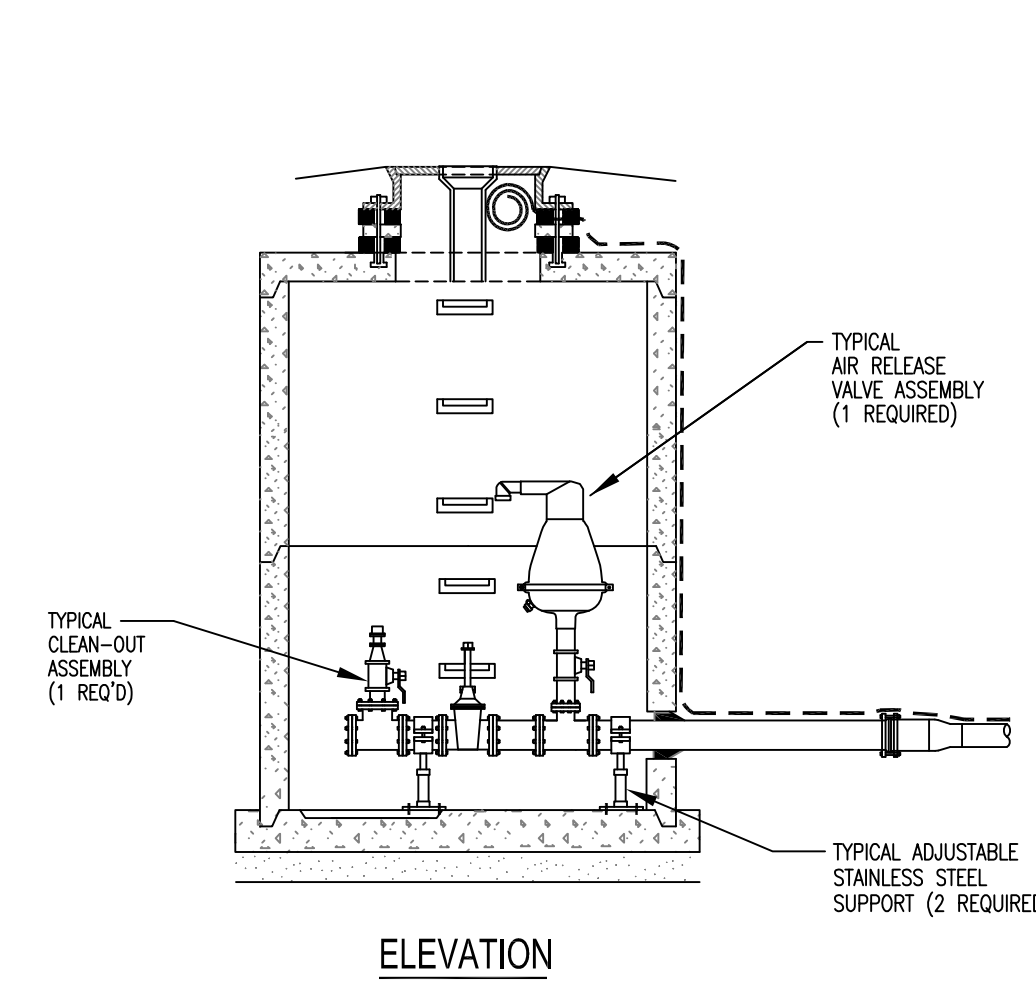
TERMINAL FLUSHING CONNECTION (TFC)
IN WELL



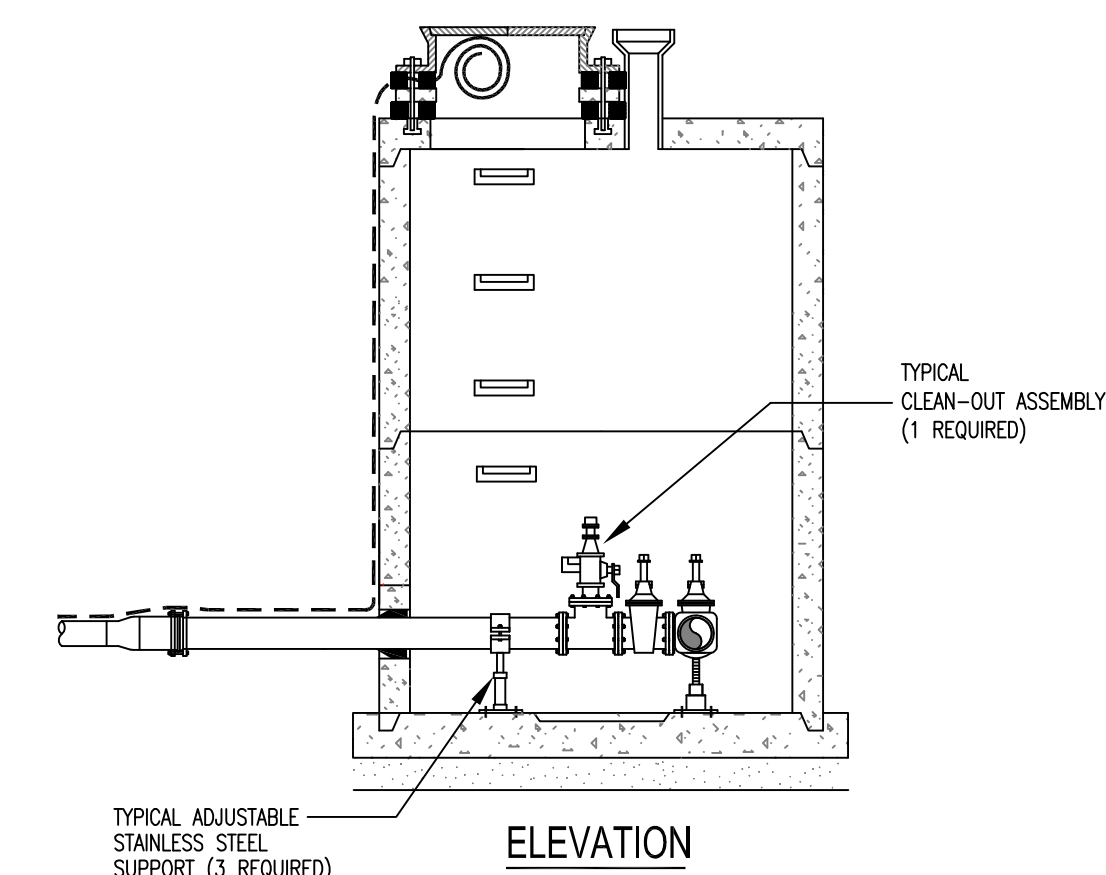
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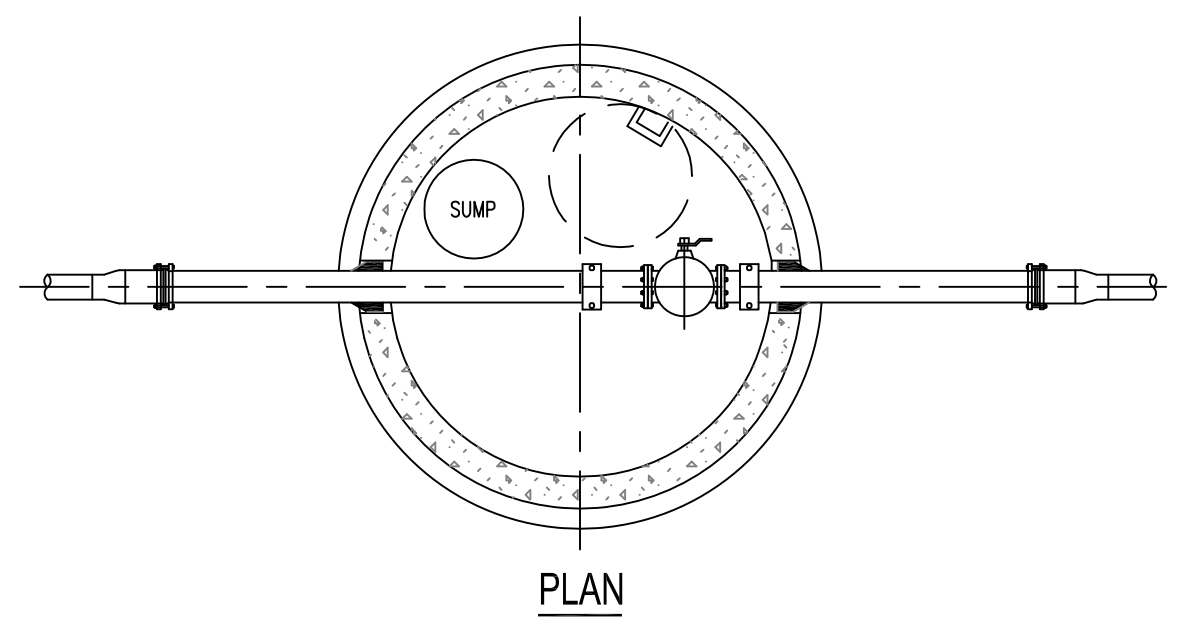
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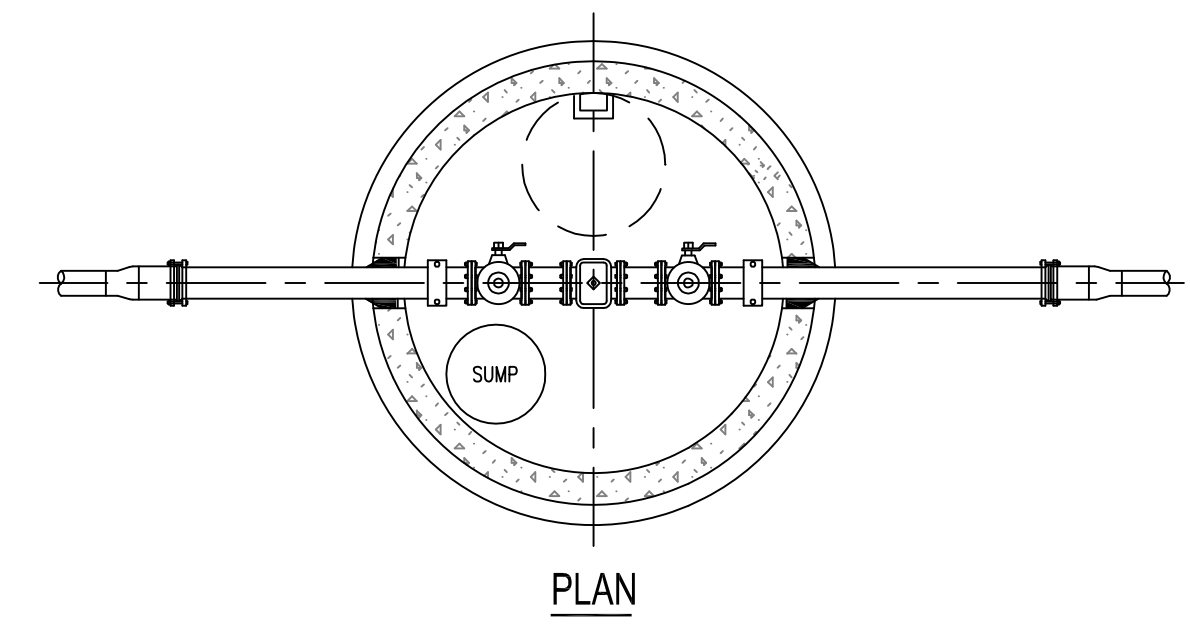
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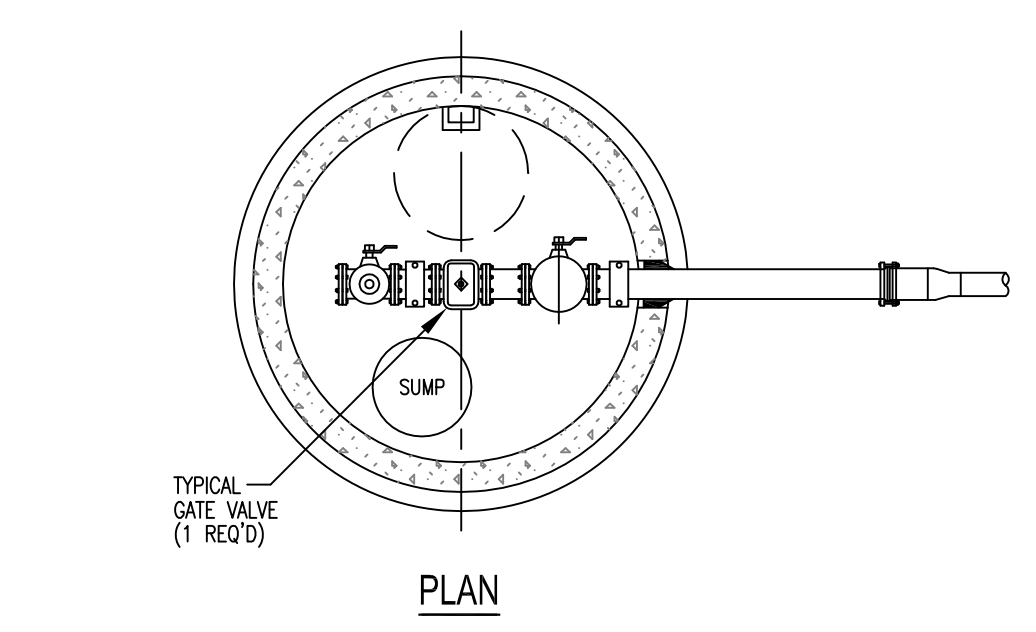
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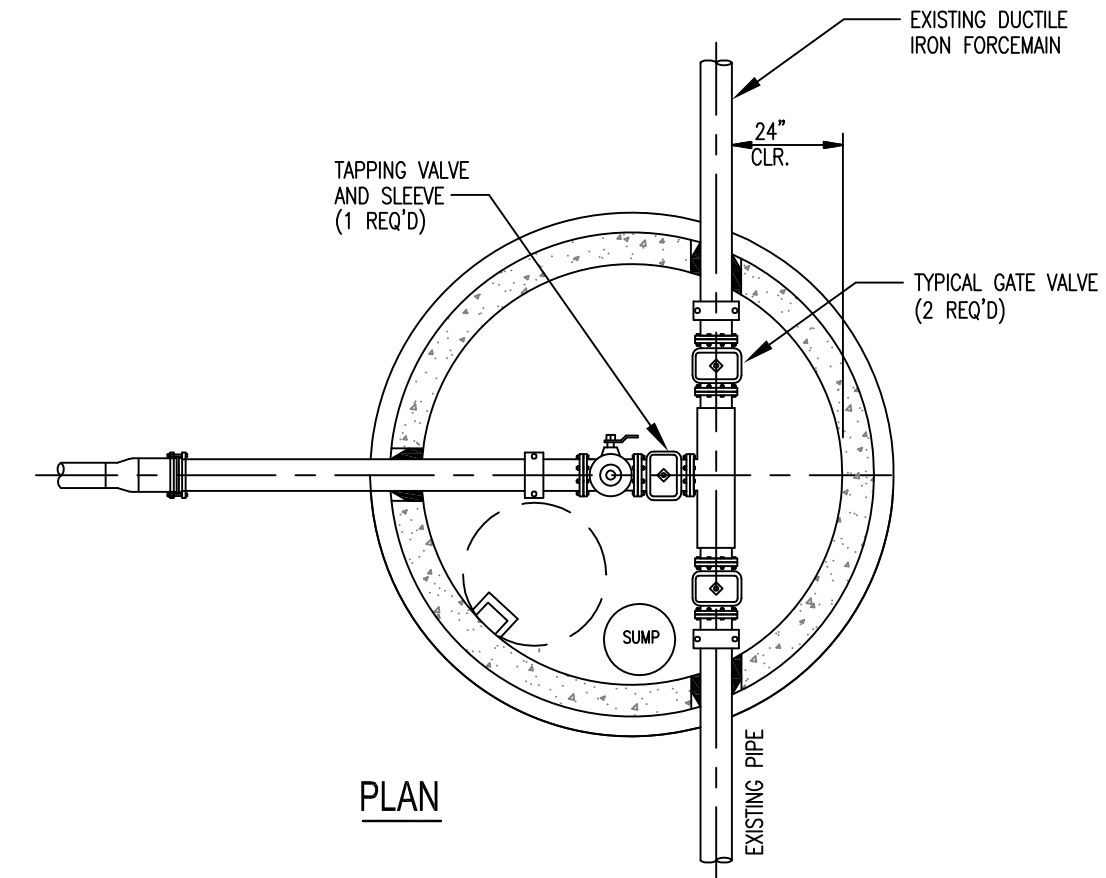
PLAN



PLAN



PLAN



PLAN

AIR/VACUUM RELEASE VALVE (ARV)
IN WELL

INTERMEDIATE FLUSHING CONNECTION (IFC)
IN WELL

TERMINAL FLUSHING CONNECTION WITH
AIR/VACUUM RELEASE VALVE (TFC/ARV)
IN WELL

TAPPING SLEEVE & VALVE (TSV)
IN WELL

KE 2018.296
SHT 17 of 19

**LOW PRESSURE
SANITARY SEWER DETAILS
AND
NOTES**

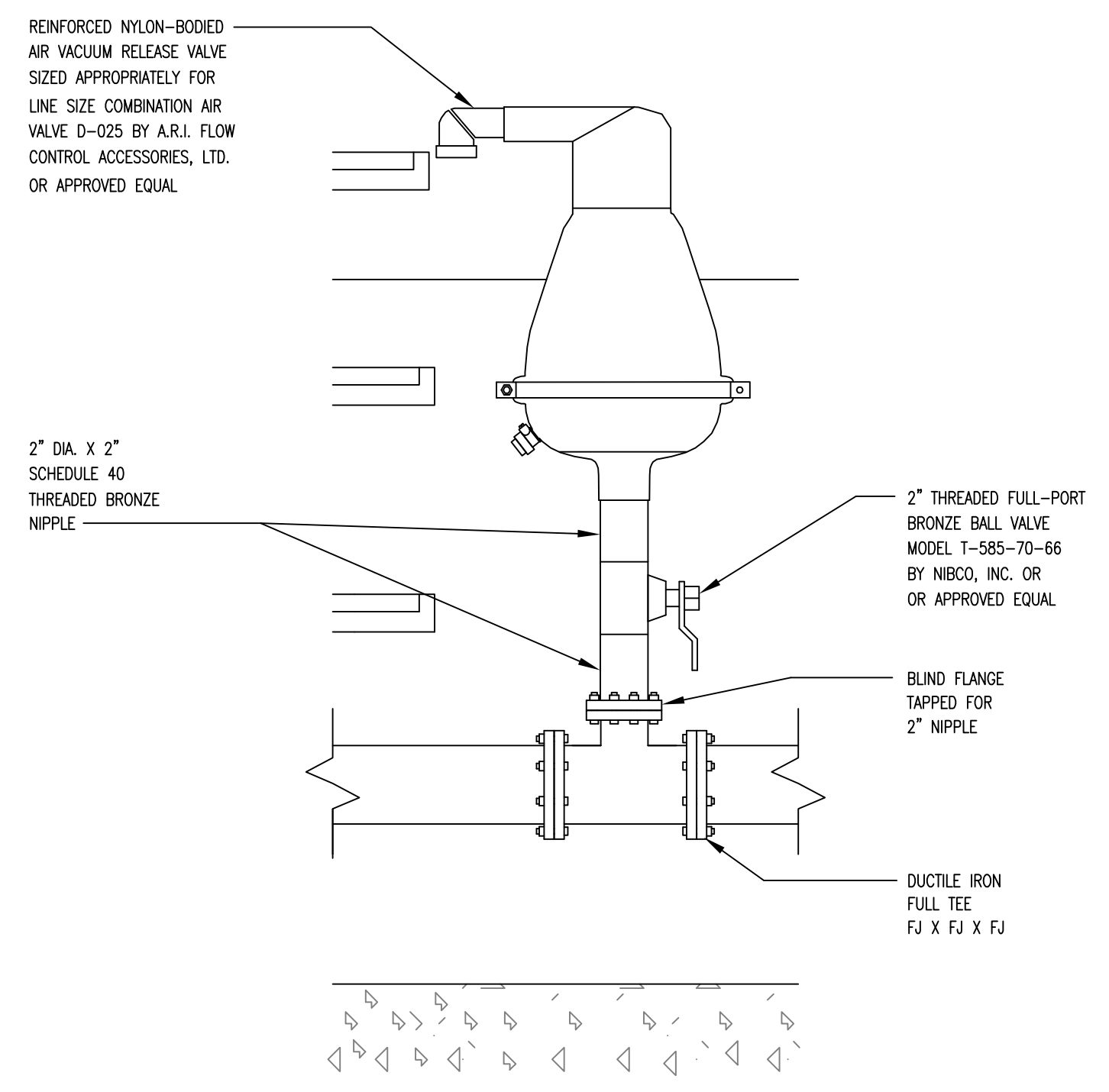
REVISION BLOCK			
Rev.	By	Date	Description
1	SS	4/15/13	APPROVED BY ENGINEERING STANDARDS COMMITTEE
2			
3			
4			

ORIG. DATE: 05/15/2013	 WRC WATER RESOURCES COMMISSIONER <i>Jim Nash</i>	ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907
SCALE: NONE		
DESIGNED BY: WRC		
DRAWN BY: WRC Mapping		

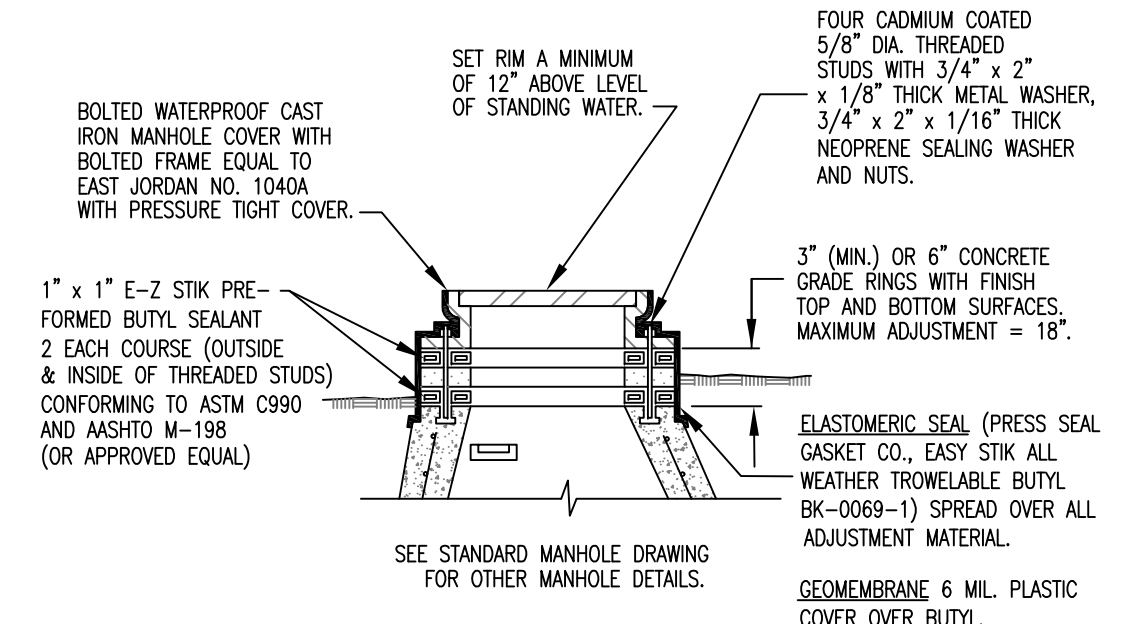
SHEET NO.: 1 of 3

CONSTRUCTION NOTES

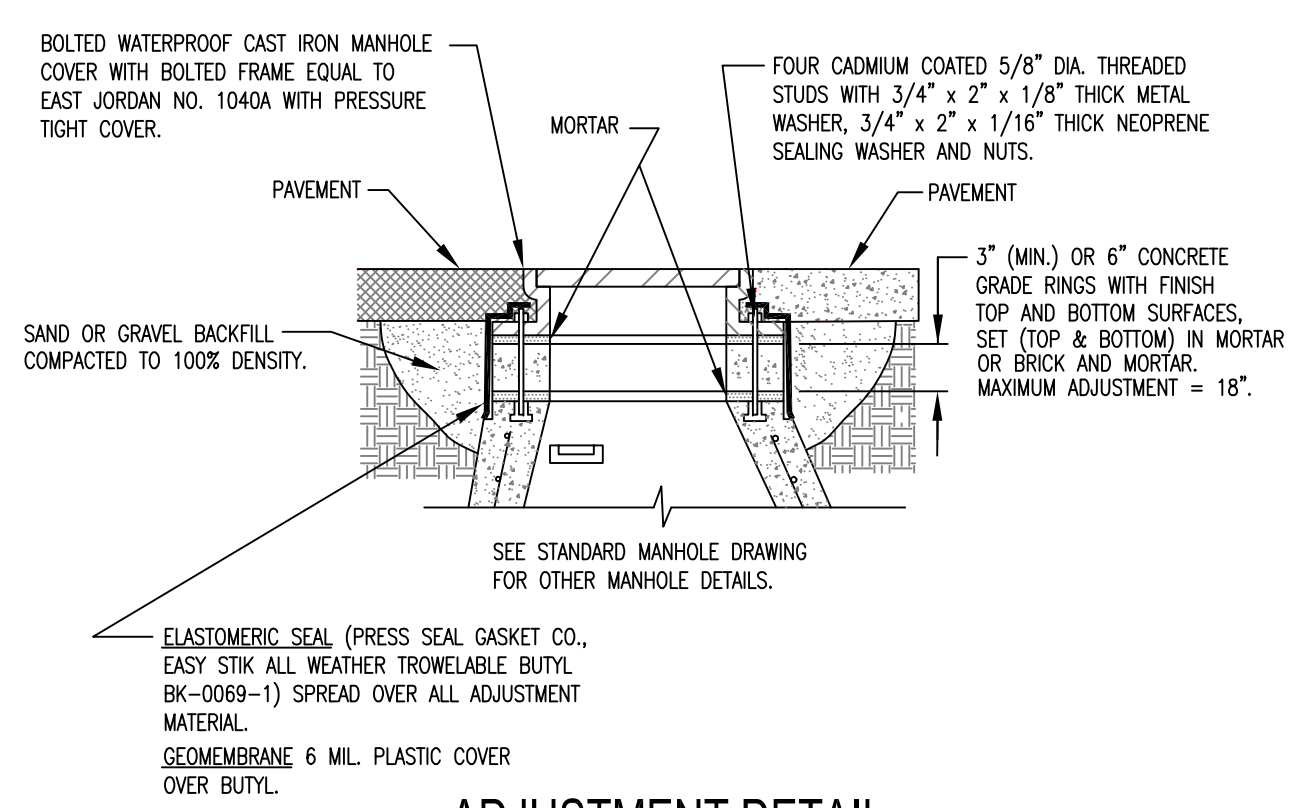
- ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE LOCAL UNIT OF GOVERNMENT AND THE OAKLAND COUNTY WATER RESOURCES COMMISSIONER (WRC). ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY A PROFESSIONAL ENGINEER PROVIDED BY, OR CAUSED TO BE PROVIDED BY THE LOCAL UNIT OF GOVERNMENT.
- AT ALL CONNECTIONS TO WRC SEWERS OR EXTENSIONS, AND BEFORE START OF CONSTRUCTION, THE CONTRACTOR MUST OBTAIN A SEWER INSPECTION PERMIT ISSUED BY WRC. SANITARY SEWER PERMIT CHARGES ARE IN ACCORDANCE WITH THE WRC CURRENT SCHEDULE OF FEES AS MODIFIED FROM TIME TO TIME. FAILURE TO PASS ANY TEST SEGMENT WILL RESULT IN AN ADDITIONAL CHARGE TO THE CONTRACTOR FOR EACH RETEST. IN ACCORDANCE WITH THE WRC CURRENT SCHEDULE OF FEES AS MODIFIED FROM TIME TO TIME, THE CONTRACTOR SHALL ALSO HAVE POSTED WITH WRC A \$5,000 SURETY BOND AND \$500 CASH BOND DEPOSIT. THE CONTRACTOR SHALL NOTIFY THE LOCAL UNIT OF GOVERNMENT AND THE WRC 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. FINAL ACCEPTANCE TESTS MUST BE WITNESSED BY WRC PERSONNEL AND MUST BE SCHEDULED IN ADVANCE BY THE LOCAL UNIT OF GOVERNMENT, OR ITS AGENT.
- AT ALL CONNECTIONS TO MANHOLES ON WRC SEWERS, OR EXTENSIONS THERETO, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 24 INCHES.
- TAPS TO EXISTING MANHOLES SHALL BE MADE BY CORING. BLIND DRILLING IS ONLY PERMITTED WITH PRE-APPROVAL FROM THE WRC OFFICE.
- IF THE STRUCTURE FALLS WITHIN THE ROADBED OF A GRAVEL ROAD OR WITHIN THE UNPAVED SHOULDER OF A PAVED ROAD, THE COVER SHALL BE SIX INCHES (6") BELOW THE FINISHED GRAVEL SURFACE. IF THE STRUCTURE CONTAINS AN ARV/AVV THEN ADDITIONAL VENTING THROUGH THE MANHOLE WALL TO GREENBELT AREA SHALL BE REQUIRED.
- TWO 6-GAUGE SOLID OR STRANDED ANNEALED OR HARD COPPER TRACER WIRES WITH GREEN 45 MIL-THICK INSULATION (HMWPE) SHALL BE ATTACHED TO THE SEWER PIPE IN ACCORDANCE WITH CURRENT WRC SPECIFICATIONS. SPLICES SHALL BE MADE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. SPLICE SHALL THEN BE ATTACHED TO PIPE WITH TIES AND HEAT SHRINK-WRAPPED IN PLACE TO RE-ESTABLISH INSULATION ACROSS SPLICED LENGTH. ALL SPLICES SHALL REQUIRE TESTING OF THE ENTIRE LENGTH OF WIRE FOR CONTINUITY FROM STRUCTURE TO STRUCTURE. A MINIMUM LENGTH OF 6 FEET OF TRACER WIRE SHALL BE COILED AND LEFT ACCESSIBLE UNDER THE COVER OF ALL MANHOLES, SERVICE VALVE BOXES AND OTHER STRUCTURES AS DIRECTED BY THE ENGINEER. THE TRACER WIRE SHALL BE ATTACHED TO THE OUTSIDE OF THE MANHOLE DIRECTLY ABOVE THE PIPE AND SHALL ENTER THE MANHOLE BETWEEN THE MANHOLE COVER FRAME AND ADJUSTMENT MATERIAL. CONTRACTOR IS RESPONSIBLE FOR TESTING CONTINUITY OF TRACER WIRE FROM STRUCTURE TO STRUCTURE USING EQUIPMENT COMPATIBLE WITH OAKLAND COUNTY WATER RESOURCES COMMISSIONERS OFFICE OR LOCAL CITY/VILLAGE/TOWNSHIP MISS DIG LOCATING DEVICES. AT LEAST ONE OF THE TWO WIRES SHALL BE REQUIRED TO HAVE PASSED THE CONTINUITY TESTING REQUIREMENT.
- ALL GRINDER DISCHARGE LINES SHALL BE 1.5" NOMINAL DIA. (COPPER TUBE SIZE C.T.S.) SDR 9 HDPE OR AN APPROVED EQUAL PIPE PER ASTM D2737 (STANDARD SPECIFICATION FOR POLYETHYLENE (PE) PLASTIC TUBING). MAINLINE FORCEMAINS TO BE HDPE SDR11 (IRON PIPE SIZE, I.P.S.)
- NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE, OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
- PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (800-482-7171) FOR THE LOCATION OF UNDERGROUND PIPELINE AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
- AN 18 INCH MINIMUM VERTICAL SEPARATION AND 10 FOOT MINIMUM HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN SANITARY SEWER AND WATER MAIN IN ACCORDANCE WITH RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES. (i.e. 10 STATES STANDARDS).
- FOR PIPING INSTALLED USING OPEN-CUT EXCAVATION, EXCAVATION METHODS, CONTROL AND DISPOSAL OF WATER, PIPE SUPPORT, AND BEDDING AND BACKFILLING SHALL BE IN ACCORDANCE WITH THE OOWRC LOW PRESSURE SEWER SPECIFICATIONS.
- ALL PIPE SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE OAKLAND COUNTY WATER RESOURCES COMMISSIONERS LOW PRESSURE SEWER SPECIFICATION (i.e. SECTION 33.33.00).
- SEE OAKLAND COUNTY LOW PRESSURE SEWER SPECIFICATION (i.e. SECTION NO. 33.33.00) FOR ADDITIONAL REQUIREMENTS.



TYPICAL AIR VACUUM RELEASE VALVE ASSEMBLY



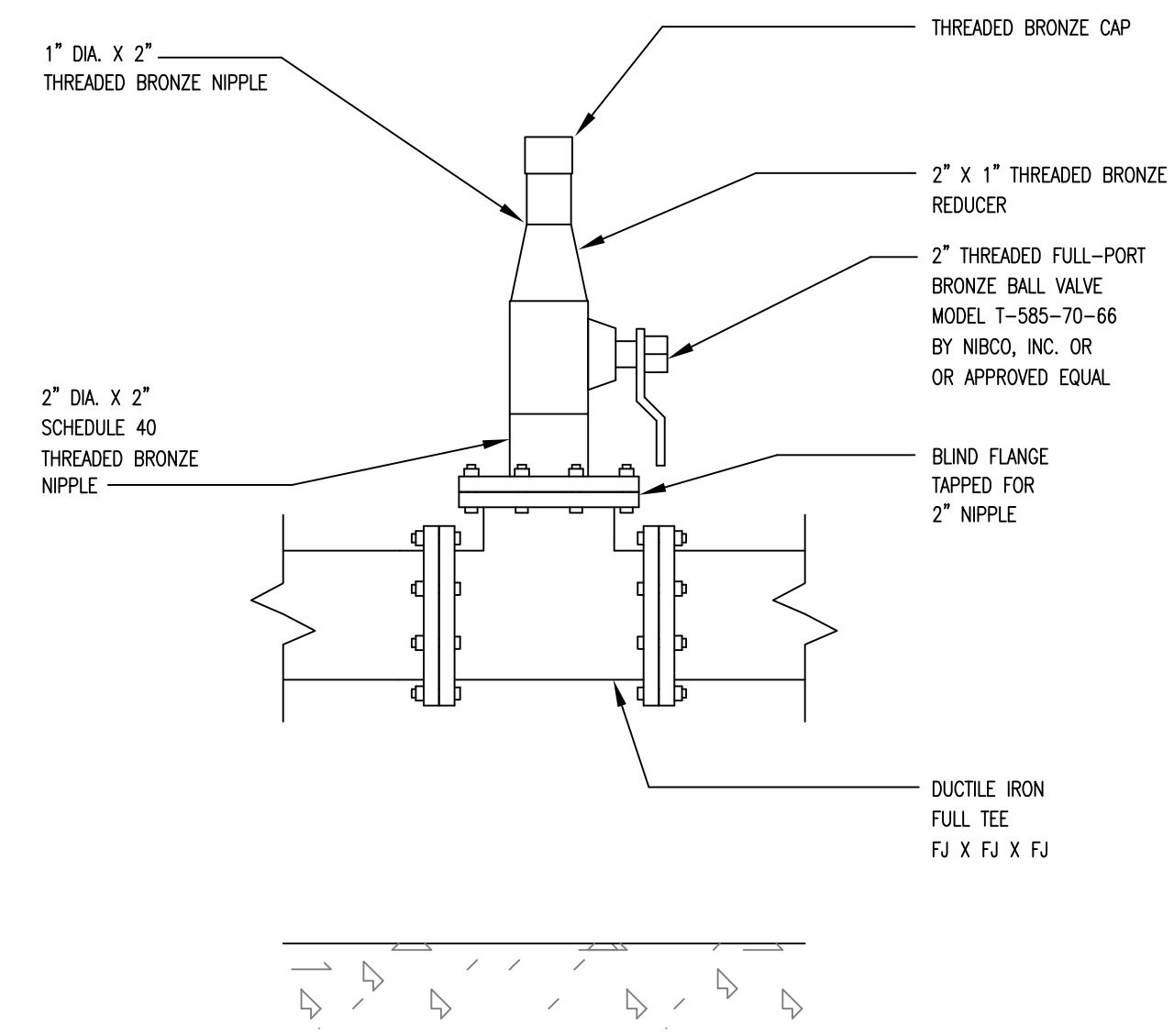
ADJUSTMENT DETAIL FOR MANHOLE TOPS WITHIN FLOOD PRONE AREAS



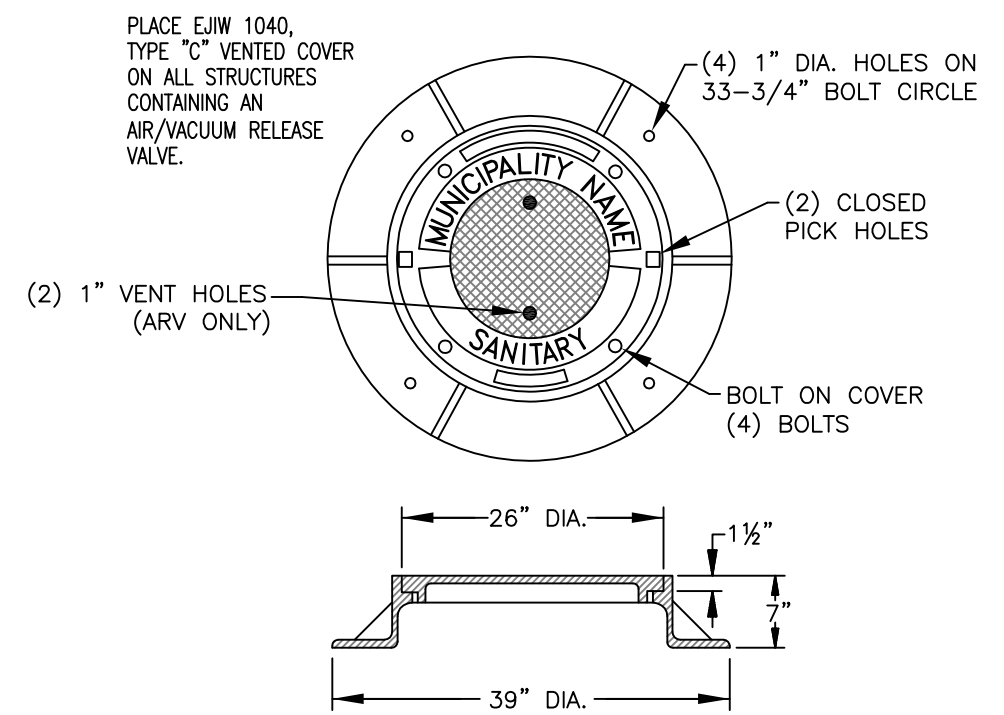
ADJUSTMENT DETAIL MANHOLE TOPS WITHIN PAVEMENT AREAS

MANHOLE RIM ADJUSTMENT CHART

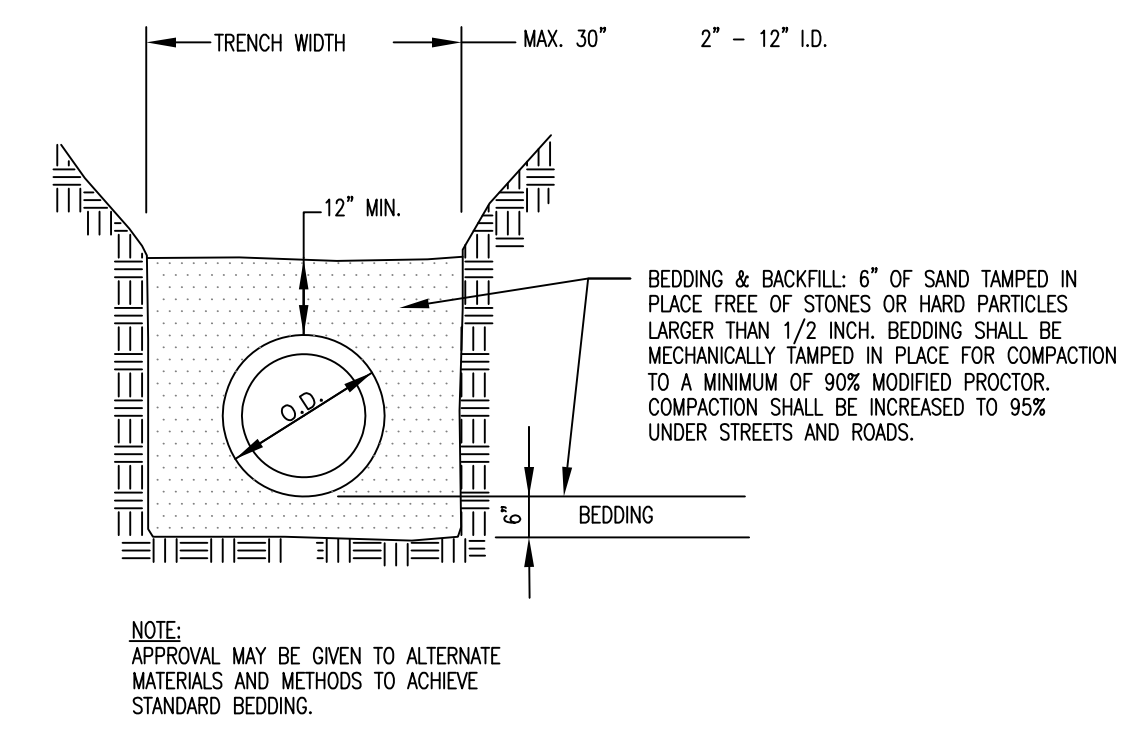
MANHOLE LOCATION	SET RIM ELEVATION
DITCH	12" ABOVE FINISH GRADE
FLOOD PLAIN	12" ABOVE STANDING WATER
GRAVEL ROAD / SHOULDER	6" BELOW FINISH GRADE
PAVEMENT / GREENBELT	FLUSH WITH FINISH GRADE



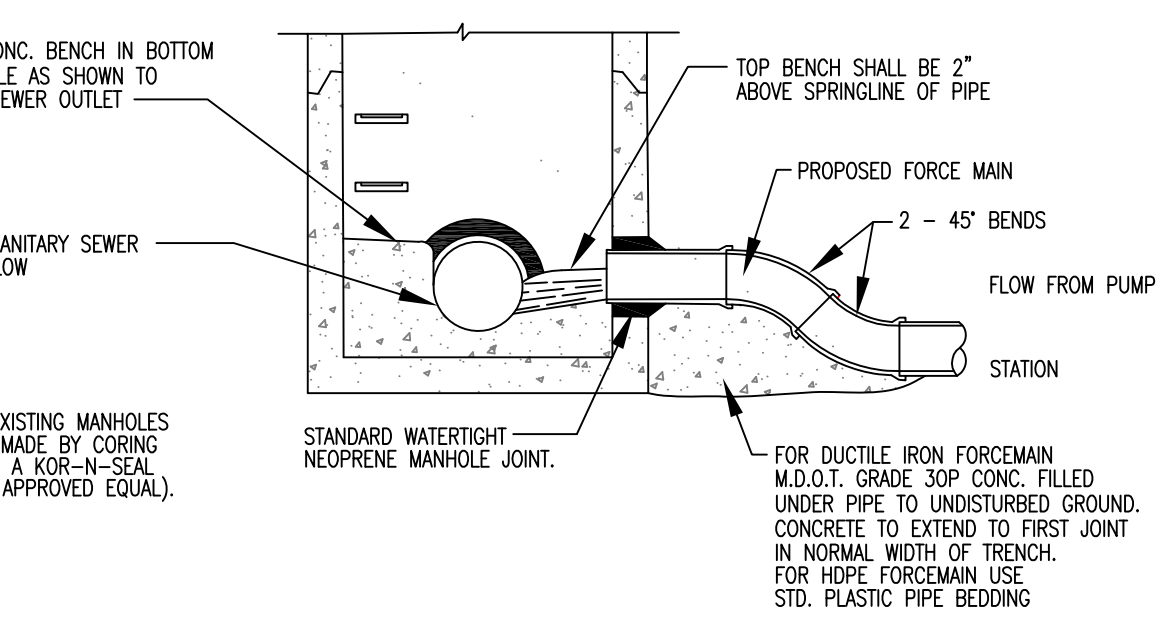
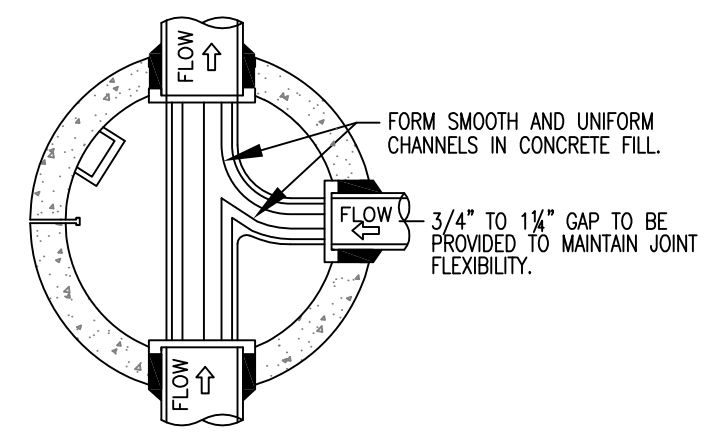
TYPICAL CLEAN OUT ASSEMBLY



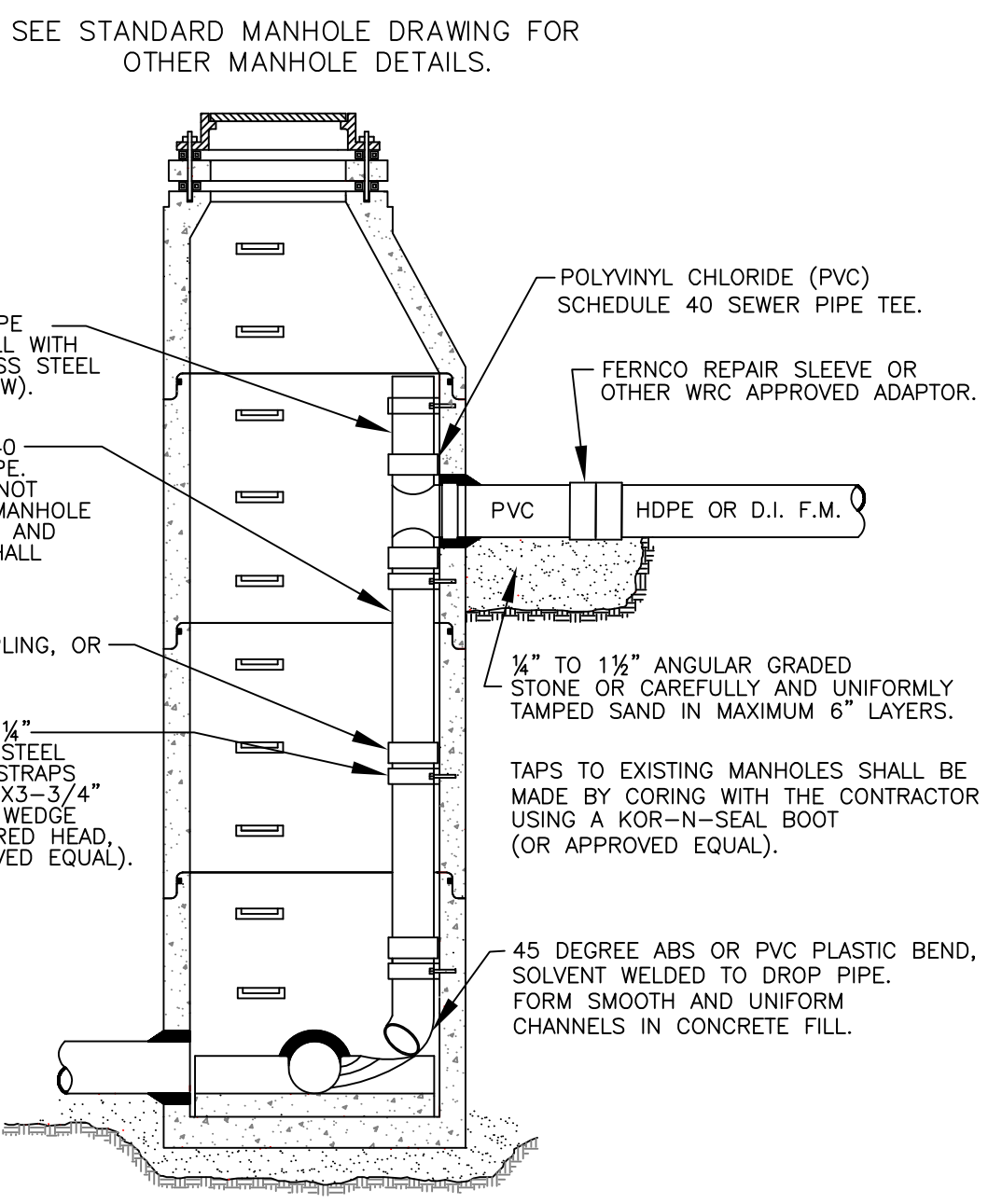
LETTERED MANHOLE COVER FOR LOCAL MUNICIPALITIES



STANDARD EMBEDMENT



FORCEMAIN DISCHARGE TO GRAVITY SEWER MANHOLE



FORCE MAIN INTERIOR DROP CONNECTION

NOTE: TO BE USED ONLY WHERE SPECIFICALLY AUTHORIZED AND NOT IN ANY MANHOLE IN WHICH AN INTERIOR DROP CONNECTION ALREADY EXISTS.

KE 2018.296
SHT 18 of 19

LOW PRESSURE SANITARY SEWER DETAILS AND NOTES

REVISION BLOCK			
Rev. No.	Rev. Date	Rev. Description	Date
1	05	4-15-13	APPROVED BY ENGINEERING STANDARDS COMMITTEE
2			
3			
4			

ORIG. DATE: 05/15/2013

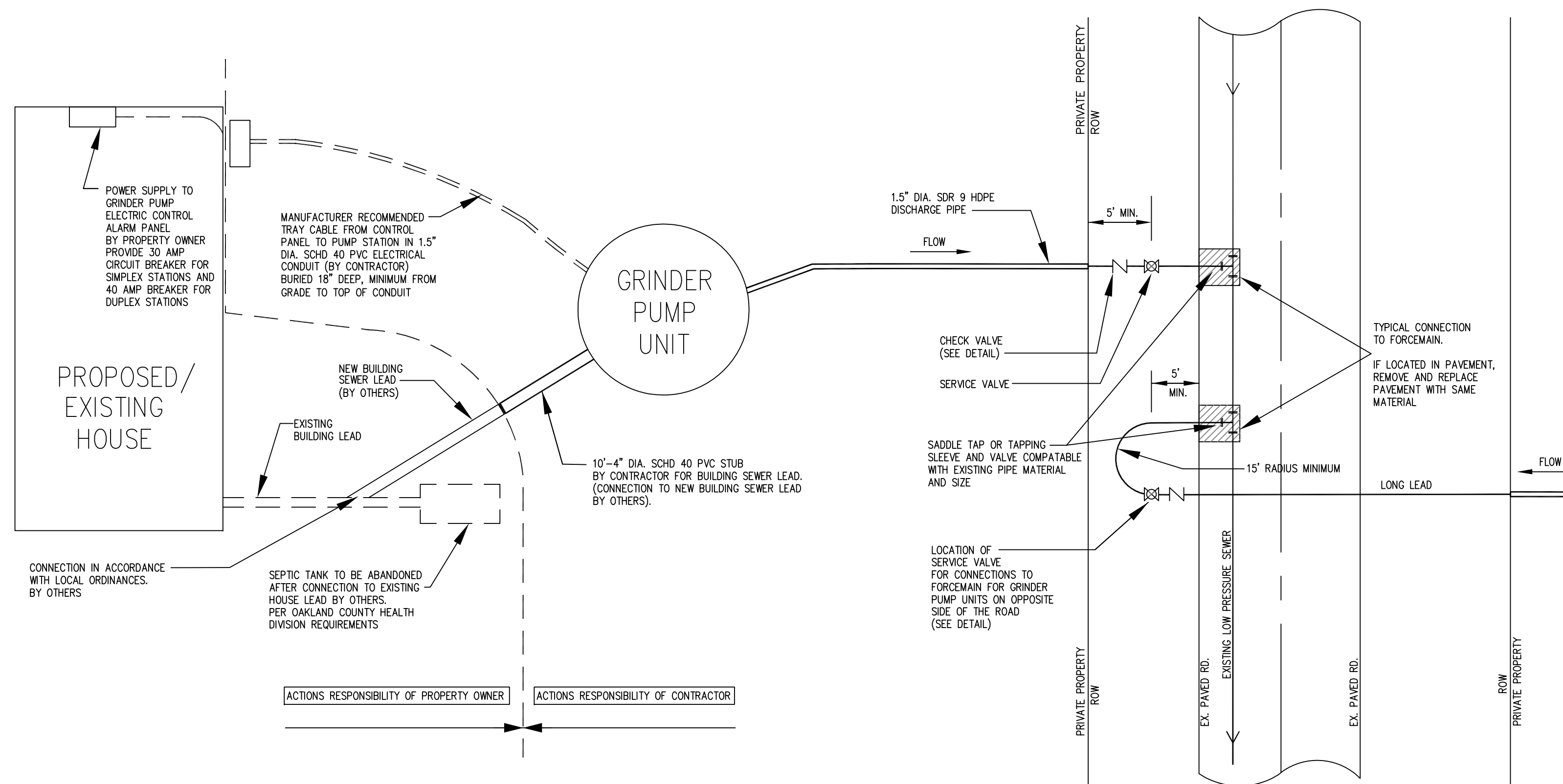
SCALE: NONE

DESIGNED BY: WRC

DRAWN BY: WRC Mapping

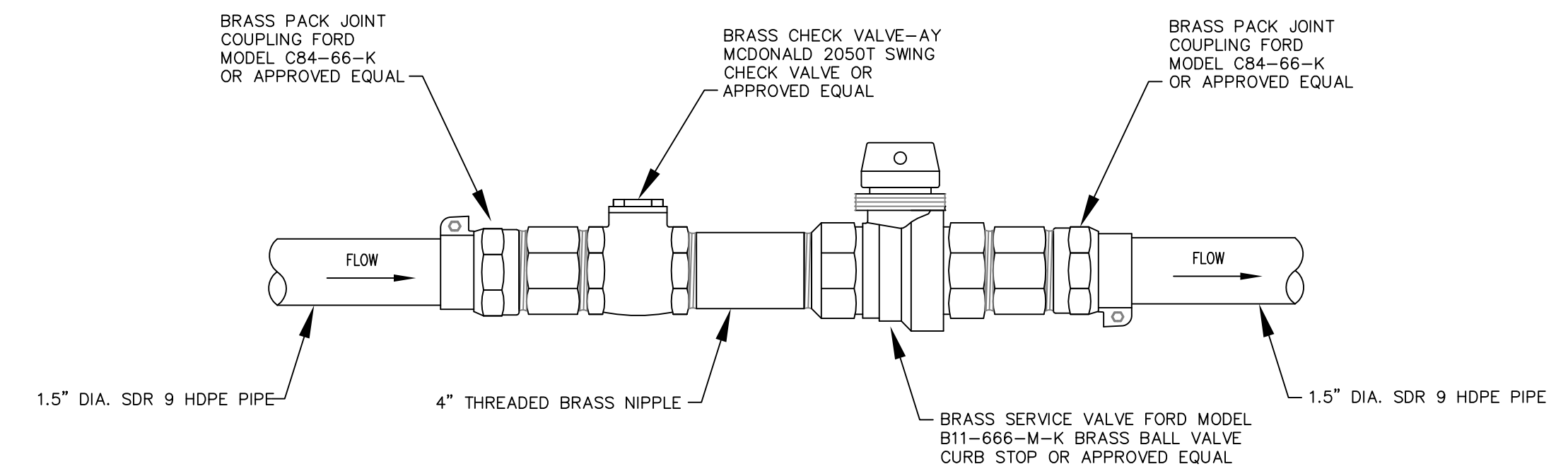
ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907

SHEET NO.: 2 of 3



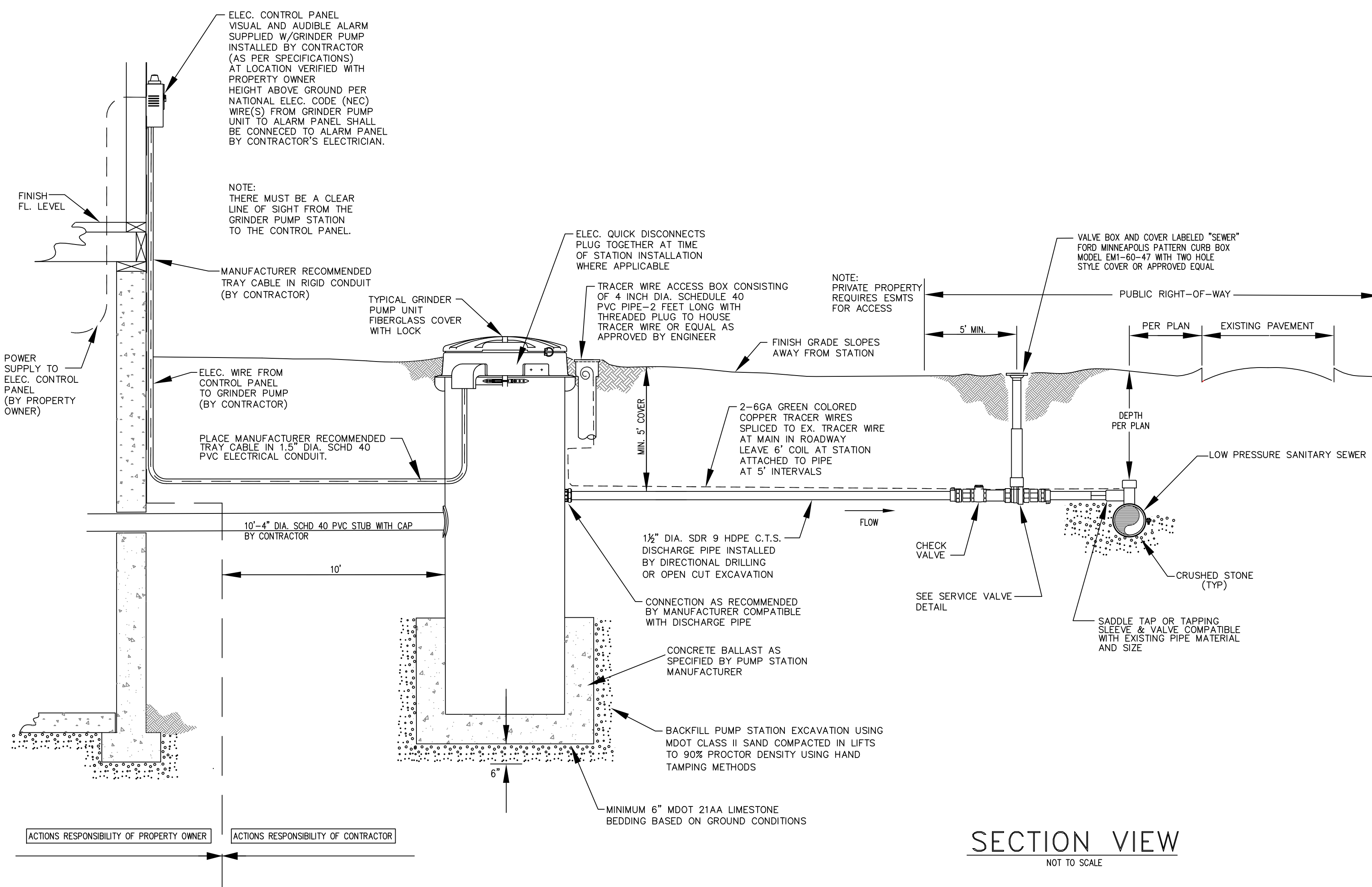
PLAN VIEW

NOT TO SCALE



SERVICE VALVE DETAIL

NOT TO SCALE



SECTION VIEW

NOT TO SCALE

KE 2018.296
SHT 19 of 19

TYPICAL INDIVIDUAL HOME GRINDER PUMP SERVICE

REVISION BLOCK			
Rev. No.	Rev. By	Rev. Date	Description
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2			
3			
4			

ORIG. DATE: 05/15/2013

SCALE: NONE

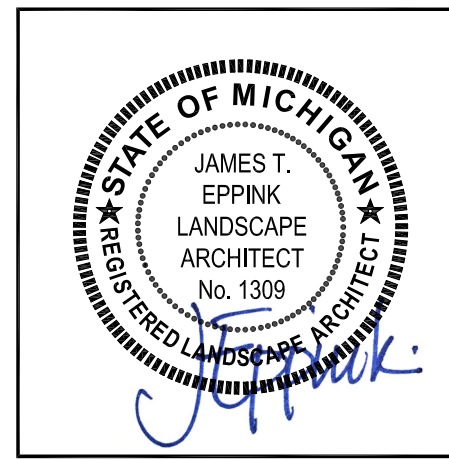
DESIGNED BY: WRC

DRAWN BY: MAPPING

WATER RESOURCES COMMISSIONER
Jim Nash

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

SHEET NO.: 3 OF 3



J EPPINK PARTNERS, INC
Urban Design Studio
Landscape Architecture
Traditional Town Planning
9336 Sashabaw Road
Clarkston, Michigan 48348
248.922.0789

The ideas and design concepts expressed herein and the graphically displayed arrangement of their components represented by this drawing have been developed for the exclusive use of the specified project and are the sole property of J EPPINK PARTNERS, INC. Any conveyance or disclosure of the ideas or design concepts or use of any graphically displayed arrangements of their components shall be at the discretion of and only through the expressed written consent of J EPPINK PARTNERS, INC.
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Project:
EAGLES LANDING
White Lake Township, Michigan

Owner:
Better Built Homes
156 East Meadow Circle
White Lake, Michigan 48383
248-892-0080

Title:
LANDSCAPE PLANTING PLAN

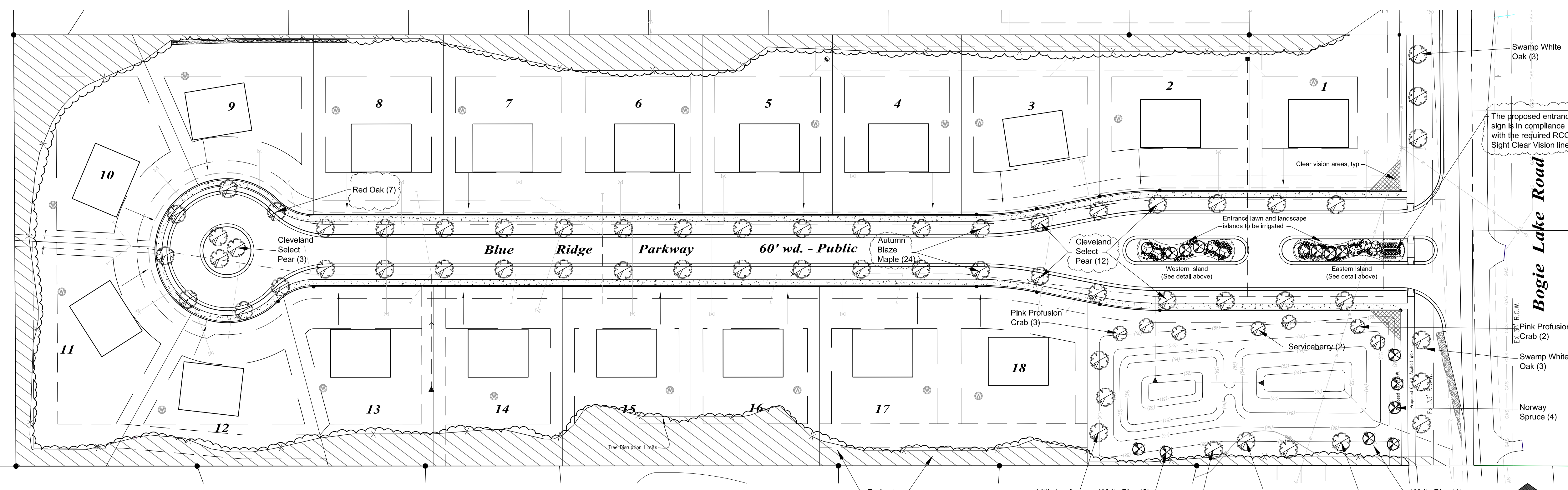
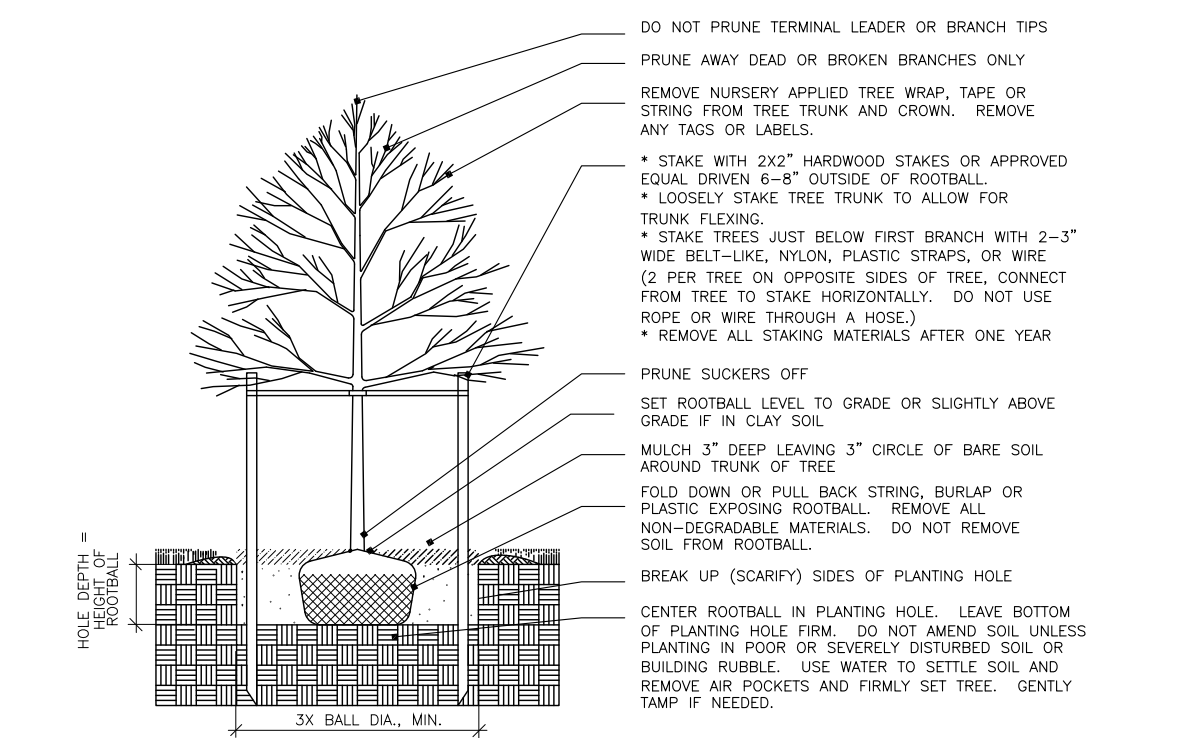
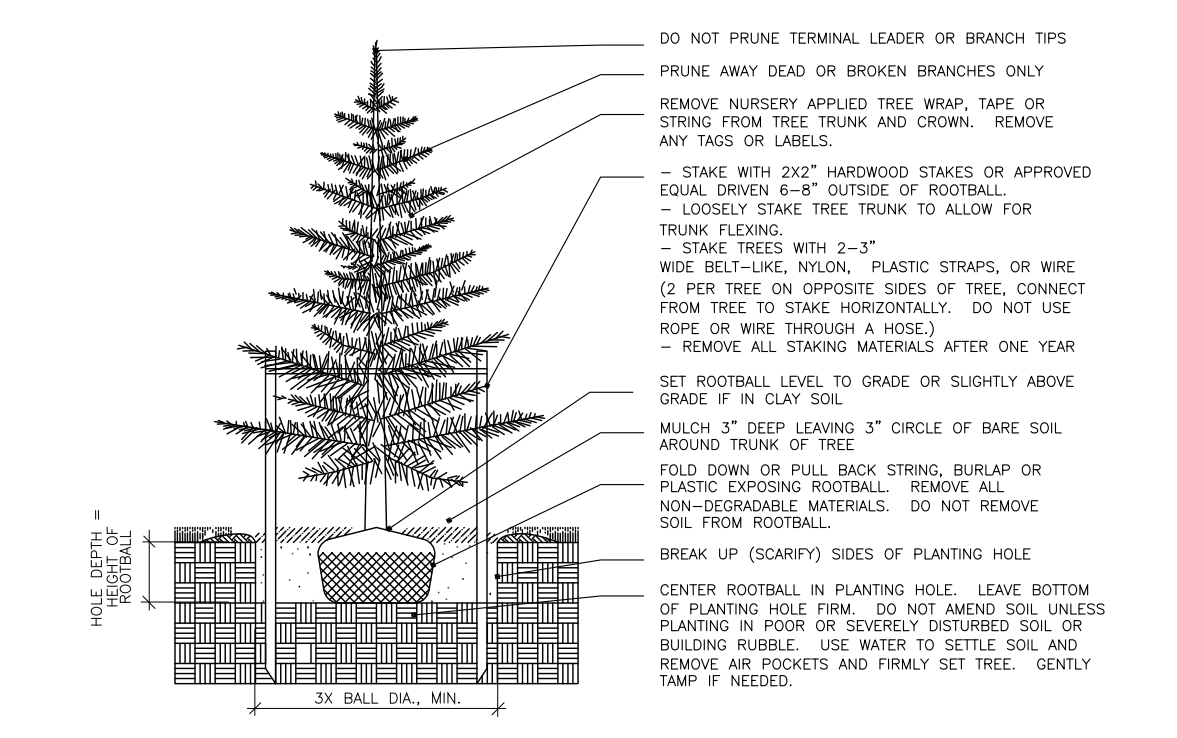
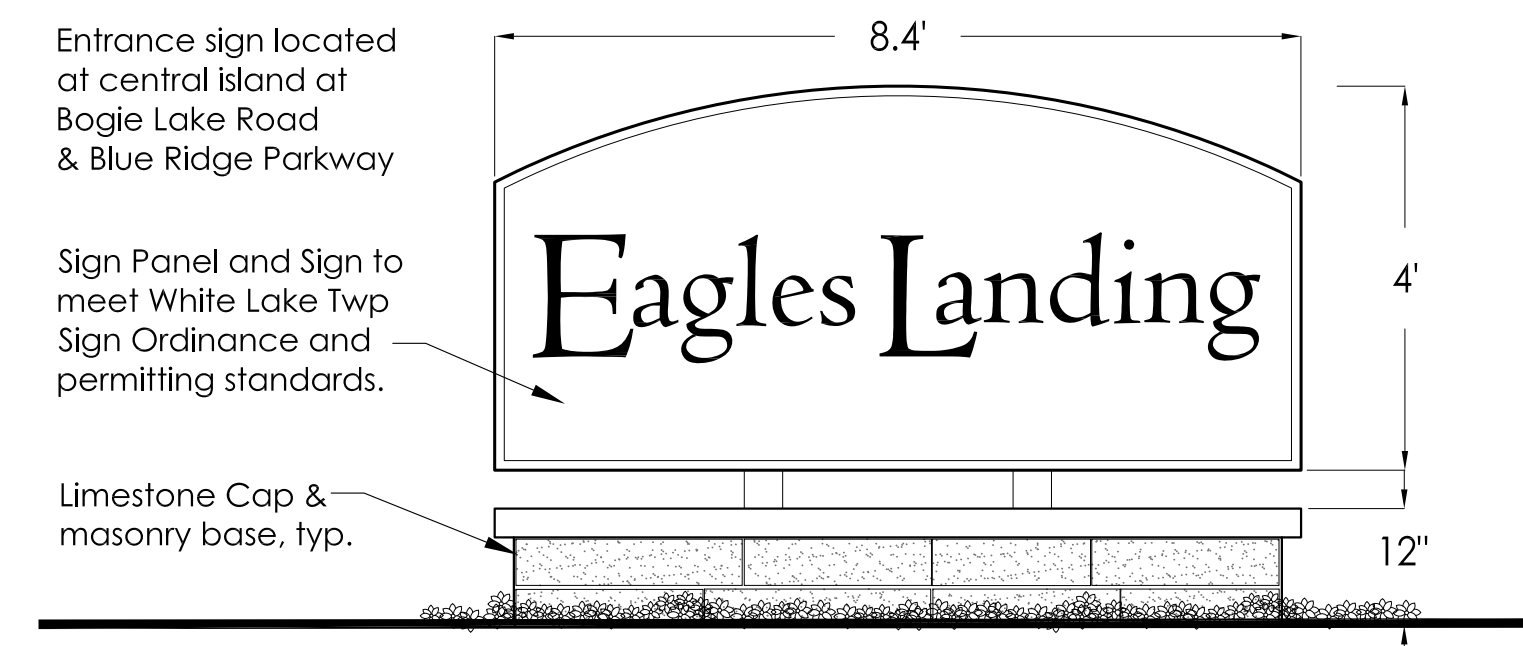
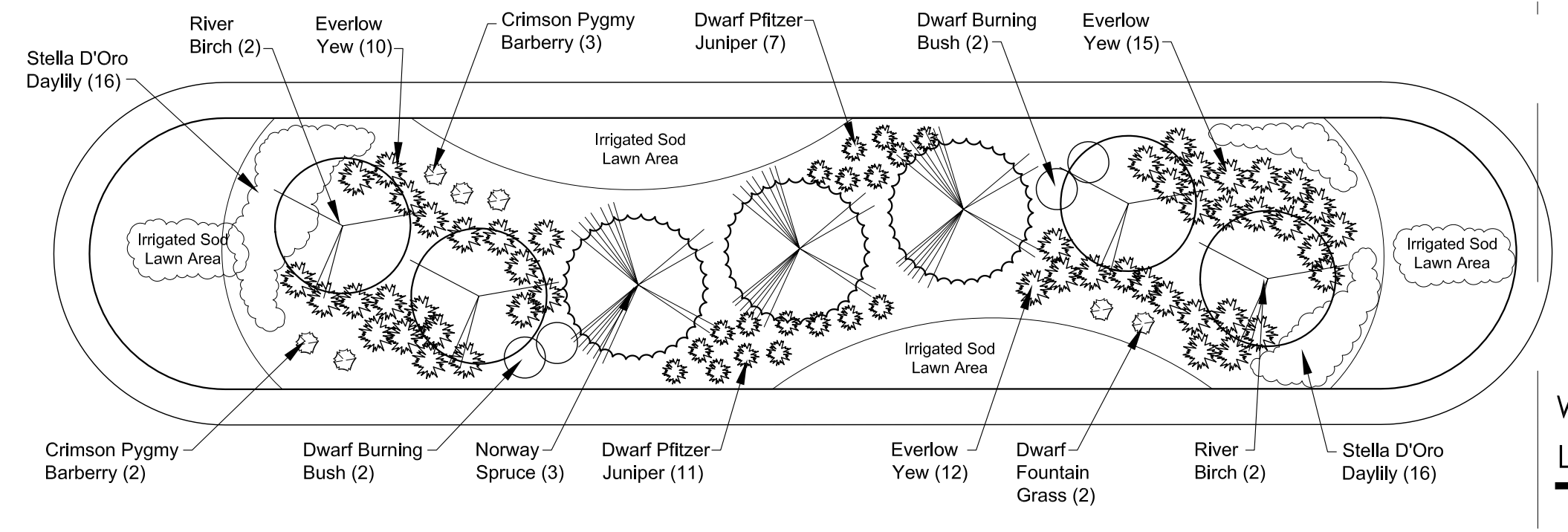
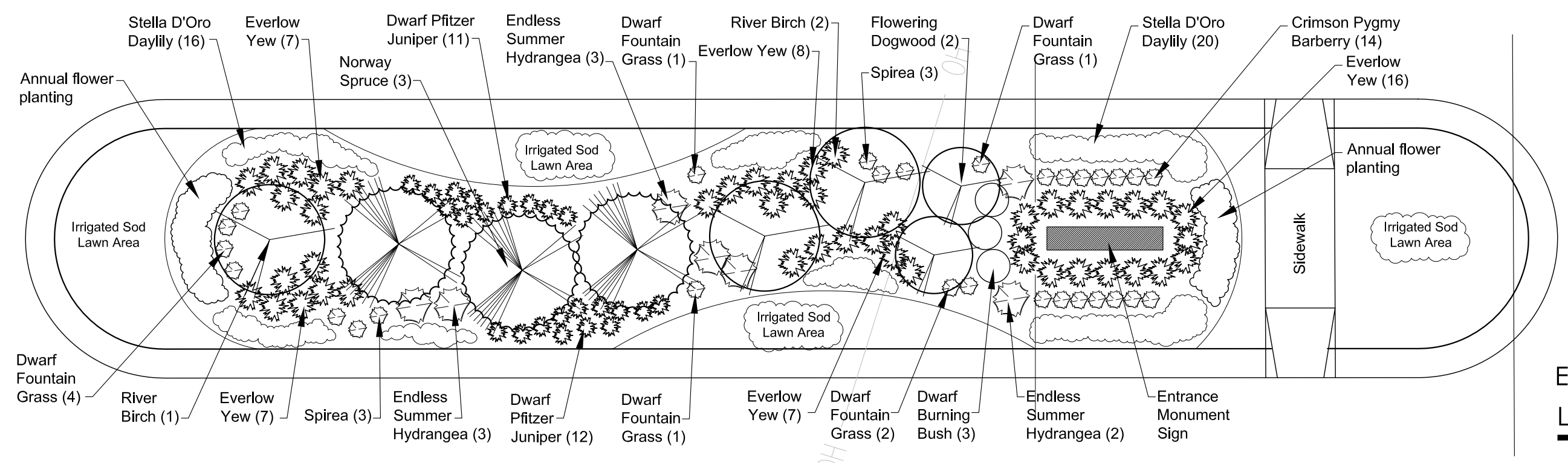
Issues / Revisions
Per McKenna (10-25-20) 12/15/20
Per DLZ (12-17-20) 12/17/20

NOT FOR CONSTRUCTION

Drawn by:
JTE
Checked by:

Date:
October 8, 2020
Scale:
AS NOTED
Sheet:

LP-1



PLANTING DETAILS:

LANDSCAPE PLANTING PLAN:

PLANTING NOTES:

- Contractor shall be responsible for contacting and coordinating with all pertinent utility companies 72 hours in advance of any digging to make themselves familiar with all underground utilities, pipes and structures. Contractor shall take sole responsibility for any cost incurred due to damage of said utilities or structures.
- Contractor shall not willfully proceed with construction as designed when it is obvious that unknown obstructions and/or grade differences exist. Such conditions shall immediately be brought to the attention of the Owner's Representative. The contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
- Any discrepancies between dimensioned layout and actual field conditions shall be reported to the Owner's Representative. Failure to make such discrepancies known will result in contractor's responsibility and liability for any changes and associated costs.
- Contractor shall be responsible for any coordination with subcontractors as required to accomplish construction installation operations.
- Contractor shall provide and maintain positive surface drainage.
- Contractor shall be responsible for any existing materials that are damaged during construction.
- See Plant & Material List and Planting Details for planting requirements, materials and execution.

- All trees shall have a clay loam or clay root ball. Trees with sand root balls will not be accepted. All tree varieties and substitutions, or deviations to the landscape plan must be approved prior to installation. Any plant material delivered to site not previously approved may be rejected and are the sole responsibility of the contractor.
- The location of all plant material shall be scaled from drawings or interpreted from plant list. Final location of all plant material shall be subject to approval from the Owner's Representative.
- Contractor shall "water in" and fertilize all plants immediately after planting.
- Contractor shall Sod or Hydro-seed all disturbed and new lawn areas as noted on drawings.
- Contractor shall install 3" depth Shredded Hardwood Mulch in all shrub and tree planting beds unless otherwise indicated. Peat Moss is to be installed in all annual flower, perennial flower and ground cover planting beds. Such beds shall have no shredded mulch, typ.
- Contractor shall coordinate lawn repair and planting bed construction in conjunction with the timing of other building construction and improvements.
- The contractor shall guarantee and maintain all trees, shrubs, ground cover and other plant materials for two years from the date of installation, including labor and removal and disposal of dead material. Project owner shall be responsible for a maintenance program which includes replacing all dead or diseased material by the end of the following planting season.

- All plant material shall be grade 1 northern nursery grown from a local source. All trees and plant material shall meet the current standards of the American Society of Nurseryman.
- Contractor shall adhere to all soil erosion prevention methods as directed within civil engineering drawings and Municipal Ordinance including maintaining silt fencing and ensuring that soil, silt and other debris is prevented from leaving site or entering area drains, sewer inlets, creeks or natural areas.
- The Home Owner's Association (Developer prior to it's establishment) shall be responsible for the ongoing health, care, and maintenance or lawn areas, trails, trees, and shrubs located within all open space and common area open spaces areas within the development.
- Individual homes will be landscaped by each homeowner following purchase and occupancy of the home. Landscaping and maintenance of residential landscape and lawn areas within home sites is the responsibility of each homeowner.
- Landscape Contractor shall install an automated irrigation system for all lawn and planting bed within the entrance islands on a Design/Build basis. A complete design, materials list, and cost estimate is required as part of the original bid proposal.

PLANT LIST :

QTY.	DESCRIPTION	NOTES
24	Acer freemanii Autumn Blaze Maple, 2.5" cal.	B&B
2	Acer platanoides Crimson King Maple, 2.5" cal.	B&B
7	Quercus rubra Red Oak, 2.5" cal.	B&B
6	Quercus bicolor Swamp White Oak, 2.5" cal.	B&B
3	Tilia cordata Little Leaf Linden, 2.5" cal.	B&B
15	Pyrus calleryana 'Cleveland Select' Cleveland Select Pear, 2.5" cal.	B&B
2	Liriodendron tulipifera Tulp Tree, 2.5" cal.	B&B
5	Malus 'Pink Profusion' Pink Profusion Crab, 2" cal.	B&B
2	Amelanchier canadensis Downy Serviceberry, 8'	B&B
7	Betula nigra River Birch, 10'	B&B

QTY.	DESCRIPTION	NOTES
2	Cornus florida Flowering Dogwood, 6'	B&B
3	Pinus strobus White Pine, 8'	B&B
10	Picea abies Norway Spruce, 8'	B&B
41	Junerperus x pfitzeriana Dwarf Pfitzer Juniper, 24-30"	Cont.
66	Taxus x media 'Everlow' Everlow Yew, 30-36"	Cont.
19	Berberis thunbergii Crimson Pygmy Barberry, 15-18"	Cont.
6	Spirea japonica 'Anthony Waterer' Anthony Waterer Spirea, 24-30"	Cont.
7	Euonymus alatus 'Compactus' Dwarf Burning Bush, 30-36"	B&B
8	Hydrangea macrophylla 'Bailmer' Endless Summer Hydrangea, 30"	Cont.
11	Pennisetum alopecuroides Dwarf fountain grass, 3 gal	Cont.

QTY.	DESCRIPTION	NOTES
68	Hemerocallis 'Stella D'Oro' Stella D'Oro Daylily, 2 gal.	Cont.



Director's Report

Project Name: Pontiac Lake Overlook

Description: Preliminary Site Plan Approval

Date on Agenda this packet pertains to: February 18, 2021

- | | |
|---|--|
| <input type="checkbox"/> Public Hearing
<input type="checkbox"/> Initial Submittal
<input type="checkbox"/> Revised Plans
<input type="checkbox"/> Preliminary Approval
<input type="checkbox"/> Final Approval | <input type="checkbox"/> Special Land Use
<input type="checkbox"/> Rezoning
<input type="checkbox"/> Tentative Preliminary Plat
<input type="checkbox"/> Final Preliminary Plat
<input type="checkbox"/> Other _____ |
|---|--|

Contact	Consultants & Departments	Approval	Denial	Approved w/ Conditions	Comments
DLZ	Engineering Consultant				
McKenna	Planning Consultant				
John Holland	WLT Fire Marshal				
Daniel Keller	WLT Police Chief				
Nick Spencer	Building Official				
Aaron Potter	DPS Department				
Jeanine Smith	Assessing Department				
Sean O'Neil	Planning Director				



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

February 9, 2021

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

RE: Pontiac Lake Overlook (FKA Pontiac Lakeview Apartments)- Preliminary Site Plan Review – 3rd Review

Ref: DLZ No. 1945-7030-00

Design Professional: Kieft Engineering, Inc.

Dear Mr. O' Neil,

Our office has performed a revised Preliminary Site Plan review for the above-mentioned revised plans which were prepared by Kieft Engineering, Inc. and dated January 21, 2021. The plans were reviewed for feasibility based on general conformance with the Township Engineering Design Standards.

General Site Information

This site is approximately 3.19 acres and is located in Section 13 on the south side of Pontiac Lake Road and north of M-59. There are currently two (2) existing one story buildings on the site which are proposed to be razed.

Site Improvement Information:

- A 4,365 square foot one- and two- bedroom unit apartment building. 14 units total.
- Associated paved parking area with boulder retaining wall from approximately 1' to 11' in height.
- One point of access off Pontiac Lake Road.
- Site to be serviced by proposed Type III domestic well. Existing site is served by an existing sanitary sewer grinder pump station which, with upgrades will service the proposed building.
- Stormwater is proposed to be detained via installation of underground detention with a pre-treatment structure at appropriate location.

We offer the following comments with respect to the revised preliminary site plan review:

Please note that our previous comments from our December 21, 2020 review are in italics. Responses to those comments are in bold. New comments are in standard typeface.

Preliminary Site Plan Comments-

General

1. *The plans have been sealed by a Licensed Professional Engineer. However, a signature on the seal has not been provided and is required.* **Comment outstanding. A signature in addition to the engineer's seal is required. The design engineer has indicated in their response letter that a signature has been added to their seal on Sheet 1. We are unable to locate signature on the electronic submittal.**
 2. *It appears a minimum of two ADA parking spaces are required and at least one of those spaces will need to be van accessible with an 8' wide access aisle. Please also indicate proposed handicap parking space sign locations on the plan set. Dimensions will need to be provided per Zoning Ordinance Section 5.11. Comment partially addressed. Although 2 ADA spaces have now been provided, the dimensions for the van accessible space and access aisle do not meet Zoning Ordinance Sections 5.11.O ii and iii. We suggest an 8' van space, 9' access aisle, 8' space configuration.* **Comment addressed. Dimensions for the van accessible space and access aisle now meet Zoning Ordinance requirements.**
 3. *Indicate if there are any wetlands on site and delineate wetland boundaries. A permit from the MDEQ may be required. Comment partially addressed. Wetlands and their delineation have now been shown on the plan. Comment remains as a notation with regard to a permit from the MDEQ that may be required.* **Comment remains as a notation. Design engineer has indicated a permit from EGLE will be obtained for storm discharge.**
 4. *It appears that a portion of the proposed building is within the 25' Natural Features Setback. The balcony scales approximately 17 feet from the wetland line at its closest point. We defer to the Township regarding which features of the proposed facility count towards the setback requirement.* **Comment remains.**
-

Grading/Paving

1. *A permit from RCOC will be required for all work within the Pontiac Lake Road right-of-way.*
Comment remains as a notation with regard to a permit from RCOC.
2. *A 6' wide public sidewalk located 1' inside the Pontiac Lake Road right of way is required (Ord. 5.21). Proposed sidewalk has been provided outside the Pontiac Lake Road Right-of-Way. If the Township is accepting of this configuration, we note that owner/ applicant will either need to dedicate right of way or provide an easement for proposed sidewalk based on proposed location of sidewalk (outside the existing Pontiac Lake Road right of way).* **Comment addressed. An easement has been shown for the sidewalk. An executed easement document including an exhibit delineating the easement will need to be provided at time of Final Site Plan Approval.**
3. *Additional details regarding the proposed retaining wall will be required at time of FSP/FEP submittal. The impact of the wall footings on the proposed storm outlet and the proposed depth of the storm outlet will need to be addressed. Additionally, a railing will need to be provided for all wall sections that are greater than 30" in height. The proposed wall is no longer in proximity to the proposed storm outlet so above comment regarding this is no longer a concern. Comment remains regarding requirement for a railing.* **Comment addressed. Design engineer has indicated on plans that a railing will be provided at top of wall. A more detailed review of the railing in terms of height required will be done at time of Final Engineering Plan submittal.**
4. *Additional details will be required regarding the swale on the west side of the site at the time of FEP as it passes by an existing sanitary sewer structure. Comment outstanding. Existing sanitary structure does not appear on current plans, was this in error on the prior submittal? Please clarify.* **Comment addressed. Plans have been updated per grinder station As-Builts.**

Watermain

1. *We defer comment regarding required fire hydrant coverage or required fire suppression measures as well as fire lane to the Township Fire Department.* **Comment remains. The architect for this project has indicated that per a conversation with the Township Fire Marshall that a well pump system for fire suppression will be located on site.**
 2. *The 50' well isolation radius will need to be shown. Comment outstanding. Proposed plans show a storm structure within this radius which may not be allowed by Oakland County.* **Comment addressed. Storm structure is now outside of well isolation radius.**
-

3. *The plans propose a Type III domestic well with reserve tank. We question if this will need to be a Class II No transient well. Ultimately Oakland County will need to review and approve the well system for this development. **Comment remains as a notation.***

Sanitary Sewer

1. *The existing sanitary sewer grinder station is in the middle of a proposed parking space and will need to be relocated. The linework for the existing sanitary sewer information does not match our records. As-Built plans are available upon request for J&A project # 18403. An evaluation will be required supporting the grinder station sizing for the proposed building. The existing grinder station is no longer in the middle of a proposed parking area, so this is no longer a concern. The remainder of the comment with regard to the linework for the existing sanitary sewer remains outstanding. **Comment addressed. Evaluation supporting the grinder station sizing will be required at time of Final Engineering Plan submittal.***
2. *The existing sanitary sewer structure on the west side of the property was previously shown but is not shown on current plans. Please clarify. **Comment addressed.***
3. *The existing gravity sanitary lead and cleanouts will need to be abandoned. This has been noted in the Quantities listing. However, please provide a note to this regard on the plan view. **Comment addressed. A note with regard to above has been added to plan.***

Stormwater Management

1. *Points of access will be required for maintenance of the underground detention system. Comment outstanding. Please provide access points. **Comment addressed. Access points have now been added.***
 2. *Provide details regarding soil erosion measures for the detention outlet culvert. This area will need to be stabilized. In addition, a local soil erosion permit from the WRC will be required. Please also provide details regarding the proposed maintenance of the storm sewer outlet. Will access be possible along the west property line? Rip rap, gravel filter, and silt fencing are proposed. The remainder of the comments are outstanding. **Comment addressed. Engineer has indicated that a permit from OCWRC will be obtained and that the maintenance of the 12" end section outlet will be included with the underground detention basin maintenance schedule.***
 3. *Provide a reference for the floodplain base flood elevation- FIRM panel number and date. Comment outstanding. In addition, it appears that the proposed building is not in the floodplain based on elevation. We do advise that the design engineer verify if the proposed building is in the floodplain based on location (i.e. FIRM Map error). If building is in floodplain by location, then a Letter of Map*
-

*Amendment (LOMA) would be required due to White Lake Township's participation in the NFIP. We mention this concern due to the close proximity of the proposed building to the floodplain. **Comment addressed. Design engineer indicates that the location of the floodplain does not encroach on proposed building footprint.***

4. *A permit may be required from the State or Oakland County for discharge into the Huron River. **Comment remains as a notation. Engineer has noted a permit from EGLE will be obtained for storm discharge.***

Recommendation

We recommend approval of the Preliminary Site Plan subject to any remaining comments being addressed on the Final Engineering Plan and acceptance of the balcony being within the 25-foot natural features setback as referenced in item General #4 above.

Please feel free to contact our office should you have any questions.

Sincerely,

DLZ Michigan



Michael Leuffgen, P.E.
Project Engineer



Victoria Loemker, P.E.
Senior Engineer

Cc: Justin Quagliata, Community Development, *via email*
Hannah Micallef, Community Development, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
John Holland, Fire Marshall, White Lake Township, *via email*



MCKENNA

February 9, 2021

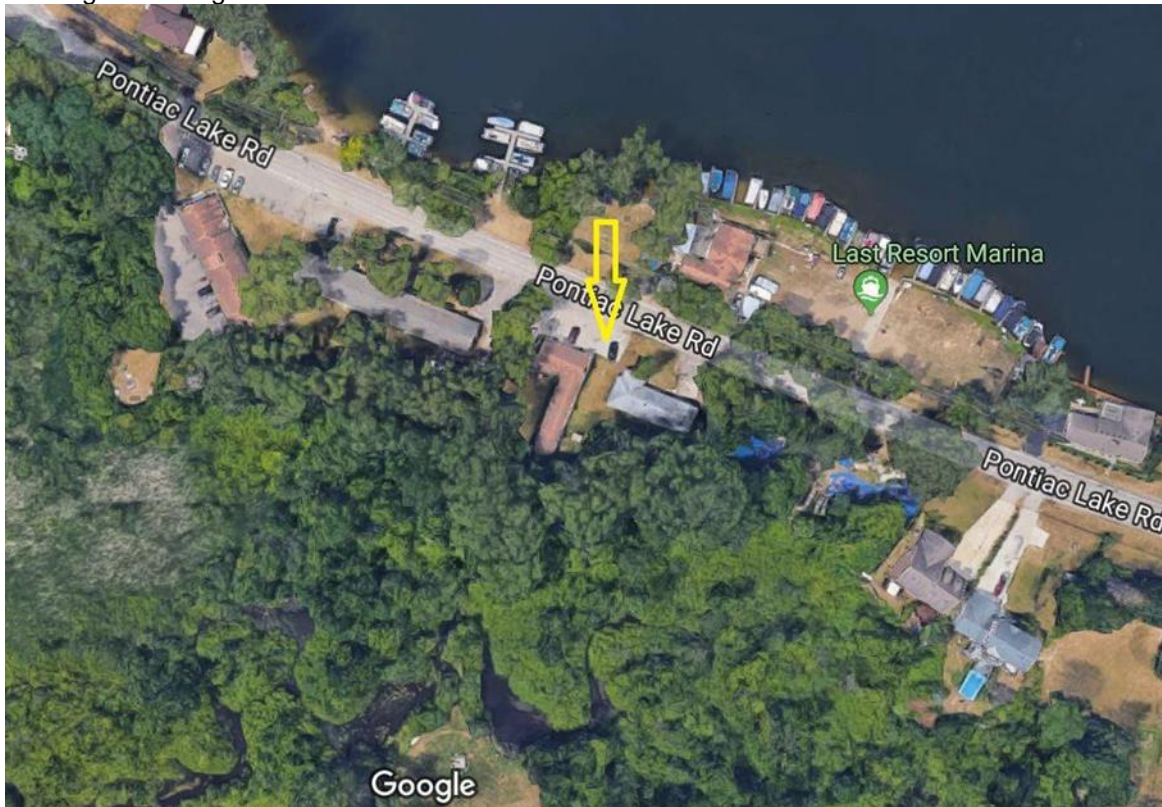
Planning Commission
Charter Township of White Lake
7525 Highland Road
White Lake, MI 48383

Subject: Pontiac Lakeview Apartments Preliminary Site Plan Review #3
Tax Parcel No. 12-13-328-001

Location: Southwest side of Pontiac Lake Road, north of Highland Road

Dear Planning Commissioners:

This 3.19-acre site is zoned Multiple-Family Residential (RM-2) as to the site lying south of Pontiac Lake Road and Single-Family District (R-1D) as to the land north of the road. The site currently contains two residential structures. The applicant has proposed to remove these existing structures and replace them with one apartment building containing 14 units.



Source: Google Maps

HEADQUARTERS
235 East Main Street
Suite 105
Northville, Michigan 48167

☎ 248.596.0920
☎ 248.596.0930
MCKA.COM

Communities for real life.

Review Comments

1. **Zoning, Land Use, and Future Land Use:** The current Zoning District, current land use, and future land use of the site, as well as the surrounding areas, are as follows:

	Zoning Districts	Current Land Uses	Future Land Use
Site	RM-2	Residential	Residential Resort
North	R1-D	Vacant/Marina	Residential Resort
East	R1-C	Single Family/Vacant	Residential Resort
South	GB	Vacant/Residential	Planned Business
West	RM-2	Residential	Residential Resort

Multiple-family dwellings are a permitted use in the RM-2 District.

2. **Dimensional Standards:**

Applicable Requirement	Required by the Zoning Ordinance in the RM-2 District	Proposed
Front Yard Setback	40 feet	40+ feet Building, <u>10-foot parking</u>
Side Yard Setback	70 feet	<u>28 feet</u>
Rear Yard Setback	45 feet	45+ feet
Wetland Setback	25 feet	25.4 feet
Building Height	35 feet or two stories	35-foot
Minimum Lot Width	200 feet	170 feet
Minimum Lot Area	10,000 SF + 3,500 SF each for 4 one-bedroom units and 4,000 SF each for 9 two-bedroom units, totaling 60,000 SF (1.38 A).	3.19 acres
Lot Coverage	20%	3%
Recreation Space	6,300 SF	8,235 square feet
Wetland setbacks	25-feet	25+ feet
Minimum Floor Area	400 SF per 1-bedroom unit; 700 per 2-bedroom	560 SF per 1-bedroom; 830 per 2-bedroom.

There are at least three deficiencies noted in the proposed dimensional standards. The applicant has identified two of these on the site plan and noted that they intend to pursue variances for both the parking and building setback deficiencies. A third dimensional deficiency is related to lot width. At 170-feet wide, the lot falls 30-feet short of the required minimum lot width in the RM-2 district. Because the proposed building does not comply with the applicable setbacks, a variance must be sought from this standard in section 3.1.9.E.

In addition to the setback and lot width deficiencies related to the principal building and parking, the proposed trash enclosure does not comply with the standards in the Zoning Ordinance. Section 5.19.N.i.C states that



trash enclosures may not be located in the required front yard, and may not be located closer to Pontiac Lake Road than the principal building. The applicant may resolve this by proposing a new location for the trash enclosure on the side or rear of the building. The applicant has indicated that they do not believe there is a viable space to place the trash enclosure which complies with the standards of section 5.19. In which case a variance must be requested from the standards, in addition to setback deficiencies noted above.

3. **Landscaping and Screening:** A landscaping plan will be required for final site plan approval.
4. **Layout and Open Space:** Section 3.11(C) of the Zoning Ordinance requires multi-family residential developments to include 5,000 sq. ft. of recreation space for the first unit plus 100 sq. ft. for each additional unit. Based on the proposed 14 units, 6,300 sq. ft. of recreation space is required. The plan's site data table proposes 8,235 square feet of recreation space, split between two areas. The first is labeled as an active recreation area in the rear of the principal building. It will feature a six-foot wide walking trail which will lead from the building and loop around near the river. The site plan notes that the path will feature wood chips where the path is closest to the building, but those wood chips will not be present on the path within the wetland area. The second area is a proposed passive recreation area to the north of Pontiac Lake Road, which the site plan notes is intended for "lake viewing." If new grass or plant material is planned for the space to better ensure the space is utilized, it should be included on the landscape plan included in the final site plan submittal.
5. **Sidewalks and Non-Motorized Pathway:** Section 6.7(C)(i) recommends sidewalks along all frontage streets and sidewalk connections to all major rights-of-way. The plan depicts a six-foot-wide walk in the Pontiac Lake Road right-of-way. While there is no sidewalk connection to the interior of the site, there is a limited interior sidewalk network which connects the proposed building to both the east and west sections of the proposed parking lot.
6. **Building Architecture and Design:** Elevation drawings have been included in the application materials; At two stories and 35-feet the building complies with the dimensional standards. The applicant has proposed a building largely comprised of dark grey brick veneer on the front elevation, with an ash colored composite siding and a standing-seam metal roof. The building will also feature a significant amount of glazing (windows) on the front and rear elevations, in addition to small patios attached to several of the units. Though the patios are shown on the elevation page, proposed materials have not been labeled. Because there are limited number of comments on the preliminary plan and the patio a small portion of the overall elevations, we believe it is appropriate for the revision to occur when the final site plan is submitted.

Finally, details for a proposed eight-foot poured concrete trash enclosure with a lockable metal gate are provided on sheet three of the site plan submittal. The applicant has proposed a poured concrete wall to screen the trash enclosure on three sides, with a metal gate on the fourth. In item two of this review, we noted deficiencies with the proposed location for the enclosure, which will require a variance.

7. **Roads and Access:** The proposed development has one, 24-foot wide access point onto Pontiac Lake Road. Road Commission approval is needed for the driveway location.
8. **Off-Street Parking:** Two parking spaces per unit are required for residents, plus an additional six guest parking spaces. The site plan proposes 34 parking spaces to satisfy these requirements plus two accessible spaces to fulfil the ADA requirements for a parking lot of this size.



9. **Lighting:** Section 5.18(G) of the Zoning Ordinance includes standards for outdoor lighting. No information on exterior lighting has been provided, but should be with a final site plan.

Recommendation

At this time there are a few minor issues noted which we believe can be addressed at the final site plan stage. There are also several issues which will require variances, but do not need to delay preliminary approval. If the Planning Commission finds it appropriate, then we would suggest that the project could be recommended for approval.

If you have any questions about this report or require additional information, please do not hesitate to contact us.

Respectfully submitted,

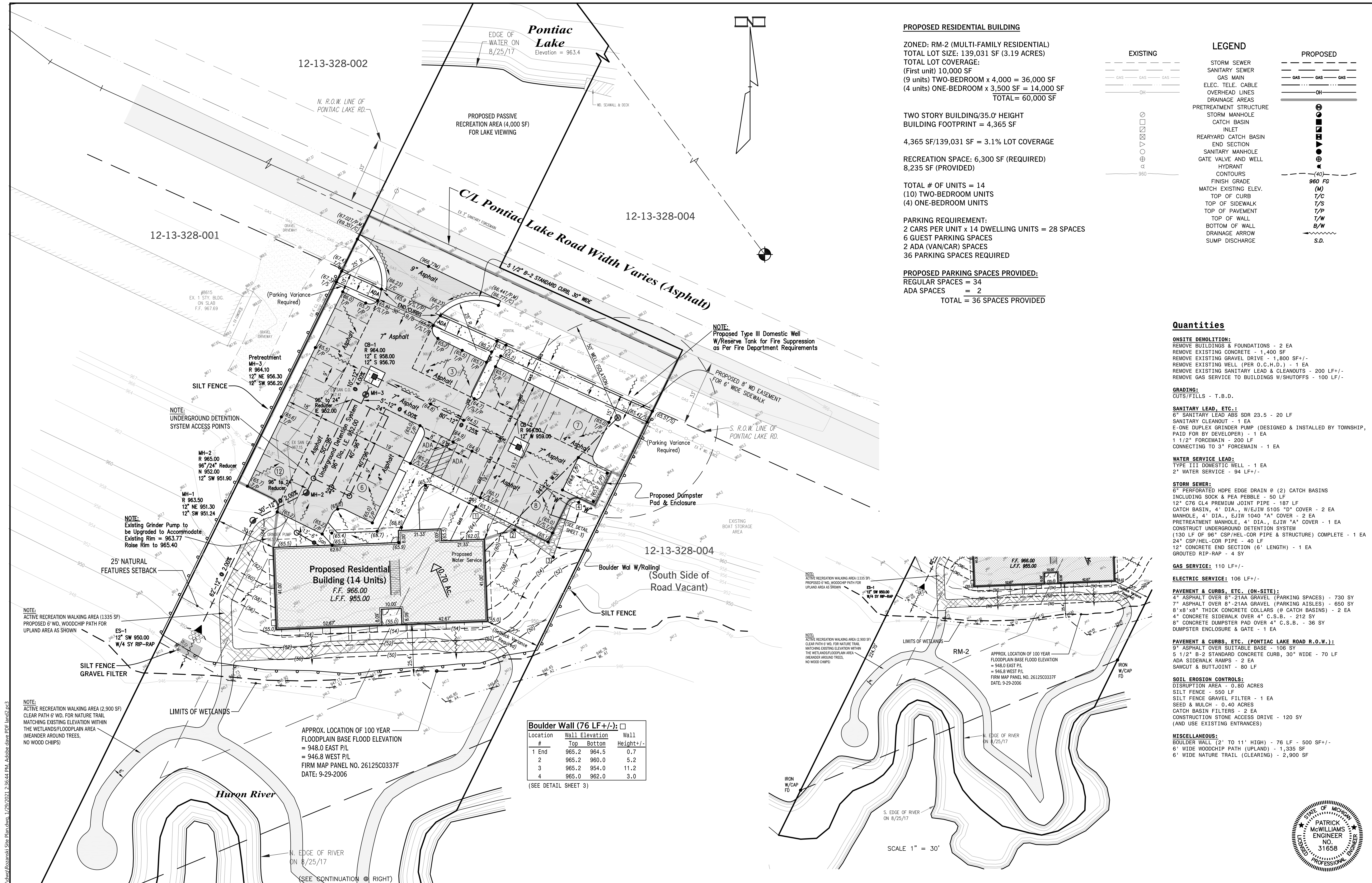
McKENNA



Chris Madigan, AICP
Associate Planner

cc: Mr. Sean O'Neal, AICP
Ms. Hannah Micallef





PROPOSED RESIDENTIAL BUILDING
 ZONED: RM-2 (MULTI-FAMILY RESIDENTIAL)
 TOTAL LOT SIZE: 139,031 SF (3.19 ACRES)
 TOTAL LOT COVERAGE:
 (First unit) 10,000 SF
 (9 units) TWO-BEDROOM x 4,000 = 36,000 SF
 (4 units) ONE-BEDROOM x 3,500 SF = 14,000 SF
 TOTAL = 60,000 SF

TWO STORY BUILDING/35.0' HEIGHT
 BUILDING FOOTPRINT = 4,365 SF

4,365 SF/139,031 SF = 3.1% LOT COVERAGE

RECREATION SPACE: 6,300 SF (REQUIRED)
 8,235 SF (PROVIDED)

TOTAL # OF UNITS = 14
 (10) TWO-BEDROOM UNITS
 (4) ONE-BEDROOM UNITS

PARKING REQUIREMENT:
 2 CARS PER UNIT x 14 DWELLING UNITS = 28 SPACES
 6 GUEST PARKING SPACES
 2 ADA (VAN/CAR) SPACES
 36 PARKING SPACES REQUIRED

PROPOSED PARKING SPACES PROVIDED:
 REGULAR SPACES = 34
 ADA SPACES = 2
 TOTAL = 36 SPACES PROVIDED

EXISTING	LEGEND	PROPOSED
---	STORM SEWER	---
---	SANITARY SEWER	---
---	GAS MAIN	---
---	ELEC. TELE. CABLE	---
---	OVERHEAD LINES	---
---	DRAINAGE AREAS	---
---	PRETREATMENT STRUCTURE	---
---	STORM MANHOLE	---
---	CATCH BASIN	---
---	INLET	---
---	REARYARD CATCH BASIN	---
---	END SECTION	---
---	SANITARY MANHOLE	---
---	GATE VALVE AND WELL	---
---	HYDRANT	---
---	CONTOURS	---
---	FINISH GRADE	---
---	MATCH EXISTING ELEV.	---
---	TOP OF CURB	---
---	TOP OF SIDEWALK	---
---	TOP OF PAVEMENT	---
---	TOP OF WALL	---
---	BOTTOM OF WALL	---
---	DRAINAGE ARROW	---
---	SUMP DISCHARGE	---

Quantities

ONSITE DEMOLITION:
 REMOVE BUILDINGS & FOUNDATIONS - 2 EA
 REMOVE EXISTING CONCRETE - 1,400 SF
 REMOVE EXISTING GRAVEL DRIVE - 1,800 SF +/-
 REMOVE EXISTING WELL (PER O.C.H.D.) - 1 EA
 REMOVE EXISTING SANITARY LEAD & CLEANOUTS - 200 LF +/-
 REMOVE GAS SERVICE TO BUILDINGS W/SHUTOFFS - 100 LF +/-

GRADING:
 CUTS/FILLS - T.B.D.

SANITARY LEAD, ETC.:
 6" SANITARY LEAD ABS SDR 23.5 - 20 LF
 SANITARY CLEANOUT - 1 EA
 E-ONE DUPLEX GRINDER PUMP (DESIGNED & INSTALLED BY TOWNSHIP, PAID FOR BY DEVELOPER) - 1 EA
 1 1/2" FORCEMAIN - 200 LF
 CONNECTING TO 3" FORCEMAIN - 1 EA

WATER SERVICE LEAD:
 TYPE III DOMESTIC WELL - 1 EA
 2" WATER SERVICE - 94 LF +/-

STORM SEWER:
 6" PERFORATED HDPE EDGE DRAIN @ (2) CATCH BASINS INCLUDING SOCK & PEA PEBBLE - 50 LF
 12" C76 CL4 PREMIUM JOINT PIPE - 187 LF
 CATCH BASIN, 4' DIA., W/ELW 5105 1" D" COVER - 2 EA
 MANHOLE, 4' DIA., EJIW 1040 "A" COVER - 2 EA
 PRETREATMENT MANHOLE, 4' DIA., EJIW "A" COVER - 1 EA
 CONSTRUCT UNDERGROUND DETENTION SYSTEM (130 LF OF 96" CSP/HEL-COR PIPE & STRUCTURE) COMPLETE - 1 EA
 24" CSP/HEL-COR PIPE - 40 LF
 12" CONCRETE END SECTION (6' LENGTH) - 1 EA
 GROUTED RIP-RAP - 4 SY

GAS SERVICE: 110 LF +/-

ELECTRIC SERVICE: 106 LF +/-

PAVEMENT & CURBS, ETC. (ON-SITE):
 4" ASPHALT OVER 8"-21AA GRAVEL (PARKING SPACES) - 730 SY
 7" ASPHALT OVER 8"-21AA GRAVEL (PARKING AISLES) - 650 SY
 8"x8"x8" THICK CONCRETE COLLARS (@ CATCH BASINS) - 2 EA
 4" CONCRETE SIDEWALK OVER 4" C.S.B. - 212 SY
 8" CONCRETE DUMPSTER PAD OVER 4" C.S.B. - 36 SY
 DUMPSTER ENCLOSURE & GATE - 1 EA

PAVEMENT & CURBS, ETC. (PONTIAC LAKE ROAD R.O.W.):
 9" ASPHALT OVER SUITABLE BASE - 106 SY
 5 1/2" B-2 STANDARD CONCRETE CURB, 30" WIDE - 70 LF
 ADA SIDEWALK RAMPS - 2 EA
 SAWCUT & BUTTJOINT - 80 LF

SOIL EROSION CONTROLS:
 DISRUPTION AREA - 0.80 ACRES
 SILT FENCE - 550 LF
 SILT FENCE GRAVEL FILTER - 1 EA
 SEED & MULCH - 0.40 ACRES
 CATCH BASIN FILTERS - 2 EA
 CONSTRUCTION STONE ACCESS DRIVE - 120 SY
 (AND USE EXISTING ENTRANCES)

MISCELLANEOUS:
 BOULDER WALL (2' TO 11' HIGH) - 76 LF - 500 SF +/-
 6' WIDE WOODCHIP PATH (UPLAND) - 1,335 SF +/-
 6' WIDE NATURE TRAIL (CLEARING) - 2,900 SF

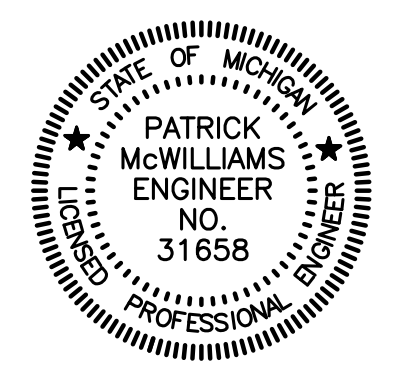
Boulder Wall (76 LF +/-)

Location	Wall Elevation	Wall	
#	Top	Bottom	Height +/-
1 End	965.2	964.5	0.7
2	965.2	960.0	5.2
3	965.2	954.0	11.2
4	965.0	962.0	3.0

(SEE DETAIL SHEET 3)

APPROX. LOCATION OF 100 YEAR FLOODPLAIN BASE FLOOD ELEVATION = 948.0 EAST P/L = 946.8 WEST P/L FIRM MAP PANEL NO. 26125C0337F DATE: 9-29-2006

SCALE 1" = 30'





Site / Construction Plan Review

To: Sean O'Neil, Planning Department Director

Date: 02/04/21

Project: Pontiac Lake Overlook

File #: Not Shown

Date on Plans: 01/30/20

The Fire Department has the following comments with regards to the Revised Site Plans for the project known as Pontiac Lake Overlook:

1. Turning Radius. The required turning radius shall accommodate the largest Fire Department Apparatus (40 feet). Provide an apparatus movement profile on future submittals.
2. Angle of approach/departure. The angles of approach and departure for fire apparatus access shall not exceed 8 degrees.
3. Knox Box. Will be required for building and Riser Room access. The location shall be on the street side of the building in an area to be determined by the Fire Marshal.
4. Fire Protection. The proposed building will require an automatic sprinkler and alarm system in accordance with the IFC and NFPA.
 - A. Three sets of plans shall be submitted to the Building Department for review.
 - B. The Fire Department Connection (FDC) shall be 5 inch Storz on a 30-45 degree downturn. The location shall be on the street side of the building in an area that provides unobstructed access, and shall be shown on both the elevation, and fire protection plans.
 - C. A red rotating "flow indication" beacon shall be mounted on the exterior wall surface, at a minimum height of 15 feet from finished grade. The location shall be directly above the FDC, and shall be shown on both the elevation, and fire protection plans.
 - D. Note. Suppression and alarm plans are sent out for third party review.

John Holland
Fire Marshal / Deputy Chief
Charter Township of White Lake
(248)698-3993
jholland@whitelaketwp.com

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

Memo

To: Sean O'Neil, Planning

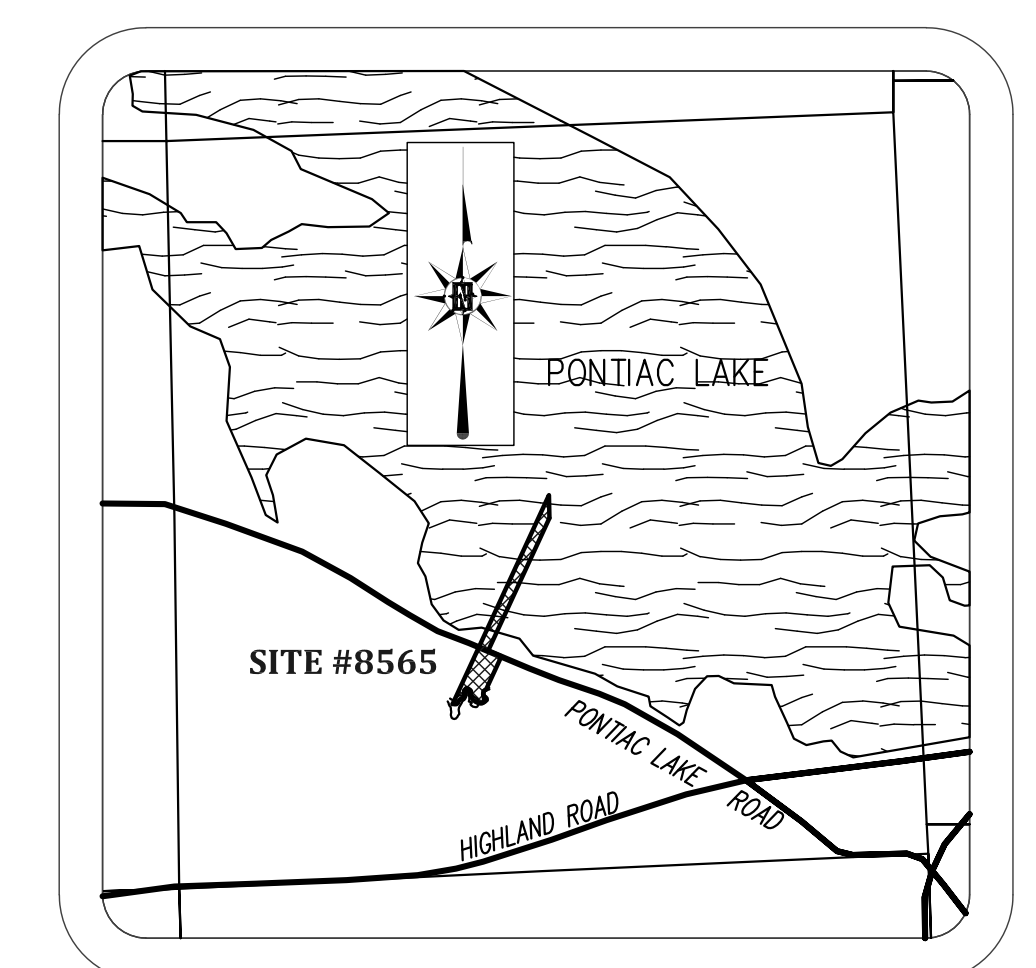
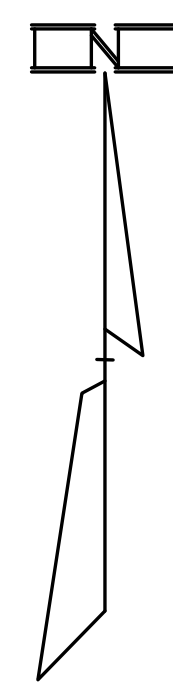
From: Jeanine A Smith

Date: October 23, 2019

Re: Project Name: Pontiac Lakeview
Apartments

Parcel Number: 12-13-328-001

Comments: No comment.



SITE LOCATION MAP
(NO SCALE)

Zoning Requirements

RM-2 MULTIPLE FAMILY RESIDENTIAL

- LOT - MIN. AREA: FT.²
- MIN. WIDTH: 200 FT.
- COVERAGE - MAX. BUILDING: 20%
- SETBACKS - FRONT YARD: 40 FT.
- REAR YARD: 45 FT.
- SIDE YARD: 70 FT.
- SIDE TOTAL: 100 FT.
- HEIGHT - MAX. BUILDING: 35 FT./ 2 STY.

R1-D SINGLE FAMILY RESIDENTIAL

- LOT - MIN. AREA: 12,000 FT.²
- MIN. WIDTH: 80 FT.
- COVERAGE - MAX. BUILDING: 20%
- SETBACKS - FRONT YARD: 30 FT.
- REAR YARD: 30 FT.
- SIDE YARD: 10 FT.
- SIDE TOTAL: 20 FT.
- HEIGHT - MAX. BUILDING: 25 FT./ 2 STY.

EXISTING CONDITIONS

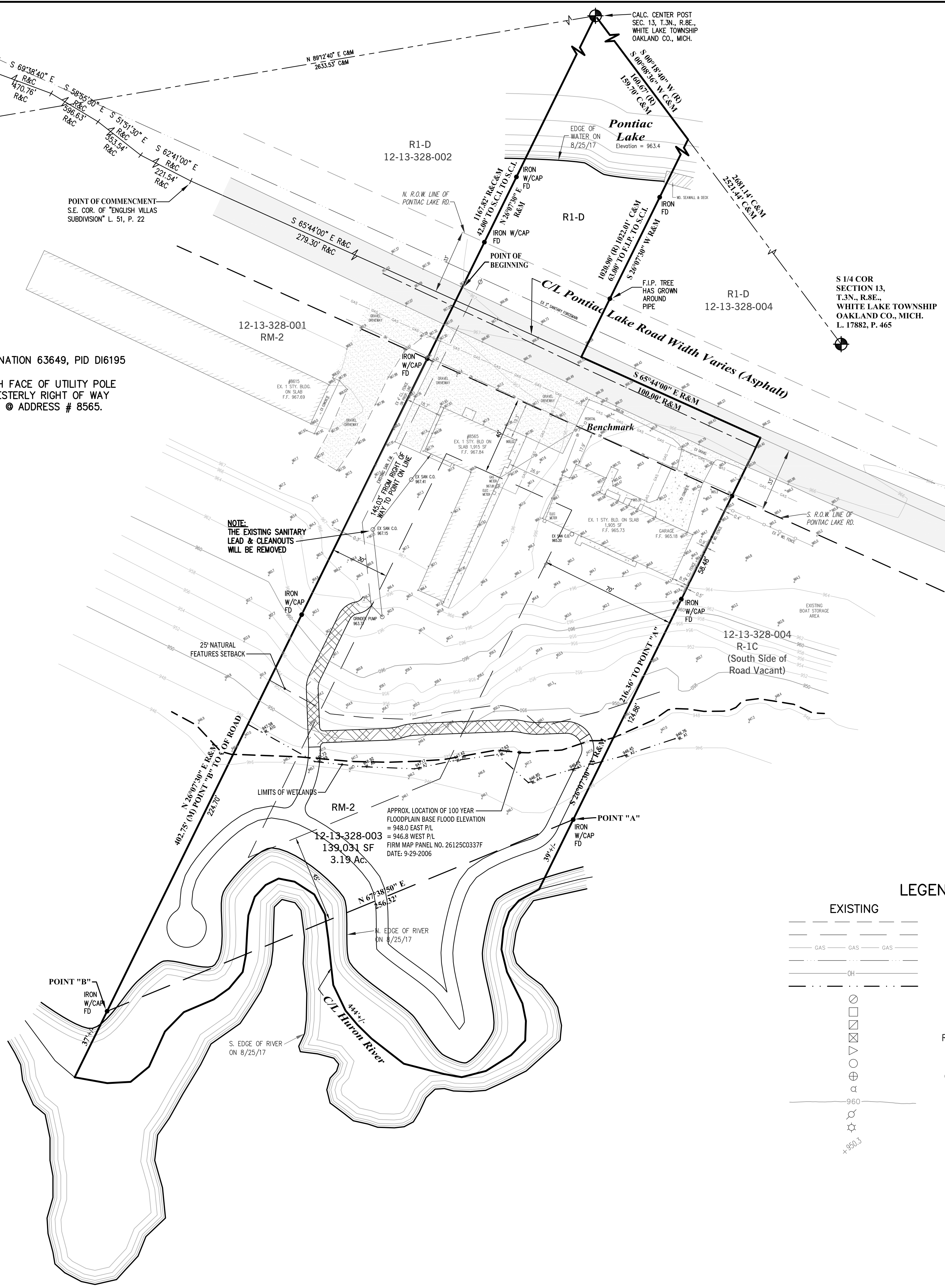
- LOT AREA: 139,031 FT.²
- WIDTH: ≈ 170 FT.
- COVERAGE - 3,820 FT.² - 2.7%

PROPOSED CONDITIONS - SEE NOTES SHEET 2

- COVERAGE - ADDITION: XXX.X FT.²
- TOTAL BLD.: X,XXX.X FT.² XX.X%
- TOTAL IMP.: X,XXX.X FT.² XX.X%

Benchmark Notes

- #1) NGS REFERENCE MARK DESIGNATION 63649, PID D16195 ELEVATION: 957.24 NAVD88
- #2) (SITE BM) SET NAIL IN NORTH FACE OF UTILITY POLE LOCATED NEAR THE SOUTHWESTERLY RIGHT OF WAY LINE OF PONTIAC LAKE ROAD @ ADDRESS # 8565. ELEVATION: 968.36 NAVD88



NOTE: THE EXISTING SANITARY LEAD & CLEANOUTS WILL BE REMOVED

LEGEND

- EXISTING
 - GAS
 - OH
 - 960
 - 950.1
- STORM SEWER
- SANITARY SEWER
- GAS MAIN
- ELEC. TELE. CABLE
- EXISTING OVERHEAD
- WETLAND LIMITS
- STORM MANHOLE
- CATCH BASIN
- INLET
- REARYARD CATCH BASIN
- END SECTION
- SANITARY MANHOLE
- GATE VALVE AND WELL
- HYDRANT
- CONTOURS
- POWER POLE
- LIGHT POLE
- GRADE

Parcel 12-13-328-003:

LEGAL DESCRIPTION AS RECORDED L. 50535, P. 481

PART OF THE SOUTHWEST 1/4 OF SECTION 13, TOWN 3 NORTH, RANGE 8 EAST, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT IN THE CENTERLINE OF PONTIAC TRAIL ROAD, SAID POINT BEING DISTANT SOUTH 65 DEGREES 44 MINUTES EAST 279.30 FEET; THENCE NORTH 26 DEGREES 07 MINUTES 30 SECONDS EAST 1167.82 FEET TO A POINT IN PONTIAC LAKE; THENCE SOUTH 00 DEGREES 18 MINUTES 40 SECONDS WEST ALONG THE NORTH-SOUTH 1/4 LINE 166.67 FEET TO A POINT IN PONTIAC LAKE; THENCE SOUTH 26 DEGREES 07 MINUTES 30 SECONDS WEST 1020.9 FEET TO A POINT IN THE CENTERLINE OF PONTIAC LAKE ROAD; THENCE SOUTH 65 DEGREES 44 MINUTES 00 SECONDS EAST ALONG SAID CENTERLINE OF PONTIAC LAKE ROAD 100.00 FEET; THENCE SOUTH 26 DEGREES 07 MINUTES 30 SECONDS WEST 265 FEET, MORE OR LESS, TO THE CENTERLINE OF HURON RIVER; THENCE SOUTHWESTERLY ALONG CENTERLINE OF HURON RIVER 230 FEET, MORE OR LESS; THENCE NORTH 26 DEGREES 07 MINUTES 30 SECONDS EAST 400 FEET, MORE OR LESS, TO THE POINT OF BEGINNING;

LEGAL DESCRIPTION AS SURVEYED

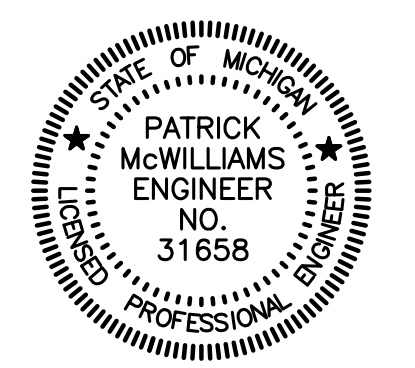
PARCEL ID# 12-13-328-003
COMMONLY KNOWN AS: 8565 PONTIAC LAKE ROAD

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CONTAINING 3.19 ACRES OF LAND MORE OR LESS, SUBJECT TO THE RIGHTS OF THE PUBLIC FOR PONTIAC LAKE ROAD OVER THAT PORTION OF THE ABOVE DESCRIBED PROPERTY LOCATED 33 FEET ON BOTH SIDES AS MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID PONTIAC LAKE ROAD. ALSO SUBJECT TO ANY OTHER EASEMENTS OR RESTRICTIONS OF USE OR RECORD.

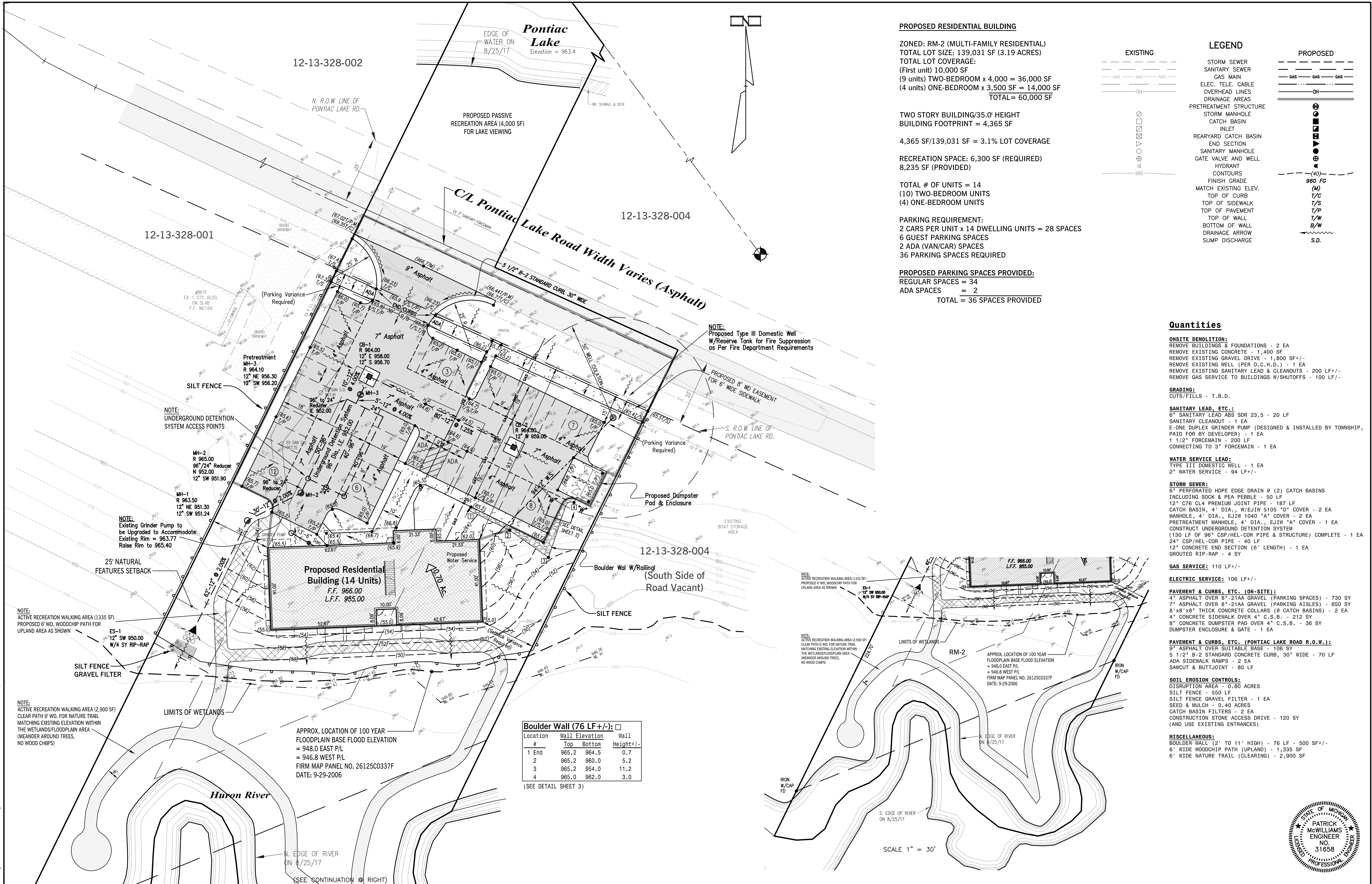
Sheet Index:

- 1. Existing Conditions Plan
- 2. Preliminary Site Plan
- 3. Notes, Calculations & Details



G:\2019\071.001.dwg\Kieft\Site Plan.dwg, 1/21/2021 3:47:26 PM, Adobe drive PDF, lmd2.p3

DATE	ISSUE	PROPRIETOR: JOHN ROZANSKI 2704 WABUM WHITE LAKE, MICHIGAN 48386 (248) 231-8529	THIS DRAWING IS THE PROPERTY OF KIEFT ENGINEERING, INC. AND MAY NOT BE USED, REPRODUCED OR PUBLISHED, IN PART OR IN WHOLE, WITHOUT EXPRESSED WRITTEN PERMISSION FROM KIEFT ENGINEERING, INC.	 KIEFT ENGINEERING, INC. PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS 5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346 PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110	DATE	4-26-19	CKD. BY	DATE	72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL FREE)	Existing Conditions Plan "Pontiac Lake Overlook" PART OF THE SW 1/4 OF SECTION 13, T.3N., R.8E., WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN	SCALE	1" = 30'
6-1-2020	ADDED WETLANDS				DRAWN	GF	SHEET	1 OF 3				
9-15-2020	REVISED BUILDING & PARKING LAYOUT				DESIGN	PCM	KE 2019.071					
11-4-2020	REVISED FOR SUBMITTAL				SECTION	13						
1-21-2021	REVISED PER DLZ (1-21-21) & MCKENNA (1-23-21)				T-	3 -N, R- 8 -E						



PROPOSED RESIDENTIAL BUILDING

ZONED: RM-2 (MULTI-FAMILY RESIDENTIAL)
 TOTAL LOT SIZE: 139,031 SF (3.19 ACRES)
 TOTAL LOT COVERAGE:
 (First unit) 10,000 SF
 (9 units) TWO-BEDROOM x 4,000 = 36,000 SF
 (4 units) ONE-BEDROOM x 3,500 SF = 14,000 SF
 TOTAL = 60,000 SF

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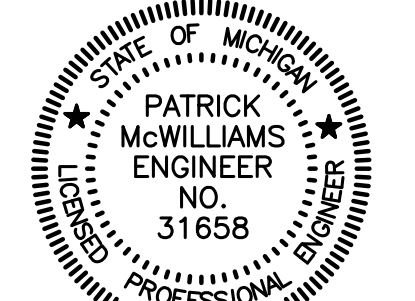
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PROPRIETOR:
 JOHN ROZANSKI
 2704 WABUM
 WHITE LAKE, MICHIGAN 48386
 (248) 231-8529

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

DATE	1-30-2020	CKD. BY	DATE
DRAWN	GF		
DESIGN	PCM		
SECTION	13	T-3-N-R-8-E	

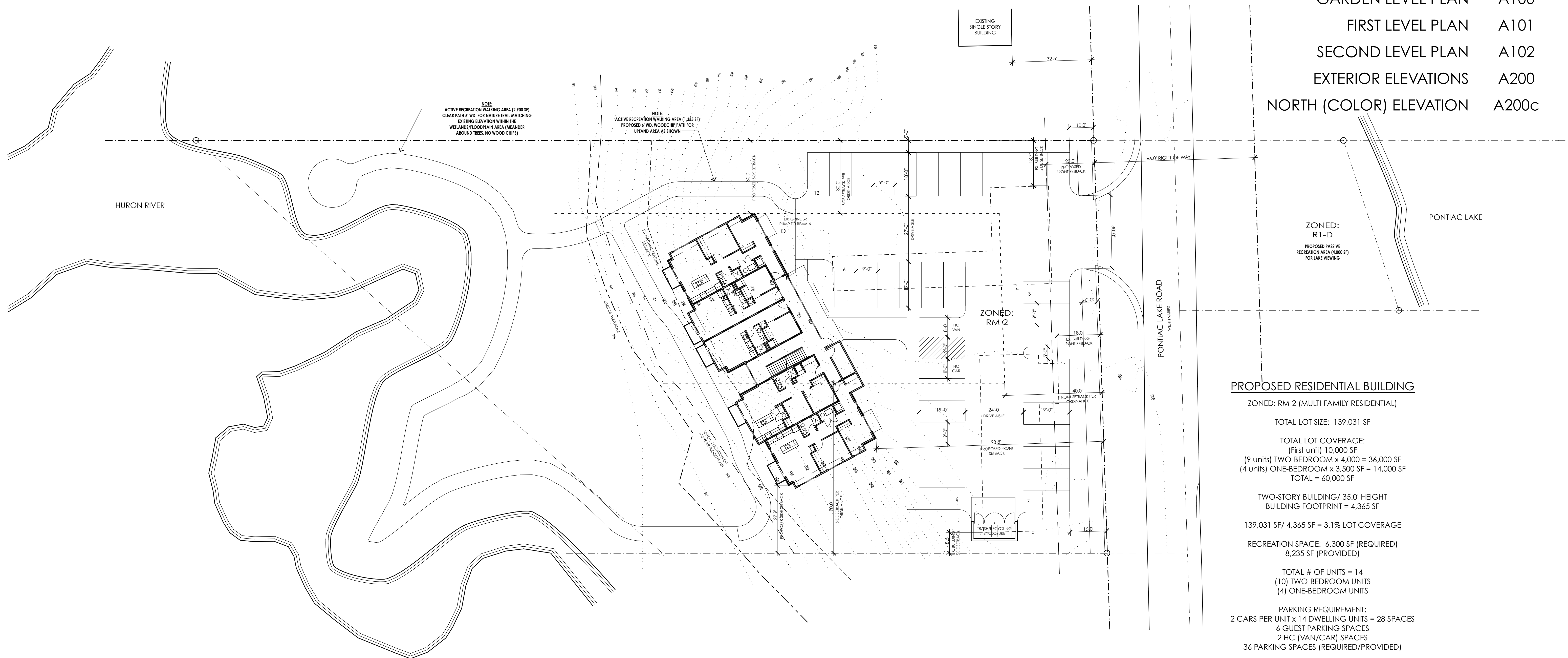
Preliminary Site Plan
"Pontiac Lake Overlook"
 PART OF THE SW 1/4 OF SECTION 13, T.3N., R.8E.,
 WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

14-UNIT RESIDENTIAL BUILDING

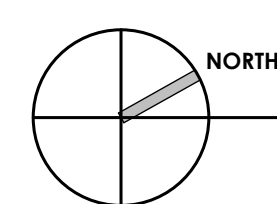
8565 PONTIAC LAKE ROAD
WHITE LAKE TOWNSHIP, MICHIGAN

ARCHITECTURAL SHEET INDEX:

ARCHITECTURAL SITE PLAN	AS00
EXISTING CONDITIONS PLAN	1 of 2
PRELIMINARY SITE PLAN	2 of 2
GARDEN LEVEL PLAN	A100
FIRST LEVEL PLAN	A101
SECOND LEVEL PLAN	A102
EXTERIOR ELEVATIONS	A200
NORTH (COLOR) ELEVATION	A200c

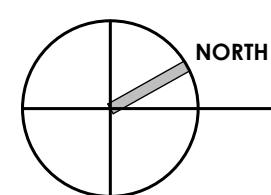


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 (10) TWO-BEDROOM UNITS
 (4) ONE-BEDROOM UNITS
 PARKING REQUIREMENT:
 2 CARS PER UNIT x 14 DWELLING UNITS = 28 SPACES
 6 GUEST PARKING SPACES
 2 HC (VAN/CAR) SPACES
 36 PARKING SPACES (REQUIRED/PROVIDED)



ARCHITECTURAL SITE PLAN

SCALE: 1" = 20'-0"



NORTH

GARDEN LEVEL PLAN

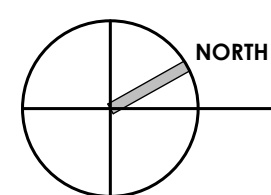
SCALE: 1/8" = 1'-0"

NOTE:
ACTIVE RECREATION WALKING AREA (1,335 SF)
PROPOSED & W/D WOODCHIP PATH FOR
UPLAND AREA AS SHOWN



ZONED:
RM-2

PONTIAC LAKE ROAD
WIDTH VARIES

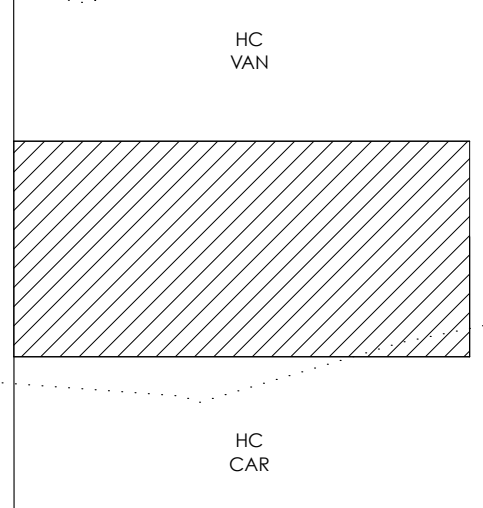
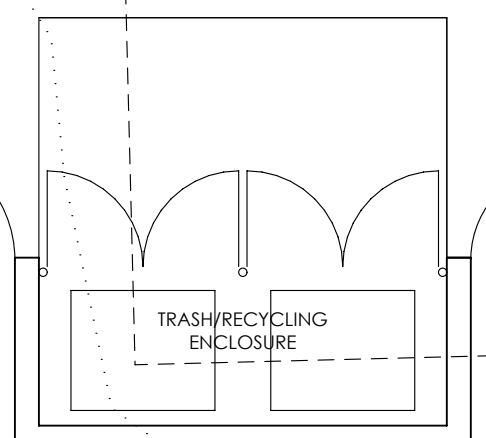


FIRST LEVEL PLAN

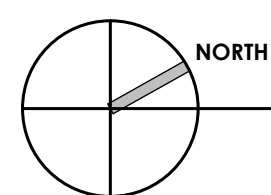
SCALE: 1/8" = 1'-0"

NOTE:
ACTIVE RECREATION WADING AREA (1,335 SF)
PROPOSED W/ WOODCHIP PATH FOR
UPLAND AREA AS SHOWN

ZONED:
RM-2



PONTIAC LAKE ROAD
WIDTH VARIES



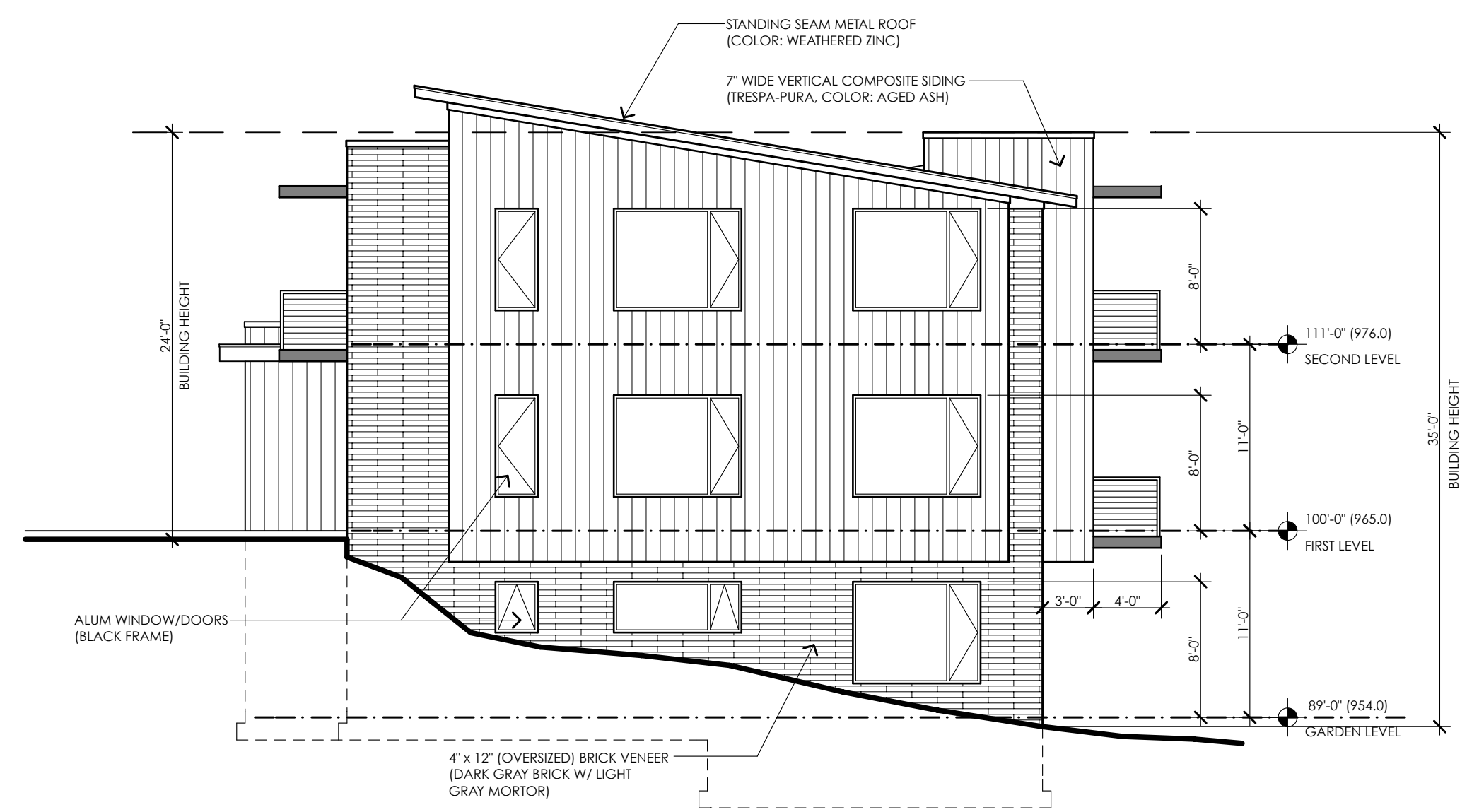
SECOND LEVEL PLAN

SCALE: 1/8" = 1'-0"



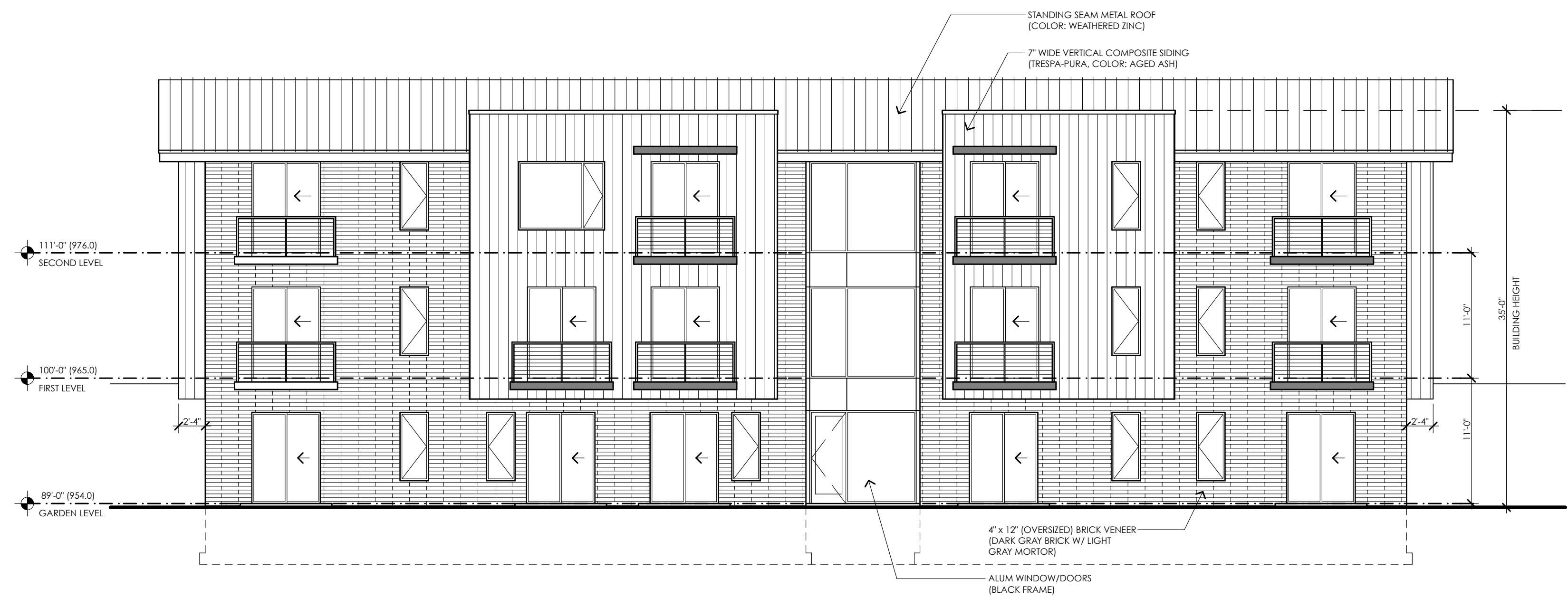
ZONED:
RM-2

PONTIAC LAKE ROAD
WIDTH VARIES



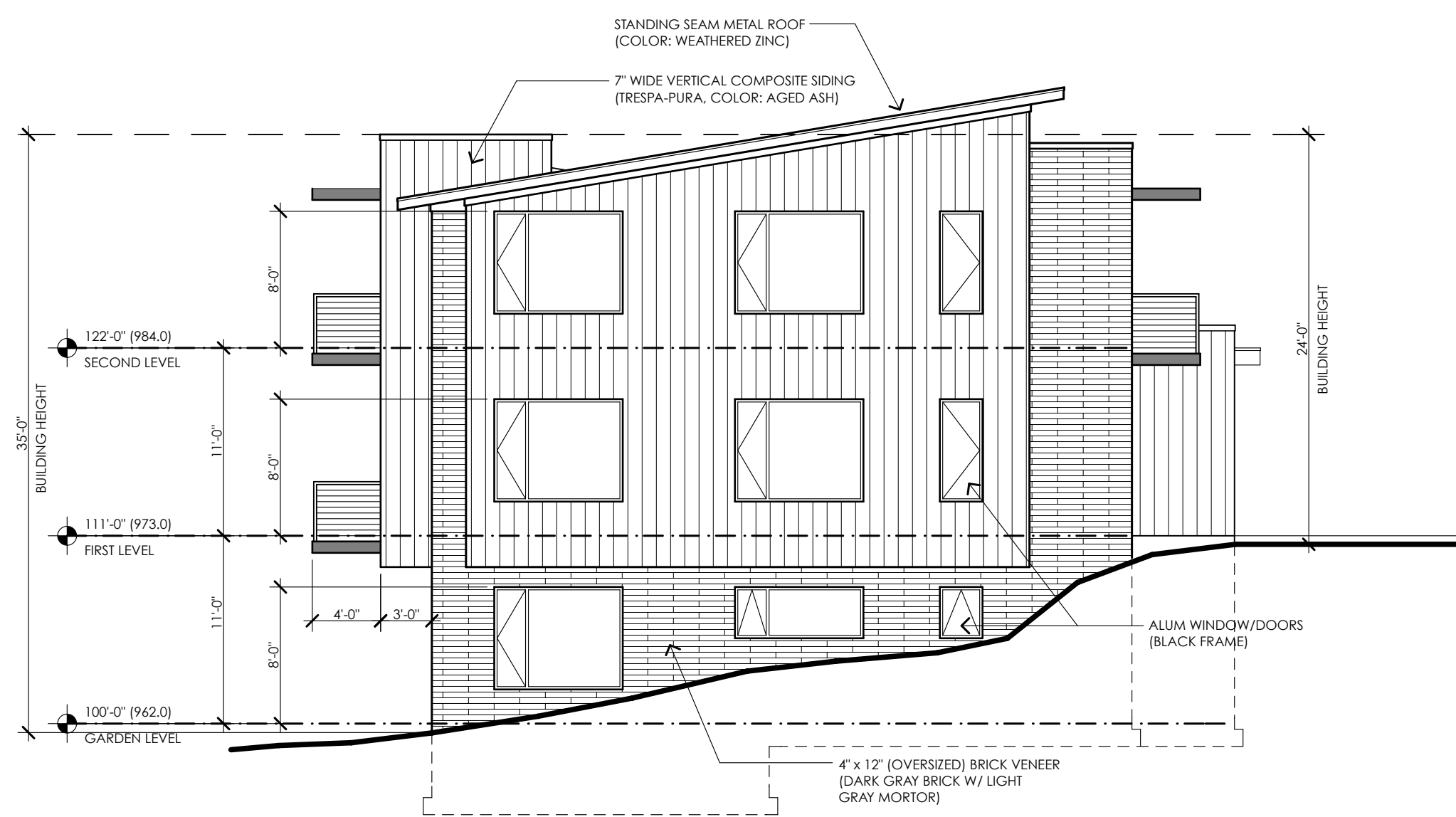
WEST ELEVATION

SCALE: 1/8" = 1'-0"



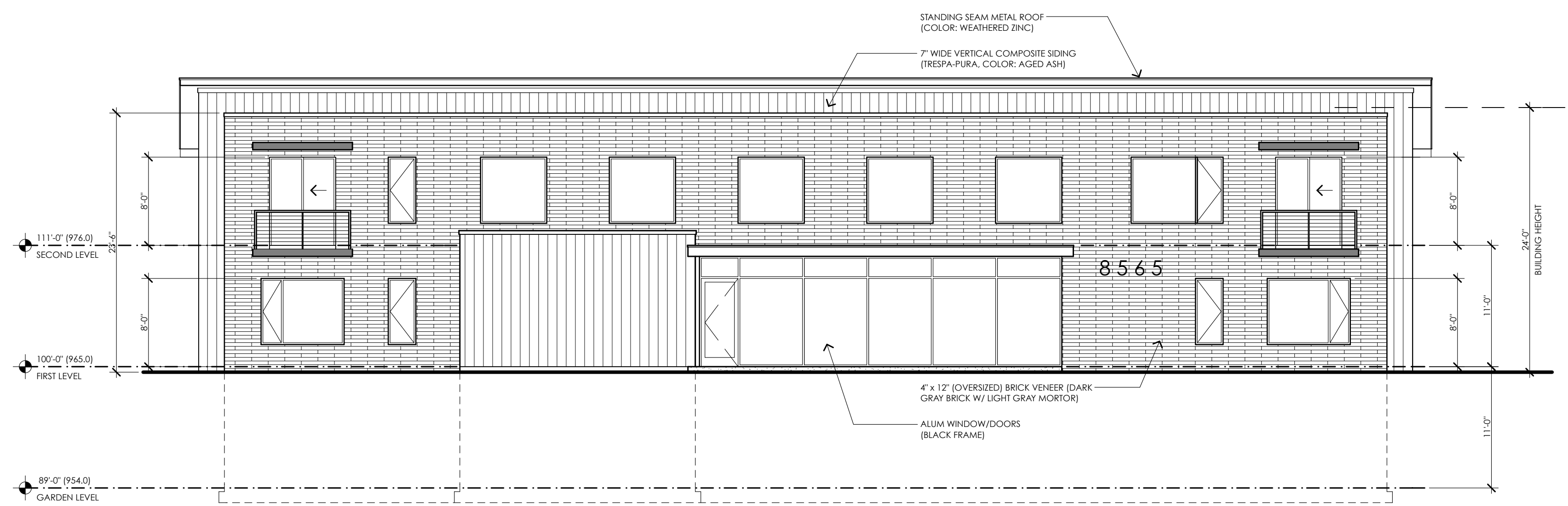
SOUTH (HURON RIVER) ELEVATION

SCALE: 1/8" = 1'-0"



EAST ELEVATION

SCALE: 1/8" = 1'-0"



NORTH (PONTIAC LAKE ROAD) ELEVATION

SCALE: 1/8" = 1'-0"