



PLANNING COMMISSION MEETING

LOCATION: TOWNSHIP ANNEX, 7527 HIGHLAND ROAD, WHITE LAKE, MI 48383
THURSDAY, JUNE 20, 2024 – 6:30 PM

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

AGENDA

1. ROLL CALL
2. PLEDGE OF ALLEGIANCE
3. APPROVAL OF AGENDA
4. APPROVAL OF MINUTES
 - A. [May 16, 2024](#)
5. CALL TO THE PUBLIC (FOR ITEMS NOT ON THE AGENDA)
6. PUBLIC HEARING
 - A. [12-16-200-030 - Rezoning Request](#)
[Location: Property described as Parcel Number 12-16-200-030, located south of Hitchcock Road, on the west side of Haley Road, consisting of approximately 15 acres.](#)
[Request: **Applicant requests to rezone the parcel from AG \(Agricultural\) to SF \(Suburban Farms\) or any other appropriate zoning district.**](#)
[Applicant: Lisa Gulda](#)
7. CONTINUING BUSINESS
 - A. [West Valley](#)
[Location: Identified as parcel 12-36-176-003, located on the west side of Union Lake Road, across from Carpathian Drive, and north of Cooley Lake Road, consisting of approximately 15 acres.](#)
[Currently zoned as \(RM-1\) Attached Single Family](#)
[Request: **Final site plan re-approval**](#)
[Applicant: Fairview Construction Company](#)
8. NEW BUSINESS
9. OTHER BUSINESS
10. LIAISON'S REPORT
11. PLANNING CONSULTANT'S REPORT
12. DIRECTOR'S REPORT
13. COMMUNICATIONS
14. NEXT MEETING DATE:
15. ADJOURNMENT

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

**WHITE LAKE TOWNSHIP
PLANNING COMMISSION
MAY 16, 2024**

CALL TO ORDER

Chairperson Seward called the meeting to order at 6:30 P.M.

Roll was called:

Present:

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

Absent:

Scott Ruggles, Township Board Liaison

Others:

Sean O'Neil, Community Development Director
Justin Quagliata, Staff Planner
Hannah Kennedy-Galley, Recording Secretary

APPROVAL OF AGENDA

MOTION by Commissioner Seeley, seconded by Commissioner Anderson to approve the agenda as presented. The motion carried with a voice vote: (8 yes votes).

APPROVAL OF MINUTES

A. May 2, 2024

MOTION by Commissioner Carlock, seconded by Commissioner Seeley to approve the minutes as presented. The motion carried with a voice vote: (8 yes votes).

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

None.

PUBLIC HEARING

A. 9101 Highland - Rezoning Request

Location: Property described as 9101 Highland Road, identified as parcel number 12-23-227-003, located south of Highland Road, west of Sunnybeach Boulevard, consisting of approximately 5.02 acres.

Request: Applicant requests to rezone the parcel from R1-C (Single Family Residential) to RB (Restricted Business) or any other appropriate zoning district.

Applicant: Affinity 10 Investments, LLC

Staff Planner Quagliata briefly went the applicant's request.

Commissioner Sevic asked staff if there was an issue with ingress into the site. Staff Planner Quagliata said the updated traffic study met the standards of the Township. The applicant provided a Traffic Impact Study, which was above and beyond what was needed for a rezoning request. If the applicant were to move forward and a site plan was reviewed, the Township Traffic Engineer would also review the study.

Commissioner Carlock asked staff if the Restrictive Business was the most restrictive commercial zoning. Staff Planner Quagliata said no, Local Business was.

Chairperson Seward asked staff if the request was compliant with the new Master Plan. Staff Planner Quagliata confirmed.

Commissioner Carlock clarified that the old and new Master Plan called for the area to be commercially zoned. Staff Planner Quagliata said holding the property to a residential zoning was inconsistent with the Master Plan.

Reid Cooksey, Stonfield Engineering, was present. He said the new application was brought to the Planning Commission after taking the concerns of the community into account. He said he was looking to bring a development to a property that the Master Plan called to be zoned commercially. He was looking to bring a high-end commercial development to the Township.

Commissioner Meagher asked Mr. Cooksey what the feedback was from the residents. Mr. Cooksey said the two biggest issues were additional green space between the development and abutting properties, and more screening. The church was sold, and the developer owned the property now.

Commissioner Anderson asked staff if there was compliance regarding frontage on the site. Staff Planner Quagliata confirmed, the lot size standards for both area and width were met.

Chairperson Seward opened the public hearing at 6:53 P.M.

Tom Miller, Vice Present of Twin Lakes HOA, 9136 Sandy Ridge, said Twin Lakes had over 370 homes and there was only one way in and out of the subdivision. He felt the rezoning would cram too much into one location.

Aaron Greenblatt, 9055 Huron Bluffs Drive, spoke in regards to negative impact of the rezoning to the surrounding property values. He also voiced his concerns regarding additional traffic to the site causing traffic delays.

David Gian, President of the Twin Lakes Improvement Association, 9315 Steep Hollow, spoke regarding

the existing road conditions of Sunny Beach Boulevard. He believed the Township should eliminate some of the ingress/egress along M-59 in favor of cross access easements.

Theresa Johns, 9051 Steep Hollow Drive, asked how the neighbors reacted to the meeting with the development team. She stated the neighbors were not pleased and did react. She felt there was no concern for property values or traffic.

Rachel Cook, 9122 Sandy Ridge, had questions regarding the access management in the traffic study.

Susan Deihl, 9170 Twin Lakes, said she understood the reason for commercial zoning, but was concerned about the water quality with a new commercial development to the area. The neighborhood had significant water changes after the new car wash was developed.

Lisa Reaser, 515 Berry Patch, spoke regarding her concerns about the left hand turn onto M-59. She was greatly disappointed and opposed to creating a greater traffic hazard.

John Bem, 298 Shotwell, said the church and daycare center made for a great buffer to the neighborhood. He wanted to zoning of the property to remain residential.

Deb Skonieczny, 373 Shotwell, said the property values of the surrounding homes would drop. She said the Township was becoming a commercial strip of nothing but buildings.

Beverly Clancy Johnson, 8790 Twin Lakes Drive, spoke regarding the lack of traffic safety.

Maureen Kinsella, 605 Sunny Beach Drive, asked the Planning Commission to consider what the community benefits would be to this rezoning.

Chris Scholz, 987 Sunnybeach, was concerned about the traffic impact and lighting.

Sheldon Greenblatt, 9055 Huron Bluffs Drive, said the Planning Commission had heard many different perspectives. He said the rezoning should not be a single decision process.

Aaron Heiner, 987 Sunnybeach, recommended an 8' cinderblock wall. He did not want to see light pollution or hear noise pollution.

Gary Seifman, 8990 Huron Bluff Drive, said he was scared as to what could take place on the site.

Megan Scholz, 987 Sunnybeach, complained of the commercial traffic that surrounded her home and did not want more commercial development closer.

Dan Gottschall, 891 Sunnybeach, said he wanted to see the request tabled for another time. He was 77 years old, and said the Planning Commission was charged with effecting the Township for the present and the future.

Chairperson Seward closed the public hearing at 7:32 P.M.

Commissioner Carlock asked staff what the difference between Local and Restrictive Business would be. Staff Planner Quagliata said Local Business didn't allow drive thru windows or restaurants with drive thru windows.

Commissioner Meagher said the traffic light issue was a MDOT issue, and what would it take to get a traffic light. Director O'Neil said MDOT had standards that needed to be met, and a factor that was taken into account was accidents. Many years ago, the Taco Bell had given the Township a contribution towards a traffic light at the Sunnybeach intersection. Traffic mitigation was a site plan issue that would be reviewed during the site plan process.

Commissioner Dehart asked staff if the neighborhood was on community water or wells. Director O'Neil said it was wells. She added she was a proponent of cross access easements, and was there a way to utilize the adjacent driveway's driveway. Staff Planner Quagliata said the abutting property did not have an existing cross access. The developer could work with the daycare to create a cross access easement.

Commissioner DeHart said she did not like seeing the vacant Tim Horton's/Wendy's property, but had understood the owner was uncommunicative. Staff Planner Quagliata said it was the business owner's choice to have a dark building, the owner did not have the building for sale.

Commissioner Sevic asked staff if there was another appropriate zoning for the property. Staff Quagliata said yes, but in staff's opinion, Restrictive Business was the most appropriate district.

Mr. Cooksey addressed some of the resident questions. He said he wanted to work with the Township and community through a very long process. Traffic concerns and entrance would be addressed at site plan. The goal was if the daycare was ever redeveloped, there would be cross access. He added that there was positive feedback, but there was hesitance from the neighbors. The request was in line with the Master Plan. He said the development would not impact the community well water.

Director O'Neil said if the project were to go through the planning process, there would be standards the developer would adhere to and the Planning Commission could enforce, such as the landscaping and buffering. Nothing could be legally tied to tonight's request.

It was MOVED by Commissioner Seeley, seconded by Commissioner Meagher to recommend the Township Board approve the rezoning 9101 Highland Road, identified as parcel number 12-23-227-003 from R1-C Residential to RB Restricted Business. The motion carried with a roll call vote: (5 yes votes)

(Seeley/yes, Meagher/yes, Slicker/yes, Sevic/yes, Anderson/no, Seward/yes, Carlock/no, Dehart/no).

CONTINUING BUSINESS

None.

NEW BUSINESS

None.

OTHER BUSINESS

None.

LIAISON'S REPORT

The Triangle Trail was moving along, and near completion. Restoration of irrigation was being handled. Stanley Park construction would be underway soon. Rockin' the Farm would be held on July 20.

DIRECTOR'S REPORT

The Master Plan was approved. Gateway Crossing's preliminary site plan was approved. Construction on Elizabeth Lake Road would begin next week through October. The Civic Center page turns for the bid package was yesterday. Culver's would be going to the Township Board next week. Gateway Crossing would be going to the ZBA next week. The Zoning Ordinance amendments would be going to the Board for first reading.

Director O'Neil presented Mary Earley with a bound version of the Master Plan, along with a copy of the executive summary.

Staff Planner Quagliata's last day was today. He was moving on to become the Community Development Director at the city of Northville. He also passed the AICP exam yesterday. Congratulations, Justin!

COMMUNICATIONS

None.

NEXT MEETING DATE: June 6, 2024

ADJOURNMENT

MOTION by Commissioner Meagher, seconded by Commissioner Dehart, to adjourn at 8:23 P.M. The motion carried with a voice vote: (8 yes votes).

Director's Report

Project Name: 12-16-200-030 Rezoning
 Description: Rezoning Request
 Date on Agenda this packet pertains to: June 20, 2024

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

Contact	Consultants & Departments	Approval	Denial	Approved w/Conditions	Other	Comments
Sean O'Neil	Community Development Director	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Based on comments from the Planning Consultant
Matteo Passalacqua	Carlisle & Wortman Associates Inc	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See letter dated 06/3/2024



Carlisle | Wortman
ASSOCIATES, INC.

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

Date: June 3, 2024

**Rezoning Review
For
White Lake Township, Michigan**

Applicant: Lisa Gulda

Project Name: Haley Road Rezoning

Location: Southwest corner of Hitchcock Road and Haley Road

Parcel ID: 12-16-200-030

Plan Date: May 28th, 2024

Current Zoning: AG, Agricultural District

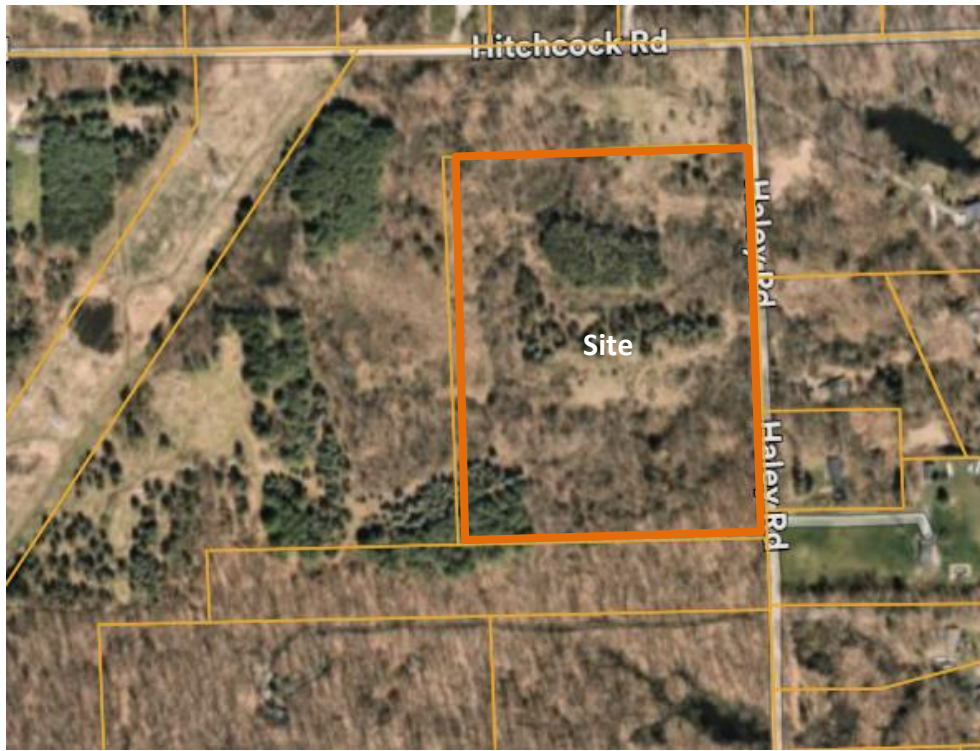
Action Requested: Rezone to SF, Suburban Farms District

PROJECT DESCRIPTION

The Applicant is requesting a zoning change for the parcel located near the southwest corner of Hitchcock and Haley Roads for the purpose of establishing a unified zoning designation and splitting the lot into five (5) parcels. The lot is currently zoned both AG and SF per the White Lake 2022 zoning map last updated October 10th, 2022.

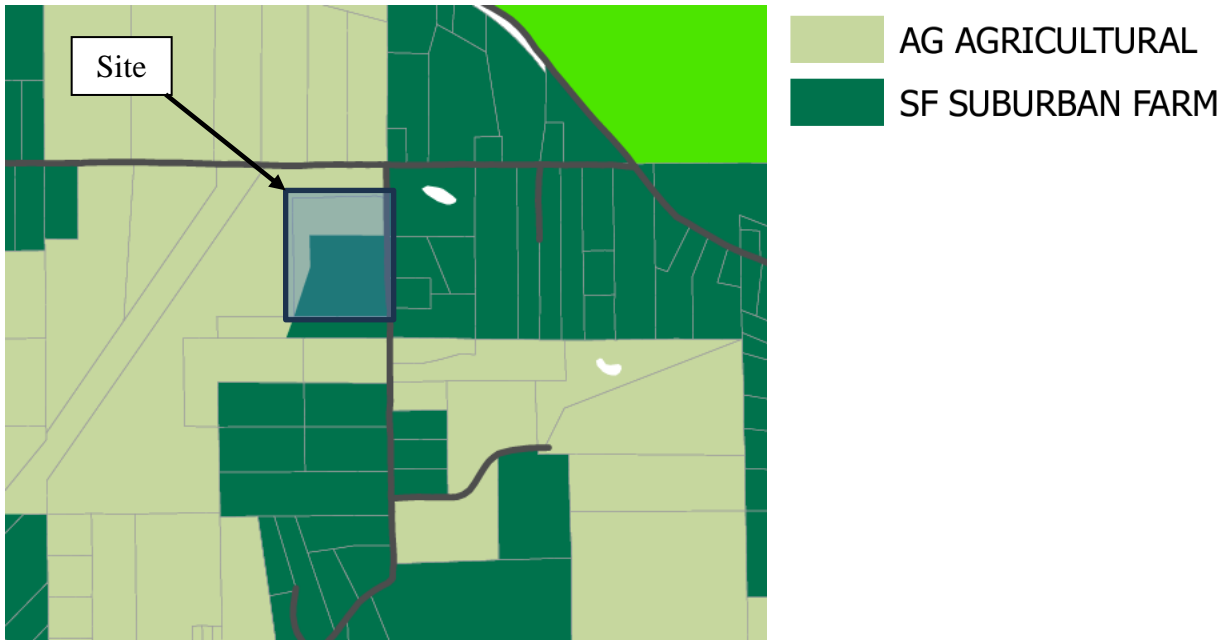
Benjamin R. Carlisle, *President* Douglas J. Lewan, *Executive Vice President* John L. Enos, *Vice President*
David Scurto, *Principal* Sally M. Elmiger, *Principal* R. Donald Wortman, *Principal*
Paul Montagno, *Principal*, Megan Masson-Minock, *Principal*, Laura Kreps, *Senior Associate*
Richard K.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

Aerial Photograph



NEIGHBORING ZONING AND LAND USE

Zoning



The zoning and existing land uses for the subject site and surrounding parcels are identified in the following table:

Direction	Zoning	Existing Use
North	AG – Agricultural	Vacant
South	SF – Suburban Farms	Vacant
East	SF – Suburban Farms	Single Family Homes
West	AG – Agricultural	Vacant

If approved, the parcel, and proposed lot splits, would conform to the lot size and dimension standards for SF. Permitted uses in the SF and AG zones are shown below. All residential uses are identical with AG allowing for more intense agricultural uses. These uses are conducive with the existing neighboring properties.

Zone	AG	SF
Permitted Uses	Adult foster care family home Family day care homes Farms iv. Home occupation Outdoor recreation uses, other public and private parks and similar outdoor recreation uses not listed in §4.38 Single-family detached dwellings Vegetable, fruit, flower and herb gardening Tree and shrub nurseries, not including landscape contractors Private stable Temporary roadside stand Temporary agricultural uses Temporary uses within a building	Adult foster care family home Family day care homes Home occupation Outdoor recreation uses, other public and private parks and similar outdoor recreation uses not listed in §4.38 Single-family detached dwellings Private stable Tree and shrub nurseries; vegetable, fruit, flower and herb gardens

Items to be addressed: None.

NATURAL FEATURES

The site is undeveloped and consists mainly of woodland clusters with intertwining open fields. No natural feature information was provided in the application. Below is our observed condition of the site.

Topography: The site appears relatively flat.

Wetlands: The Department of Environment, Great Lakes and Energy indicate wetlands located along western border of the parcel.

Woodland: Several woodland clusters are onsite which are composed of mature trees and vegetation.

Soils: Predominant soils are Marlette Loam and Fox Sandy Loam.

Water: The site is not within any regulated floodplains.

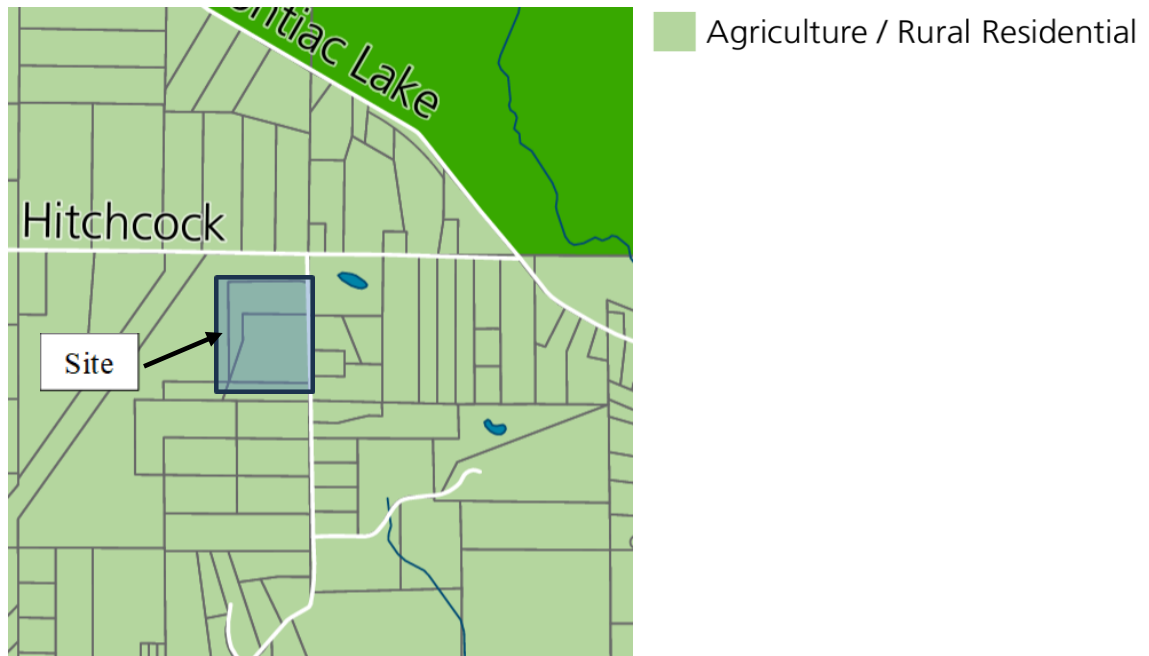
Items to be addressed: None.

MASTER PLAN

The Township’s Master Plan is a comprehensive document that includes many elements that should be considered when determining rezoning requests. Pertinent sections to review include future land uses, as well as goals, objectives and strategies of the site(s) proposed for rezoning.

Future Land Use

Under the current Master Plan, the site is located in the Agricultural / Rural Residential district which is shown below:



We note that the Master Plan anticipates the site being a uniform designation. The description and example of uses (not an exhaustive list) for the Agricultural / Rural Residential District are:

Description: *“Maintains agricultural land and rural living through large lots and limited residential development. Subdivision residential development is discouraged”*

Example of Uses: *“Large-lot single family, agriculture, farm-stands, cider mills”*

Lot sizes are not prescribed in the Master Plan for future land use designations however the corresponding zoning districts associated with Agricultural / Rural Residential district are AG and SF.

No conflict exists with the Master Plan in the consideration of this parcel being rezoned to Suburban Farm.

Items to be addressed: None.

DEVELOPMENT POTENTIAL

If rezoned, the lot will allow for low density single family residential and accessory improvements as well as any other of the permitted uses listed earlier in this report and noted in Section 3.1.2 of the Zoning Ordinance. If the parcel is subdivided into separate lots conforming to SF standards, a maximum of five (5) lots could be created and permit the same improvements / uses as referenced above. Accounting for current market conditions and infrastructure, the likely use for the lot(s) would be single family residential homes.

REZONING STANDARDS

Section 7.9 of the White Lake Township Zoning Ordinance states that all proposed amendments to the provisions of the Ordinance or the Official Zoning Map shall be referred to the Planning Commission for public hearing and recommendation to the Township Board, prior to consideration thereof by the Township Board.

Section 7.13 of the White Lake Township Zoning Ordinance outlines the criteria the Planning Commission and Township Board are to utilize when assessing any petition for an amendment to the Official Zoning Map. Below is a review of the materials provided by the applicant as they relate to the proposed rezoning:

- A. *Consistency with the goals, policies and future land use map of the White Lake Township Master Plan, including any subarea or corridor studies. If conditions have changed since the Master Plan was adopted, the consistency with recent development trends in the area.*

CWA Comment: The Future Land Use Map from the Master Plan designates the subject site in the Agricultural / Rural Residential category, which aligns with the proposed SF zoning district and uses.

- B. *Compatibility of the site's physical, geological, hydrological and other environmental features with the host of uses permitted in the proposed zoning district.*

CWA Comment: The SF designation is compatible with the current natural environment as well as the low density development permitted in the zone.

- C. *Evidence the applicant cannot receive a reasonable return on investment through developing the property with one (1) of the uses permitted under the current zoning.*

CWA Comment: No such evidence addressing this criterion was submitted with the application. We note that selling or developing lots with multiple zoning designations can be challenging based on the nature of the proposed use.

- D. *The compatibility of all the potential uses allowed in the proposed zoning district with surrounding uses and zoning in terms of land suitability, impacts on the environment, density, nature of use, traffic impacts, aesthetics, infrastructure and potential influence on property values.*

CWA Comment: No use is proposed as part of the rezoning request. In the event a use is proposed, the permitted and special land uses in the SF district are compatible with the surrounding uses and the nature of the uses anticipated in the Township Master Plan. Any use other than SF residential would require the submission of a site plan application to ensure zoning standards are met. Only the Township Assessor may provide comment on property values.

- E. *The capacity of Township utilities and services sufficient to accommodate the uses permitted in the requested district without compromising the "health, safety and welfare" of the Township.*

CWA Comment: The site is not serviced by public water and sanitary sewer. No additional Township services are anticipated as a result of rezoning to SF. We defer to the Director of Public Services and Township Engineering Consultant on any concerns with infrastructure or public safety services.

- F. *The capability of the street system to safely and efficiently accommodate the expected traffic generated by uses permitted in the requested zoning district.*

CWA Comment: Pursuant to Section 6.3.E of the zoning ordinance, the requirement for submittal of a rezoning traffic study was waived by the Community Development Department. Future requests for development, may require submittal of a traffic analysis.

- G. *The apparent demand for the types of uses permitted in the requested zoning district in relation to the amount of land in the township currently zoned and available to accommodate the demand.*

CWA Comment: Evidence of the demand in the Township for additional SF zoned property has not been submitted. However, the location is appropriate for property zoned as such, given the traffic, residential units, neighboring uses and general developmental density in the area.

- H. *The boundaries of the requested rezoning district are reasonable in relationship to its surroundings, and construction on the site will be able to meet the dimensional regulations for the zoning district listed in the Schedule of Regulations.*

CWA Comment: Construction on the site is not proposed at this time. However, rezoning to SF to establish uniform development standards for the site is preferable. Factors that may impact future development of the site, such as, but not limited to, soils, topography, site layout, stormwater/drainage, and utilities would be considered at the time of a development proposal.

- I. *The requested zoning district is considered to be more appropriate from the township's perspective than another zoning district.*

CWA Comment: The uses and development standards allowed in the SF district are appropriate for the site and are complementary to the AG district. A denser residential district proposal would be less appropriate for the site.

- J. *If the request is for a specific use, is rezoning the land more appropriate than amending the list of permitted or special land uses in the current zoning district to allow the use?*

CWA Comment: The intent of the request is to apply uniform zoning so the lot can be divided. If approved, the permitted uses for the divided lots are conducive with the SF zoning designation.

- K. *The requested rezoning will not create an isolated and unplanned spot zone.*

CWA Comment: No spot zoning is proposed. The surrounding and nearby areas are zoned AG, SF and ROS (Recreation and Open Space).

- L. *The request has not previously been submitted within the past one (1) year, unless conditions have changed or new information has been provided.*

CWA Comment: This request is a new application.

- M. *An offer of conditions submitted as part of a conditional rezoning request shall bear a reasonable and rational relationship to the property for which rezoning is requested.*

CWA Comment: No conditions were offered in the application.

N. Other factors deemed appropriate by the Planning Commission and Township Board.

CWA Comment: The Planning Commission and Township Board may also consider other factors which may be relevant to the rezoning request.

Items to be addressed: Any concerns from Township Engineering and Public Services should be addressed.

RECOMONDATION

The proposed rezoning is compatible with both the existing and future land uses/zoning, consistent with the Master Plan, and applies uniform zoning for the parcel. Pending any items needing clarification or resolution by the Township Engineer and Public Service departments, we recommend the proposed rezoning.

Respectfully,



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

CHARTER TOWNSHIP OF WHITE LAKE
COMMUNITY DEVELOPMENT DEPARTMENT
7525 Highland Road, White Lake, Michigan 48383-2900
248-698-3300, Ext. 163

APPLICATION TO REZONE PROPERTY

Date: 5/28/24

Applicant: Lisa Gulda

Address: 5033 Thicket Lane, Clarkston, MI 48346

Phone No.: 248-904-8571 Fax No.: _____

E-mail: lisagulda@yahoo.com

Applicant's Interest in Property: Owner

Property Owner: SAME

Owner's Address: _____

Phone No.: _____ Fax No.: _____

Location of Property: Haley Rd - Vacant

Sidwell No(s): 12-16-200-030

Total area of change: _____ acres

I, the undersigned (owner, attorney, or option holder) hereby request that this property now classified as AG District, be reclassified as SF District.

Applicant's Signature: Lisa Gulda
(If owner does not sign application, attach letter signed by owner, requesting zoning change.)

Please Print Name: Lisa Gulda

Required Attachments:

- 1. Legal description of the property proposed to be rezoned.
- 2. Location map
- 3. Rezoning sign location map
- _____ 4. Statement indicating why change is requested
- _____ 5. Review fee (check payable to the Charter Township of White Lake)

C E R T I F I C A T E O F S U R V E Y

LEGAL DESCRIPTION-PARCEL 1:

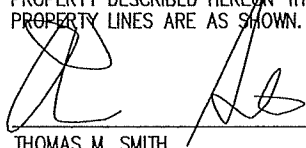
PART OF THE NORTHEAST ¼ OF SECTION 16, T3N., R8E., WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT LOCATED ON THE EAST LINE OF SECTION 16, DISTANT S 01°00'00"E, 253.75 FEET FROM THE NORTHEAST SECTION CORNER; THENCE CONTINUING S 01°00'00" E, ALONG SAID EAST LINE, 900.00 FEET; THENCE S 89°58'09" W, 720.00 FEET; THENCE N 01°00'00" W, 900.00 FEET; THENCE N 88°35'15" E, 640.99 FEET; THENCE S 78°59'11" E, 80.69 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC IN HALEY ROAD. PARCEL CONTAINS 15.00 ACRES OF LAND.

LEGAL DESCRIPTION-PARCEL 2:

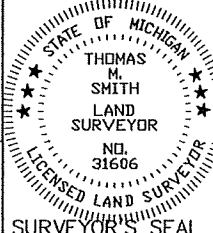
PART OF THE NORTHEAST ¼ OF SECTION 16, T3N., R8E., WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT THE NORTHEAST CORNER OF SECTION 16; THENCE S 01°00'00"E, ALONG THE EAST LINE OF SAID SECTION 16, 253.75 FEET; THENCE N 78°59'11" W, 80.69 FEET; THENCE S 88°35'15" W, 640.99 FEET; THENCE S 01°00'00" E, 900.00 FEET; THENCE S 89°58'09" W, 587.05 FEET; THENCE S 01°09'58" E, 166.70 FEET; THENCE S 89°58'09" W, 258.77 FEET; THENCE S 01°00'25" E, 673.44 FEET; THENCE N 89°58'09" E, 258.77 FEET; THENCE S 01°00'25" E, 656.95 FEET TO THE EAST-WEST ¼ LINE OF SAID SECTION 16; THENCE S 89°31'57" W, ALONG SAID EAST-WEST ¼ LINE, 1314.16 FEET TO THE CENTER OF SECTION 16; THENCE N 00°37'01" W, ALONG THE NORTH-SOUTH ¼ LINE, 256.58 FEET; THENCE N 34°44'11" E, 2930.34 FEET TO THE NORTH LINE OF SAID SECTION 16 AND THE CENTERLINE OF HITCHCOCK ROAD(66 FT WD); THENCE S 89°49'19" E, ALONG SAID NORTH LINE, 907.31 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC IN HITCHCOCK & HALEY ROADS(66 FT WD). PARCEL CONTAINS 48.48 ACRES OF LAND.

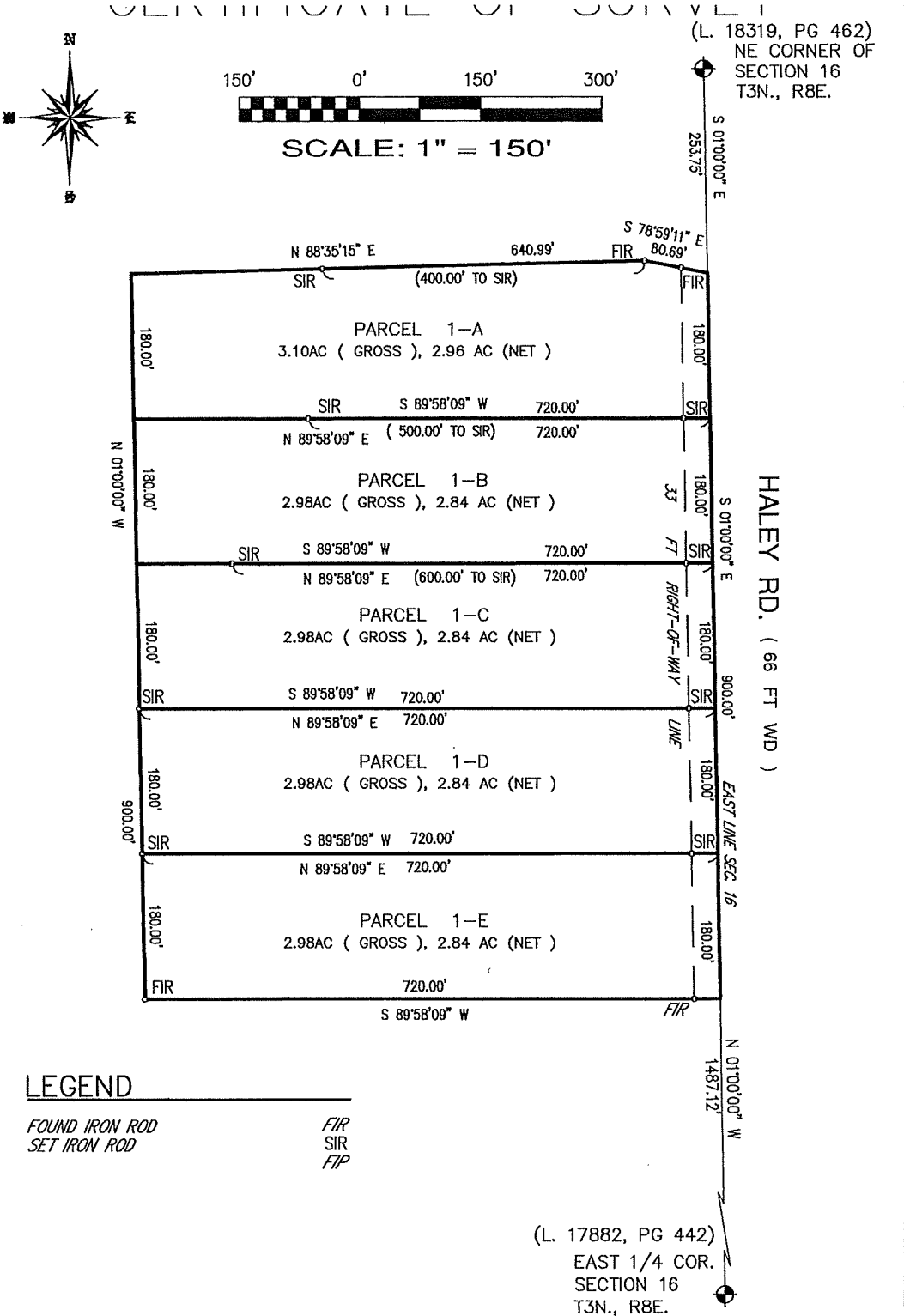
SURVEYORS CERTIFICATE:

I HEREBY CERTIFY THAT I HAVE SURVEYED THE PROPERTY DESCRIBED HEREON THAT THE PROPERTY LINES ARE AS SHOWN.



THOMAS M. SMITH
R.L.S. No. 31606

ISSUED FOR:	REV'D BY:	ISSUED FOR:	REV'D BY:
THOMAS M. SMITH P.S. PROFESSIONAL LAND SURVEYOR			
7559 OLDE STURBRIDGE TRAIL tsmith7559@yahoo.com CLARKSTON, MICHIGAN 48348 PHONE: (248) 625-3276			
DRAWN BY TMS	JOB No. 20-171	DESCRIPTION	
DATE 06-30-20 SHEET No. 3 OF 3 SCALE N/A		PT SEC 16, T3N., R8E WHITE LAKE TWP., MI	
		SURVEYOR'S SEAL	



LEGEND

FOUND IRON ROD	FIR
SET IRON ROD	SIR
	FIP

(L. 17882, PG 442)
 EAST 1/4 COR.
 SECTION 16
 T3N., R8E.

ISSUED FOR:	REV'D BY:	ISSUED FOR:	REV'D BY:
THOMAS M. SMITH P.S. PROFESSIONAL LAND SURVEYOR			
7559 OLDE STURBRIDGE TRAIL tsmith7559@yahoo.com CLARKSTON, MICHIGAN 48348 PHONE: (248) 625-3276			
DRAWN BY TMS	JOB No. 20-171	DESCRIPTION PT SEC 16, T3N., R8E WHITE LAKE TWP., MI	
DATE 03-13-22 SHEET No. 1 OF 2 SCALE 1"=150'		SURVEYOR'S SEAL	

DECLARATION OF SURVEY

LEGAL DESCRIPTION-PARCEL 1-A:

PART OF THE NORTHEAST $\frac{1}{4}$ OF SECTION 16, T3N., R. 8E., WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT LOCATED ON THE EAST LINE OF SAID SECTION 16, DISTANT S 01'00'00" E, 253.75 FEET FROM THE NORTHEAST CORNER OF SAID SECTION 16; THENCE CONTINUING S 01'00'00" E, ALONG SAID EAST LINE, 180.00 FEET; THENCE S 89'58'09" W, 720.00 FEET; THENCE N 01'00'00" W, 180.00 FEET; THENCE N 88'35'15" E, 640.99 FEET; THENCE S 78'59'11" E, 80.67 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC IN THE EAST 33 FEET FOR ROAD PURPOSES. PARCEL CONTAINS 3.10 ACRES OF LAND.

LEGAL DESCRIPTION-PARCEL 1-B:

PART OF THE NORTHEAST $\frac{1}{4}$ OF SECTION 16, T3N., R. 8E., WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT LOCATED ON THE EAST LINE OF SAID SECTION 16, DISTANT S 01'00'00" E, 433.75 FEET FROM THE NORTHEAST CORNER OF SAID SECTION 16; THENCE CONTINUING S 01'00'00" E, ALONG SAID EAST LINE, 180.00 FEET; THENCE S 89'58'09" W, 720.00 FEET; THENCE N 01'00'00" W, 180.00 FEET; THENCE N 89'58'09" E, 720.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC IN THE EAST 33 FEET FOR ROAD PURPOSES. PARCEL CONTAINS 2.98 ACRES OF LAND.

LEGAL DESCRIPTION-PARCEL 1-C:

PART OF THE NORTHEAST $\frac{1}{4}$ OF SECTION 16, T3N., R. 8E., WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT LOCATED ON THE EAST LINE OF SAID SECTION 16, DISTANT S 01'00'00" E, 613.75 FEET FROM THE NORTHEAST CORNER OF SAID SECTION 16; THENCE CONTINUING S 01'00'00" E, ALONG SAID EAST LINE, 180.00 FEET; THENCE S 89'58'09" W, 720.00 FEET; THENCE N 01'00'00" W, 180.00 FEET; THENCE N 89'58'09" E, 720.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC IN THE EAST 33 FEET FOR ROAD PURPOSES. PARCEL CONTAINS 2.98 ACRES OF LAND.

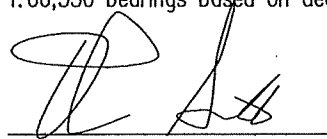
LEGAL DESCRIPTION-PARCEL 1-D:

PART OF THE NORTHEAST $\frac{1}{4}$ OF SECTION 16, T3N., R. 8E., WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT LOCATED ON THE EAST LINE OF SAID SECTION 16, DISTANT S 01'00'00" E, 793.75 FEET FROM THE NORTHEAST CORNER OF SAID SECTION 16; THENCE CONTINUING S 01'00'00" E, ALONG SAID EAST LINE, 180.00 FEET; THENCE S 89'58'09" W, 720.00 FEET; THENCE N 01'00'00" W, 180.00 FEET; THENCE N 89'58'09" E, 720.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC IN THE EAST 33 FEET FOR ROAD PURPOSES. PARCEL CONTAINS 2.98 ACRES OF LAND.

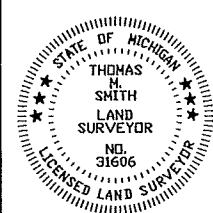
LEGAL DESCRIPTION-PARCEL 1-E:

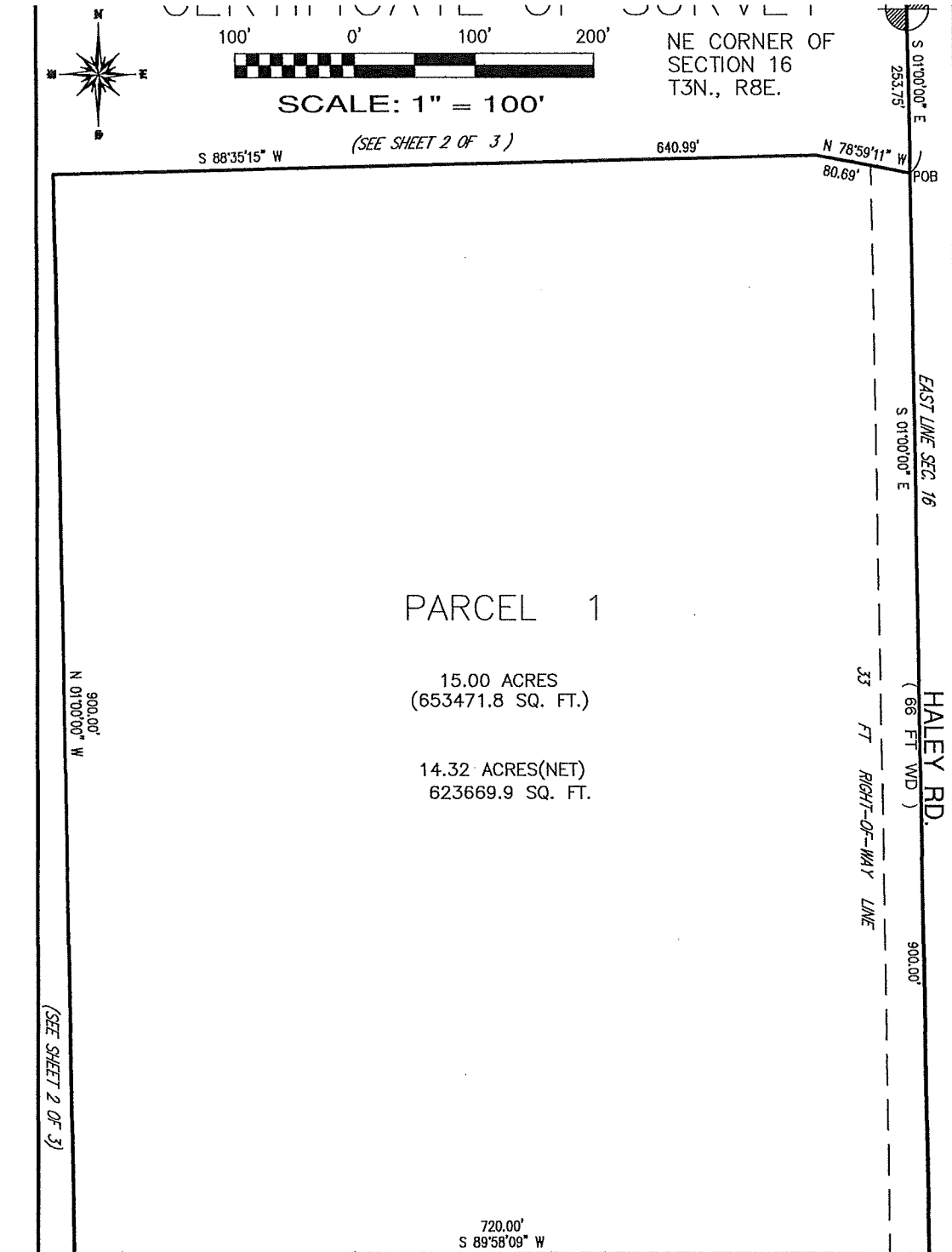
PART OF THE NORTHEAST $\frac{1}{4}$ OF SECTION 16, T3N., R. 8E., WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT A POINT LOCATED ON THE EAST LINE OF SAID SECTION 16, DISTANT S 01'00'00" E, 973.75 FEET FROM THE NORTHEAST CORNER OF SAID SECTION 16; THENCE CONTINUING S 01'00'00" E, ALONG SAID EAST LINE, 180.00 FEET; THENCE S 89'58'09" W, 720.00 FEET; THENCE N 01'00'00" W, 180.00 FEET; THENCE N 89'58'09" E, 720.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO THE RIGHTS OF THE PUBLIC IN THE EAST 33 FEET FOR ROAD PURPOSES. PARCEL CONTAINS 2.98 ACRES OF LAND.

WE HEREBY CERTIFY that we have surveyed the property herein described and that we have placed marker irons at the corners of the parcel or as indicated in the above sketch and that we have complied with the survey requirements of Public Act 132 of 1970, as amended. Error of closure 1:66,550 bearings based on deed of record.



THOMAS M SMITH, PS #31606

ISSUED FOR:	REV'D BY:	ISSUED FOR:	REV'D BY:
THOMAS M. SMITH P.S. PROFESSIONAL LAND SURVEYOR			
7559 OLDE STURBRIDGE TRAIL tsmith7559@yahoo.com CLARKSTON, MICHIGAN 48348 PHONE: (248) 625-3276			
DRAWN BY TMS	JOB No. 20-171	DESCRIPTION	
DATE 03-13-22 SHEET No. 2 OF 2 SCALE N/A		PT SEC 16, T3N., R8E WHITE LAKE TWP., MI	
			
		SURVEYOR'S SEAL	



PARCEL 1

15.00 ACRES
(653471.8 SQ. FT.)

14.32 ACRES (NET)
623669.9 SQ. FT.

ISSUED FOR:	REV'D BY:	ISSUED FOR:	REV'D BY:
THOMAS M. SMITH P.S. PROFESSIONAL LAND SURVEYOR			
7559 OLDE STURBRIDGE TRAIL tsmith7559@yahoo.com CLARKSTON, MICHIGAN 48348 PHONE: (248) 625-3276			
DRAWN BY TMS	JOB No. 20-171	DESCRIPTION	
DATE 06-30-20 SHEET No. 1 OF 3 SCALE 1"=100'		PT SEC 16, T3N., R8E WHITE LAKE TWP., MI	

WHITE LAKE TOWNSHIP NOTICE OF PUBLIC HEARING

Item A.

Notice is hereby given the Planning Commission of the Cha... p of White Lake will hold a public hearing on **Thursday, June 20, 2024 at 6:30 P.M.** at the Township Annex, 7527 Highland Road, White Lake, Michigan 48383, to consider the following changes to the zoning map:

Property identified as Parcel Number 12-16-200-030, located south of Hitchcock Road, on the west side of Haley Road, consisting of approximately 15 acres.

Applicant requests to rezone the parcel from AG (Agricultural) to SF (Suburban Farms) or any other appropriate zoning district.

Persons interested are requested to be present. Pertinent information relative to this rezoning request is on file at the Community Development Department and may be examined at any time during the Township's summer business hours; Monday through Thursday, 8:00 a.m. through 5:00 p.m., and Friday from 8:00 a.m. through 12:00 p.m., (excluding holidays). Persons interested may visit the Community Development Department, contact the Community Development Department by telephone at 248-698-3300, ext. 5, or attend the Public Hearing on the date specified. Written comments are also welcome at 7525 Highland Road, White Lake, MI 48383. Individuals with disabilities requiring auxiliary aids or services should contact the Clerk's Office at least 5 days before the hearing.

Sean O'Neil, AICP
Community Development Director

23

Director's Report

Project Name: West Valley
 Description: Final site plan re-approval
 Date on Agenda this packet pertains to: June 20, 2024

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

Contact	Consultants & Departments	Approval	Denial	Approved w/Conditions	Other	Comments
Sean O'Neil	Planning Director	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Subject to all staff and consultant review comments being addressed.
DLZ	Engineering Consultant	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See letter dated 06/12/2024
Matteo Passalacqua	Carlisle Wortman Associates, Inc	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See letter dated 06/10/2024.
John Holland	WLT Fire Chief	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See letter dated 06/10/2024.



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EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

June 12, 2024

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

RE: West Valley – Final Site Plan and Final Engineering Plan – 9th Review

DLZ # 1845-0029-00

Dear Mr. O' Neil,

Our office has reviewed the above-mentioned revised plans prepared by Seiber, Keast, Lehner Engineering and dated June 3, 2024. These plans were reviewed for conformance with the Township Engineering Design Standards. Note that the plans have been modified to coordinate utility access and emergency access with the proposed Comfort Care development. We offer the following comments for your consideration:

Please note that comments from our April 10, 2024 review are in *italics*. Responses to those comments are in **bold**. New comments are in standard typeface.

The following comment from our Preliminary Site Plan review letter dated March 11, 2019 will also need to be addressed:

1. *We defer to the Township Fire Department regarding access however we will note the proposed stub for future secondary emergency access appears as if it will burden parcel 12-36-176-002. Comment addressed; the above referenced stub remains however the applicant has provided an additional fire lane to the south west. We defer to the Fire Department on the fire lane configuration; however, we note some movements may be challenging for the larger fire vehicles. The Fire Department may want to ask for the turning radius of the largest fire trucks to be overlaid on the plans sheets to determine if the provided fire lane is sufficient.* **We note that the fire lane that was proposed near the southwest corner of the site has been removed from the plan and a paved emergency access connection to the Comfort Care site to the north is now shown. The proposed grading and coordination with the grading and alignment shown on the Comfort Care site appear acceptable.**

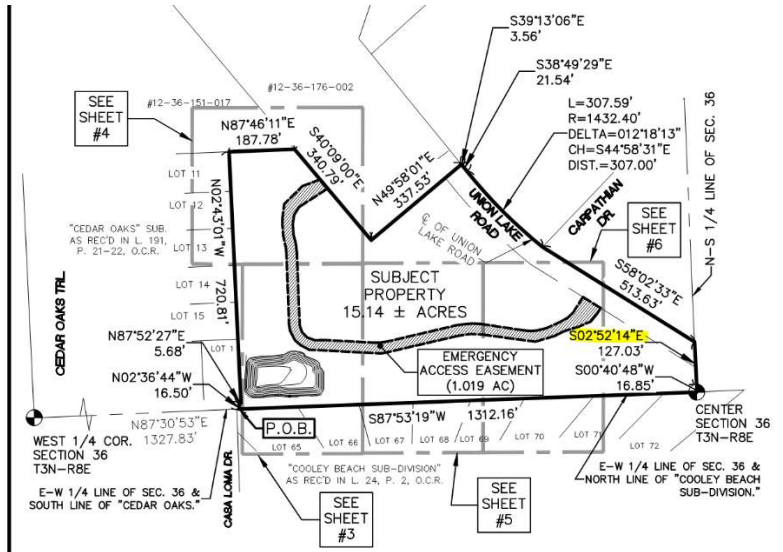


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We note that approval of West Valley is dependent on the emergency access being provided on the Comfort Care property. DLZ recommends that the secondary access to the south would be required as a condition of approval should the Comfort care facility not be constructed and available for secondary access use. The Township should consider if an escrow for construction of this access drive would be appropriate. Design engineer has stated that the Township Fire Department is accepting of the internal road network for fire truck access subject to demonstration that the internal West Valley street network can provide for a standard 40' long fire truck. A sheet demonstrating this was added to the plan set. An emergency vehicle access easement has also been provided and our office has reviewed the easement description for closure and have the following comments. We note that our previous comment above regarding the secondary access to the south and escrow remain.

T3N, R8E, SEC 36 PART OF SE 1/4 OF NW 1/4 BEG AT PT DIST N 87-30-53 E 1327.83 FT & FROM W 1/4 COR, TH N 02-36-44 16.50 FT, TH N 87-52-27 E 5.68 FT, TH N 02-43-01 W 720.81 FT, TH N 87-46-11 E 187.78 FT, TH S 40-09-00 E 340.79 FT, TH N 49-58-01 E 337.53 FT, TH S 39-13-06 E 3.56 FT, TH S 38-49-29 E 21.54 FT, TH ALG CURVE TO LEFT, RAD 1432.40 FT, CHORD BEARS S 44-58-31 E 307 FT, DIST OF 307.59 FT, TH S 58-02-33 E 513.63 FT, TH S 02-52-24 E 127.03 FT, TH S 00-40-48 W 16.85 FT, TH S 87-53-19 W 1312.16 FT TO BEG 15.14 A CORR 10-11-18





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The easement fits within the subject property, easement closes, and all the bearings and descriptions as described match the exhibit, with the exception of the one call above. To ensure access, the descriptions and exhibits should call out and qualify to the right of way line for Union Lake Road.

FSP/FEP Comments-

General

1. *Storm sewer, watermain, detention basin, and fire access lane, and a portion of decks are all proposed within the existing Michigan Bell easement on the south side of the property. Provide supporting documentation that these activities are allowable within this easement. **Comment remains as a notation. Applicant has provided a legal opinion from their attorney (letter dated March 24, 2021, from Dykema Gossett PLLC) supporting the proposed activities are allowable within the easement.***

Grading/Paving

1. *The grading has been reviewed for general conformance with Township standards. A more detailed review will be provided at the time of individual building construction plot plan submittal. **Comment remains as a notation.***
2. *Sheet 26- The end sidewalk at the eastern end of the property should end short of where shown; the sidewalk end location and grades shall coordinate with that shown on Sheet C801 of the Comfort Care Plan. **Comment partially addressed. The end sidewalk location along the eastern end of the property has not been revised. The sidewalk fronting Union Lake Road is now shown as 6' in width instead of 8' in width. This new width is acceptable by the Township; however, please update the following plan sheets: 1) Sheet 3- Proposed Improvements- Note 4- Change width from 8' to 6'; 2) Sheets 3,4,6, LS-2, and LS-3- Label on these sheets still notes 8' width.***

Sanitary Sewer

1. *The plans show a 20-foot-wide sanitary sewer easement which is acceptable. Easement exhibits shall be provided for review as attachments to the Township standard conveyance document. Easement exhibits have been provided for review; a review letter was sent out on 3-31-2021 under separate cover. **Comment addressed. Our easement review letter dated July 8, 2021 indicates that all of our comments regarding the sanitary sewer easement exhibit have been addressed. Comment remains as a notation.***



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2. *Sheet 14- Pump Station Detail will be required to be updated per OCWRC comments (reference emails from OCWRC and the design engineer dated November 29, 2023 and December 5, 2023). Comment addressed. Pump Station Detail has been updated by the design engineer per OCWRC comments and SCADA control panel details sheets have now been added to the plans. Design engineer is currently waiting for confirmation of acceptance of revisions by OCWRC. **OCWRC has approved the plans for both the gravity sewer and the pump station. Submittal to EGLE is in process.***

Watermain

1. *The plans show a 20-foot-wide watermain easement which is acceptable. Easement exhibits shall be provided for review as attachments to the Township standard conveyance document. Easement exhibits have been provided for review; a review letter was sent out on 3-31-2021 under separate cover. Comment addressed. Our easement review letter dated August 20, 2021, indicates that all of our comments regarding the watermain easement exhibit have been addressed. **Comment remains as a notation.***
2. *We continue to note that the watermain connection to the north is dependent on construction of the watermain for the Comfort Care site. We defer to the Township with respect requiring an escrow to ensure that a watermain connection for this area shall be established in the event that the Comfort Care development does not proceed forward. **Comment remains as a notation.***

Stormwater Management

1. *Due to the complexity of the storm water management system for this development as it now accommodates Comfort Care discharge, Lakepoint discharge, as well as the stormwater treatment for the West valley development DLZ will be reaching out a meeting to discuss the stormwater calculations as well as easement/maintenance agreement requirements. There is also confusion regarding the intent for receiving discharge from Comfort Care. The January 23, 2023 transmittal letter indicates that additional capacity was provided in the West Valley Storm System to accommodate the restricted flow from the Comfort Care Detention Basin however it only looks like this discharge will be received if the Comfort Care basin reaches overflow conditions, essentially making it a retention system without a positive outlet. Comment addressed. DLZ, Seiber Keast, and Township DPS and Planning personnel met to discuss these items for clarification. An additional plan sheet detailing the overall stormwater management system has been added to the plan set. **Comment remains as a notation.***



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2. *A Storm Water Management Facilities Easement, Maintenance Agreement and Lien document will need to be completed and exhibits provided for review. Easement exhibits have been provided for review; a review letter was sent out on 3-31-2021 under separate cover. Our August 20, 2021 easement review letter included the comment: 'Please ensure easement is recorded for benefit of Lake Pointe. This comment should be reviewed by the Township Attorney and be addressed on the Standard Storm Water Management Facilities Easement, Maintenance Agreement and Lien to enable the stormwater conveyance from Lake Pointe through West Valley without issues.'*

With the latest revision, this comment needs to be expanded to also include reference to the Comfort Care development as the storm overflow from that development will discharge overland onto the West Valley property. Currently the easement exhibit metes and bounds description and the drawing dated April 2, 2021 do not show this easement. Comment remains.

A separate easement description and exhibit have now been provided for the overland stormwater discharge onto the West Valley development from the adjacent proposed Comfort Care development. The legal description of the easement closes; however, a couple of calls shall require revision. We have attached the document with the areas highlighted that will require revision. Comment addressed. Calls requiring revision have been updated.

We continue to defer to the Township Attorney regarding the storm water management agreement and language pertaining to conveyance of storm water from the Lake Pointe and Comfort Care developments through the West Valley development.

3. *Show the additional off-site drainage path for the overland flow along Casa Loma Drive. Plan Sheet 5 shows this discharge flowing onto casa Loma Drive, but it is not clear where it will go from there. Comment remains outstanding. Although a few additional directional flow arrows have been provided to demonstrate the flow in Casa Loma Drive, please provide and clearly show the flow path down Casa Loma Drive as well as Cedar Island Drive the overland flow shall ultimately go. Comment addressed. Emergency overflow route down Casa Loma Drive is now shown on plan. **Comment remains as a notation.***
4. *Our office met with the design engineer and Township Planning staff at the Township offices in approximately July of this year to discuss various stormwater management issues associated with this project. One item of discussion was regarding the previously approved wetland permit from EGLE as the proposed detention basin restricted discharge is conveyed via storm sewer along Cedar Island Road and discharged to a low area approximately 700' to the west. Historically, this area has been subject to flooding. The design engineer's environmental consultant has rendered an opinion dated August 14, 2023 that a wetland permit for the discharge from West Valley would not be required from EGLE but that the ultimate question as to jurisdiction is with EGLE. We note that a Part 303 permit has been previously issued by EGLE for this discharge, however the question of whether this*



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permit would require modification due to the additional storm discharge from potential overland flows from West Valley and Comfort Care (through West Valley) would be subject to EGLE interpretation. Our office recommends that verification of wetland status as well as the consideration of potential additional flows to this low area be secured from EGLE as part of the site plan approval process. As a part of this verification, our office has reached out to EGLE for a decision and are currently awaiting a response. Since storm water flows from the Lake Pointe and Comfort Care developments flow through West Valley's storm management system to West Valley's ultimate outlet (wetlands to the west of West Valley), we are requesting confirmation from EGLE that they are aware of Lake Pointe's and Comfort Care's stormwater contributions to West Valley's ultimate stormwater outlet and that EGLE has evaluated and approves of this. This confirmation shall be required prior to final engineering approval for West Valley. We are currently awaiting a basin outflow analysis from the design engineer but note that the applicant has a permit for the discharge of the West Valley development from EGLE, the concern is in regard to the addition of the Lakepoint development and should not impede the West Valley development.

Required Permits and Approvals

The following permits and approvals will be required:

1. Permit from the Road Commission for all work within the Union Lake Road, Casa Loma Drive, and Cedar Island Road Right-Of-Ways. **Paving and utilities submitted to RCOC. Currently under review.**
2. SESC permit from OCWRC. **Permit # 001074-2023-CO issued April 2, 2024.**
3. A Notice of Coverage for Stormwater Discharge under the NPDES program as administered by the MDEQ is required. **Per design, engineer, this will be acquired after all other permits are secured.**
4. Watermain permit from EGLE. **EGLE Permit #ACT-291560 was issued on 6/5/2024**
5. Sanitary sewer permit from OCWRC including for the pump station. **OCWRC Permit # 0121-2021 was approved 6/4/2024 (Permit Fee & Contractor Bond apply).**
6. Sanitary sewer permit from EGLE. **Submittal to EGLE is in process.**
7. Executed Stormwater Maintenance Agreement and revised exhibit. **Additional exhibit provided for Comfort Care retention basin overland flow. Please reference review comments for required revisions and request of Township Attorney opinion regarding agreement language. Exhibit revisions that were required by DLZ have been reviewed and have been found acceptable. Reference Comment 2 under 'Stormwater Management' above regarding Township Attorney opinion regarding agreement.**



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- 8. Easement Exhibits for Sanitary Sewer and Watermain. **Received, reviewed, and recommended for approval by DLZ.**
- 9. An off-site agreement will be required for the proposed driveway paving adjacent to Cedar Island Road near the southwest corner of the site.

Recommendation

DLZ notes that the revisions to the plan set tie completion and ordinance compliance for this development to the Comfort Care development in terms of emergency access and watermain looping. There are a few very minor items referenced above that will need to be cleared up ahead of the Pre-Construction Meeting for the development, DLZ recommends approval subject to the completion of these outstanding items.

Please contact our office should you have any questions.

Sincerely,

DLZ Michigan

Michael Leuffgen, P.E.
Department Manager

Victoria Loemker, P.E.
Senior Engineer

Cc: Hannah Kennedy- Galley, Community Development, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
Nick Spencer, Building Official, White Lake Township *via email*
John Holland, Fire Marshall, White Lake Township, *via email*
Lisa Hamameh, Esq., RSJA Law

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Carlisle | Wortman
ASSOCIATES, INC.

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

TO: Sean O’Neil, Community Development Director
FROM: Matteo Passalacqua, Associate Planner
DATE: June 10, 2024
RE: West Valley – Final Site Plan Backcheck #6

Mr. O’ Neil,

We have conducted a review of the memo titled “West Valley – Final Site Plan Backcheck #6”, dated April 2nd, 2024, as it relates to the West Lake development site plan dated August 23rd, 2019 and revised June 3rd, 2024. Below are our comments pertaining to the most recent items requiring attention from the applicant. Comments are listed in the order they were presented.

1. Revision dates for Sheets IRR 1 through 6 have been corrected to reflect May 29th, 2024.
2. Sheet LS 5 has a note stating “*All site irrigation systems shall include a rain sensor or similar measure to ensure irrigation down not occur during or shortly after precipitation events.*” It is likely “*down*” is an error and is intended to state “*does*”.
3. We note that Sheets LS 2 and 3 indicate that trees shall not be planted closer than four feet to a property line along the west and south property lines. We did not observe this note on the landscape sheets indicating such for the northern or eastern property lines.
4. Sheet LS 4 has a note stating “*Trees identified for protection during construction and the means of protection shall be identified prior to final site plan. No construction shall occur until tree protection has been installed and approved by the Community Development Director.*”
5. The Plant Material Lists on Sheet LS 4 and 5 do not contain any type of pine tree.
6. Sheets LS 1 through 3 have notes indicating

Tree cluster/grouping planting notes:

- *1. typical 3 to 4 evergreen or canopy tree cluster grouping per same species*

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

- 2. maximum of 8-evergreen tree cluster grouping per same species provided
- 3. maximum of 5-canopy tree cluster grouping per same species provided

It is unclear if this addresses the intent of the ordinance requirements.


7. A note on Sheet LS 4 states “Mulch 4” depth with **double shredded** hardwood bark natural in color. Leave 3” circle of bare soil at base of tree trunk to expose root flare.”
8. Exterior construction materials have been indicated on Sheets A 201 and A 203. Materials listed include brick, asphalt shingles, horizontal siding and shake siding. Finish samples are provided on Sheet AS-1.
9. No sign lighting is indicated on Sheet LS 4. No lighting cut sheet is provided within the revised site plan.

ITEMS TO BE ADDRESSED

Based on the most current site plan revision dated May 14, 2024, the additional information is required for approval:

1. The note “trees shall not be planted closer than four feet to a property line” shall be added to the northern and eastern property lines.
2. The note “No more than two planted trees in a row shall be of the same species” should be added to Sheets LS 1 though 3.

Respectfully,



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



Fire Department
Charter Township of White Lake

Site / Construction Plan Review

To: Sean O’Neil, Planning Department Director

Date: 06/06/24

Project: West Valley

File #: N/A

Date on Plans: 02/13/24 (revision)

The Fire Department has the following comments with regard to the revised site plan submitted for the project known as West Valley:

1. This project has satisfied the Fire Department requirements as submitted. As a general note, we do request that the future “Secondary Access Drive” is designed to accommodate the turn radius requirements as shown on sheet 28.

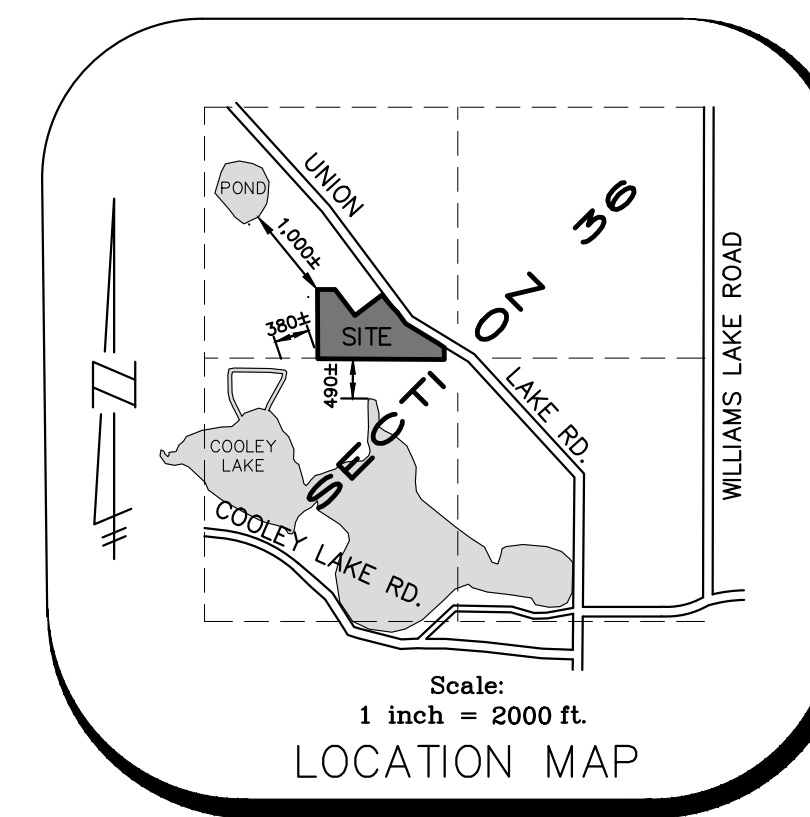
John Holland
Fire Chief
Charter Township of White Lake
(248) 698-3993
jholland@whitelaketwp.com

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

ENGINEERING CONSTRUCTION PLANS FOR WEST VALLEY

MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, T 3 NORTH, R 8 EAST, WHITE LAKE TOWNSHIP,
OAKLAND COUNTY, MICHIGAN

APPLICANT:
JMF WHITE LAKE, L.L.C.
1700 WEST BIG BEAVER ROAD, SUITE 120
TROY, MI 48084
PHONE: 248-602-2220



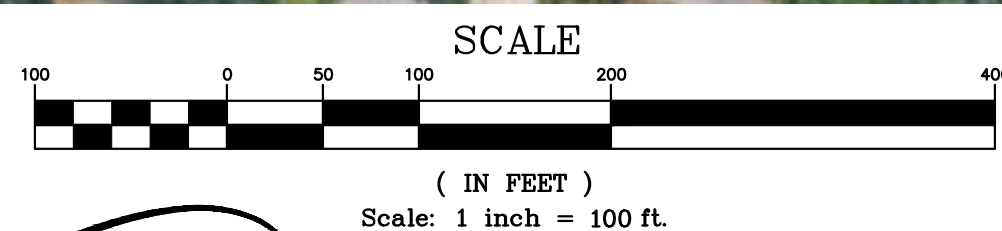
LEGAL DESCRIPTION

THE LAND REFERRED TO IN THIS COMMITMENT IS DESCRIBED AS FOLLOWS: TOWNSHIP OF WHITE LAKE, COUNTY OF OAKLAND, STATE OF MICHIGAN:
PART OF THE SOUTHEAST 1/4 OF NORTHWEST 1/4 OF SECTION 36, TOWN 3 NORTH, RANGE 8 EAST, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 36; THENCE NORTH 87 DEGREES 30 MINUTES 53 SECONDS EAST 1327.83 FEET ALONG THE EAST-WEST 1/4 LINE OF SAID SECTION 36 AND THE SOUTH LINE OF "CEDAR OAKS", A SUBDIVISION AS RECORDED IN LIBER 191 OF PLATS, PAGES 21-22 TO THE POINT OF BEGINNING; THENCE ALONG THE EASTERLY LINE OF SAID "CEDAR OAKS" THE FOLLOWING THREE COURSES, 1) NORTH 02 DEGREES 36 MINUTES 44 SECONDS WEST 16.50 FEET, 2) NORTH 87 DEGREES 52 MINUTES 27 SECONDS EAST 5.68 FEET, AND 3) NORTH 02 DEGREES 43 MINUTES 01 SECONDS WEST 720.81 FEET TO THE NORTHEAST CORNER OF SAID "CEDAR OAKS"; THENCE NORTH 87 DEGREES 46 MINUTES 11 SECONDS EAST 187.78 FEET; THENCE SOUTH 40 DEGREES 09 MINUTES 00 SECONDS EAST 340.79 FEET; THENCE NORTH 40 DEGREES 58 MINUTES 01 SECONDS EAST 337.53 FEET; THENCE ALONG THE CENTERLINE OF UNION LAKE ROAD AS PREVIOUSLY SURVEYED BY DAVID P. SMITH AND ASSOCIATES, JOB NUMBER 03-050203, DATED SEPTEMBER 9, 2003 THE FOLLOWING THREE COURSES, 1) SOUTH 39 DEGREES 13 MINUTES 06 SECONDS EAST 3.56 FEET, 2) SOUTH 38 DEGREES 49 MINUTES 29 SECONDS EAST 21.54 FEET, AND 3) 307.59 FEET ALONG A NON-TANGENTIAL CURVE TO THE LEFT, SAID CURVE HAVING A RADIUS OF 1432.40 FEET, A CENTRAL ANGLE OF 12 DEGREES 18 MINUTES 13 SECONDS, AND A CHORD WHICH BEARS SOUTH 44 DEGREES 58 MINUTES 31 SECONDS EAST 307.00 FEET; THENCE SOUTH 58 DEGREES 02 MINUTES 33 SECONDS EAST 513.83 FEET ALONG THE CENTERLINE OF UNION LAKE ROAD PER "BOCOVINA HOMESITES", OAKLAND COUNTY CONDOMINIUM PLAN NO. 754 AND AS PREVIOUSLY SURVEYED BY MCGINNIS ENGINEERING COMPANY, DATED OCTOBER 12, 1973; THENCE SOUTH 02 DEGREES 52 MINUTES 24 SECONDS EAST 127.03 FEET ALONG THE NORTH-SOUTH 1/4 LINE OF SAID SECTION 36; THENCE SOUTH 00 DEGREES 40 MINUTES 48 SECONDS WEST 16.85 FEET TO THE CENTER OF SAID SECTION 36; THENCE SOUTH 87 DEGREES 53 MINUTES 19 SECONDS WEST 1312.16 FEET ALONG THE EAST-WEST 1/4 LINE OF SAID SECTION 36 AND THE NORTH LINE OF "COOLEY BEACH SUB-DIVISION" AS RECORDED IN LIBER 24 OF PLATS, PAGE 2 TO THE POINT OF BEGINNING. CONTAINING 15.14 ACRES.

TAX PARCEL No.: 12-36-176-003

GENERAL NOTES

- THE CONTRACTOR SHALL CONTACT THE TOWNSHIP ENGINEER AT (248) 334-9901 48 HOURS PRIOR TO BEGINNING OF CONSTRUCTION. THE CONTRACTOR SHALL KEEP THE INSPECTOR APPRAISED OF THE NEED FOR INSPECTION ON A DAY TO DAY BASIS. LACKING SPECIFIC SCHEDULING WITH THE INSPECTOR, THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE TO THE TOWNSHIP ENGINEER PRIOR TO WORK REQUIRING INSPECTION. FAILURE TO INFORM THE INSPECTOR OR THE TOWNSHIP ENGINEER OF A WORK CANCELLATION MAY RESULT IN A ONE HALF DAY INSPECTION CHARGE TO THE DEVELOPER.
- THE DEVELOPER SHALL CONTACT THE TOWNSHIP PLANNING DEPARTMENT AT (248) 698-3300 TO SCHEDULE A PRE-CONSTRUCTION MEETING. THE DEVELOPER'S PRIME SITE CONTRACTOR SHALL ATTEND. A COPY OF ALL PERMITS MUST BE SUBMITTED TO THE PLANNING DEPARTMENT PRIOR TO SCHEDULING THE MEETING.
- ALL CONSTRUCTION MUST CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY WHITE LAKE TOWNSHIP.
- CONTRACTOR SHALL CONTACT MISS DIG AT 1-800-482-7171, 72 HOURS IN ADVANCE OF CONSTRUCTION, FOR EXISTING UNDERGROUND UTILITY LOCATIONS.
- ALL SOIL EROSION AND SILTATION MUST BE CONTROLLED AND CONTAINED ON-SITE.
- ALL EXCAVATION, INCLUDING ALL UTILITIES AND LEADS, UNDER OR WITHIN 1 ON 1 INFLUENCE OF ANY PAVEMENT (INCLUDING SIDEWALKS), EXISTING OR PROPOSED, OR WHERE SAND BACKFILL IS CALLED FOR ON THE PLAN, SHALL BE BACKFILLED AND COMPACTED WITH GRANULAR MATERIAL (SAND) MDOT CLASS II TO 95 PERCENT MAXIMUM UNIT DENSITY (ALL OTHERS 90 PERCENT).
- THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES AND FACILITIES. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT THE PROPOSED UTILITY CROSSINGS PRIOR TO THE START OF UNDERGROUND CONSTRUCTION. ANY CONFLICTS WITH UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE PROJECT ENGINEER.
- WHERE TWO UTILITIES CROSS, INCLUDING SANITARY SEWER LEADS, PROVIDE POROUS GRADE "B" BACKFILL MATERIAL COMPACTED TO THE UNDERSIDE OF THE HIGHER UTILITY OR AS SPECIFIED ON THE DETAIL SHEET.
- DUST CONTROL SHALL BE MAINTAINED AT ALL TIMES.
- ANY MUD TRACKED ONTO UNION LAKE ROAD SHALL BE REMOVED DAILY.
- IF DEWATERING IS DETERMINED TO BE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY THE AREA TO BE DEWATERED, SUBMIT A DEWATERING PLAN TO THE WHITE LAKE TOWNSHIP ENGINEERING DIVISION FOR REVIEW, TO MONITOR AND TO DETERMINE THAT THERE WILL NOT BE ANY IMPACT TO ANY ADJOINING OR OFFSITE PROPERTIES DEWATERING PROCEDURES SHALL BE IN COMPLIANCE WITH WHITE LAKE TOWNSHIP.
- A ROAD COMMISSION FOR OAKLAND COUNTY RIGHT-OF-WAY PERMIT IS REQUIRED FOR ANY WORK WITHIN THE UNION LAKE ROAD AND CEDAR ISLAND ROAD RIGHTS-OF-WAY (OR ANY PUBLIC ROAD RIGHT-OF-WAY) AND/OR ANY TOWNSHIP EASEMENT.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS, INVERTS AND GRADES PRIOR TO THE START OF ANY WORK.
- ALL PAVEMENT MARKINGS, TRAFFIC CONTROL SIGNS, AND PARKING SIGNS SHALL COMPLY WITH THE DESIGN AND PLACEMENT REQUIREMENTS OF THE 2011 MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- WHITE LAKE TOWNSHIP HAS NO RESPONSIBILITY TO IMPROVE OR MAINTAIN THE PRIVATE STREETS CONTAINED WITHIN OR PRIVATE STREETS PROVIDING ACCESS TO THE PROPERTY DESCRIBED IN THE PLAN.
- IN ORDER TO VERIFY COMPLIANCE WITH APPROVED PLANS, FULL-TIME CONSTRUCTION OBSERVATION WILL GENERALLY BE REQUIRED DURING ALL PHASES OF UNDERGROUND SITE CONSTRUCTION INCLUDING INSTALLATION OF SANITARY SEWER, STORM SEWERS, DRAINS, WATER MAINS AND APPURTENANCES AS WELL AS PRIVATE STREET CURBING AND PAVING CONSTRUCTION. INTERMITTENT OBSERVATIONS WILL BE MADE FOR SITE GRADING, PARKING LOT CURBING AND PAVING, RETAINING WALL CONSTRUCTION AND OTHER SURFACE ACTIVITY.



SKL SEIBER KEAST LEHNER
ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE
17001 NINETEEN MILE ROAD, SUITE 3
CLINTON TOWNSHIP, MI 48038
586.412.7050

FARMINGTON HILLS OFFICE
39206 COUNTRY CLUB DRIVE, SUITE C8
FARMINGTON HILLS, MI 48331
248.308.3331

ARCHITECTURAL PLANS PROVIDED BY:
ALEXANDER V. BOGAERTS AND ASSOCIATES, P.C.
2445 FRANKLIN ROAD
BLOOMFIELD HILLS, MICHIGAN 48302
PHONE: 248.334.5000

PROPERTY BOUNDARY & TOPO INFORMATION
ALPINE ENGINEERING, INC.
46892 WEST ROAD, SUITE 109
NOVI, MICHIGAN 48377
PHONE: 248.926.3765

LANDSCAPE PLANS PROVIDED BY:
FELINO PASCUAL & ASSOCIATES
LANDSCAPE ARCHITECTURE
24333 ORCHARD LAKE ROAD, SUITE G
FARMINGTON, MICHIGAN 48336
PHONE: 248.557.5588

SHEET INDEX

- COVER SHEET
- TOPOGRAPHIC AND DEMOLITION PLAN
- COMPOSITE UTILITY PLAN
- GRADING AND S.E.S.C. PLAN
- DETAILED GRADING PLAN
- ROAD, SANITARY SEWER & WATER MAIN PLAN
- ROAD, SANITARY SEWER, FORCE MAIN & WATER MAIN PLAN
- PUMP STATION SITE PLAN
- FORCE MAIN PROFILE
- WATER MAIN PROFILES
- WATER MAIN PROFILES
- PRESSURE REDUCING VALVE DETAILS AND NOTES
- SANITARY SEWER PUMP STATION DETAILS
- SANITARY SEWER PUMP STATION CALCULATION CHARTS
- OFF-SITE SANITARY DESIGN
- STORM SEWER PLAN
- STORM SEWER PROFILES
- DETENTION BASIN PLAN
- DRAINAGE DISTRIBUTION PLAN AND STORM SEWER CALCULATIONS
- OVERALL STORM WATER MANAGEMENT SYSTEM "WEST VALLEY & LAKE POINT"
- APPROACH PLAN
- SIGHT DISTANCE PLAN AT UNION LAKE ROAD
- EMERGENCY VEHICLE ROUTE
- NOTES AND DETAILS

OCWRC DETAILS:
OCWRC STANDARD LIFT STATION DRAWINGS (ND3-ND8)
LOW PRESSER SANITARY SEWER DETAILS AND NOTES (2)

DETAILS:

WHITE LAKE TOWNSHIP:
SANITARY SEWER STANDARD DETAILS
WATER MAIN STANDARD DETAILS
STORM SEWER STANDARD DETAILS

OAKLAND COUNTY:
SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

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LS-2 OVERALL LANDSCAPE PLANTING DETAIL
LS-3 OVERALL LANDSCAPE PLANTING DETAIL
LS-4 PLANT MATERIAL LIST & PLANTING DETAILS
LS-5 OVERALL LANDSCAPE PLANTING DETAIL

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IRR-2 IRRIGATION PLAN
IRR-3 IRRIGATION PLAN
IRR-4 IRRIGATION PLAN
IRR-5 IRRIGATION PLAN
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A101 FIRST FLOOR PLANS
A102 TYPICAL UNIT ELEVATION
A200 BUILDING ELEVATIONS
A201 BUILDING ELEVATIONS
A203 BUILDING ELEVATIONS
AS-1 SITE PLAN

BENCHMARKS:

BM#1 - CONCRETE MONUMENT AT SOUTHWEST CORNER OF PROPERTY.
ELEVATION 948.29 NAVD88

BM#2 - TELECOM MANHOLE COVER AT NORTHEAST CORNER OF CARPATHIAN DR. AND UNION LAKE RD.
ELEVATION 984.75 NAVD88

BM#3 - TELECOM MANHOLE COVER ±48" WEST OF CENTER OF SECTION 36 ALONG THE SOUTH PROPERTY LINE.
ELEVATION 962.72 NAVD88

SEE SHEET 26 FOR R.C.O.C. NOTES

SEE SHEET 29 FOR LIST OF QUANTITIES

REVISIONS			ENGINEER'S SEAL
NO.	ITEM	DATE	
1.	REV. PER R.O.C. PERMITS DEPARTMENT	10-22-19	
2.	REV. SAN. ST. & PAV. PER OWNER	04-10-20	
3.	REV. SAN. ST. & PAV. PER OWNER	5-18-20	
4.	REVISE PER TWP.	02-18-21	
5.	REVISE PER TWP.	03-17-21	
6.	REVISED WATER MAIN PER EDGE.	05-11-21	
7.	REV. PER OWNER, R.O.C. AND SCWC.	11-23-22	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP.	04-25-23	
10.	REVISE PER TWP.	7-27-23	
11.	REVISED PER TWP.	09-21-23	
12.	REVISED PER EDGE.	01-31-24	
13.	REVISE PER TWP.	02-13-24	
14.	REV. PER TWP.	06-03-24	

DATE: 08-23-19 DESIGNED BY: A.A. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE: 17031-CV.DWG

- LEGEND**
- EX. CATCH BASIN
 - EX. MANHOLE
 - ▽ EX. END SECTION
 - ⊕ EX. OVERFLOW STRUCTURE
 - ⊕ EX. CLEANOUT
 - ⊕ EX. HYDRANT
 - ⊕ EX. WATER SHUTOFF
 - ⊕ EX. FIRE DEPT. CONNECTION
 - ⊕ EX. WATER WELL
 - ⊕ EX. LIGHTPOLE
 - ⊕ EX. UTILITY POLE
 - ⊕ EX. GUY ANCHOR
 - ⊕ EX. TRAFFIC SIGNAL
 - ⊕ EX. GAS SHUTOFF
 - ⊕ EX. GAS VENT
 - ⊕ EX. HANDHOLE
 - ⊕ EX. PEDESTAL
 - ⊕ EX. TRANSFORMER
 - ⊕ EX. GENERATOR
 - ⊕ EX. GAS METER
 - ⊕ EX. ELECTRIC METER
 - ⊕ EX. UTILITY MARKER
 - ⊕ EX. AIR CONDITIONER
 - ⊕ EX. RAILROAD SIGNAL
 - ⊕ EX. SIGN
 - ⊕ EX. POST/BOLLARD
 - ⊕ EX. FLAGPOLE
 - ⊕ EX. MAILBOX
 - ⊕ EX. PARKING METER
 - ⊕ EX. SATELLITE DISH
 - ⊕ EX. SOIL BORING
 - ⊕ EX. MONITOR WELL
 - ⊕ FOUND IRON
 - ⊕ SET IRON
 - ⊕ EX. BOULDER
 - ⊕ EX. TREE STUMP
 - EX. TREE
 - ⊕ EX. TREE TAG & NUMBER
 - EX. TREE LINE
 - EX. FENCE
 - EX. SANITARY SEWER
 - EX. STORM SEWER
 - EX. WATER MAIN
 - EX. ELECTRIC CABLE
 - EX. COMMUNICATION
 - EX. GAS LINE
 - EX. OVERHEAD LINE

BENCHMARKS:

BM#1 - CONCRETE MONUMENT AT SOUTHWEST CORNER OF PROPERTY. ELEVATION 948.29 NAVD88

BM#2 - TELECOM MANHOLE COVER AT NORTHEAST CORNER OF CARPATHIAN DR. AND UNION LAKE RD. ELEVATION 964.75 NAVD88

BM#3 - TELECOM MANHOLE COVER ±485' WEST OF CENTER OF SECTION 36 ALONG THE SOUTH PROPERTY LINE. ELEVATION 962.72 NAVD88

NCS PID D16198
ELEVATION 966.63 NAVD88

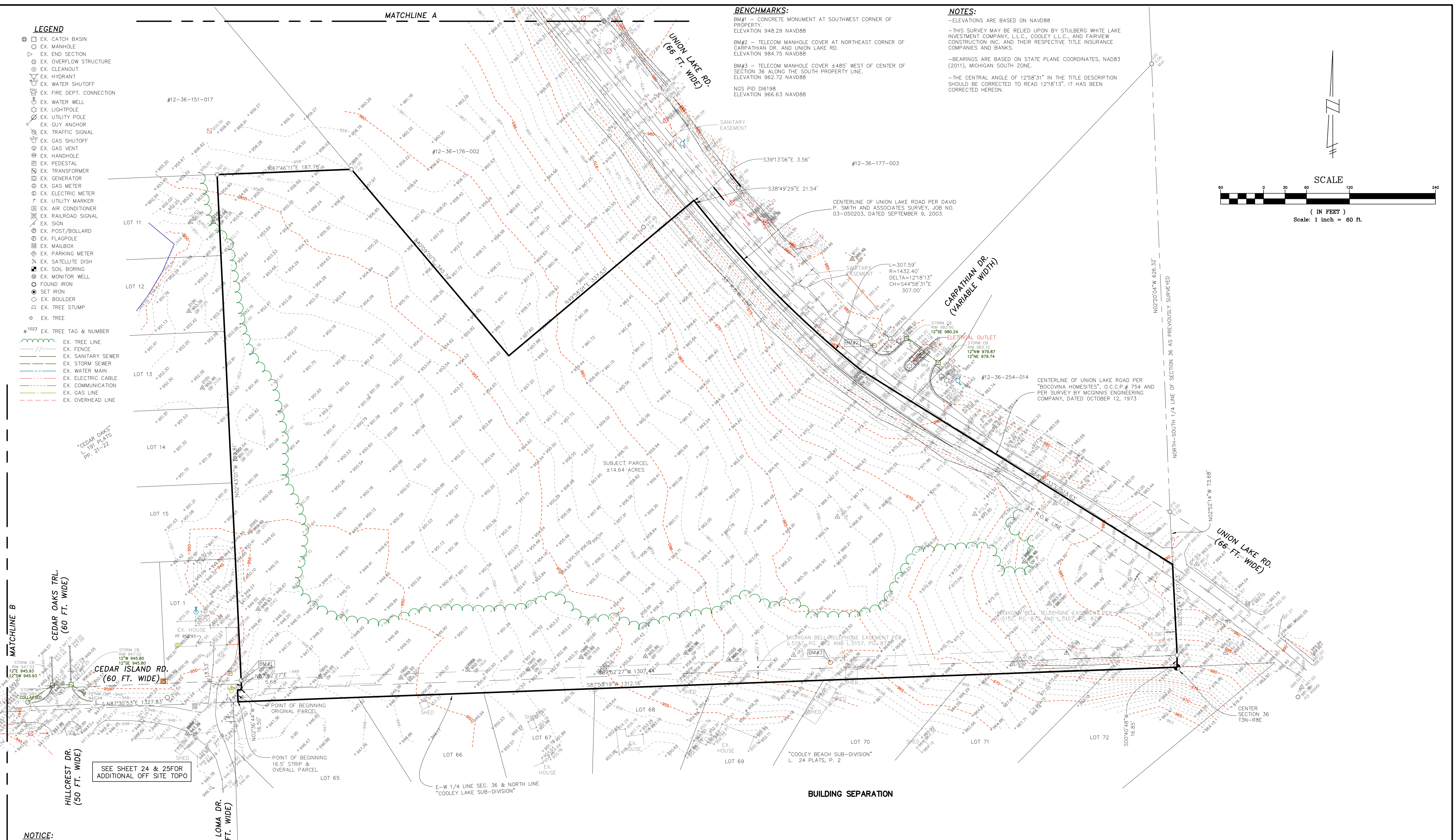
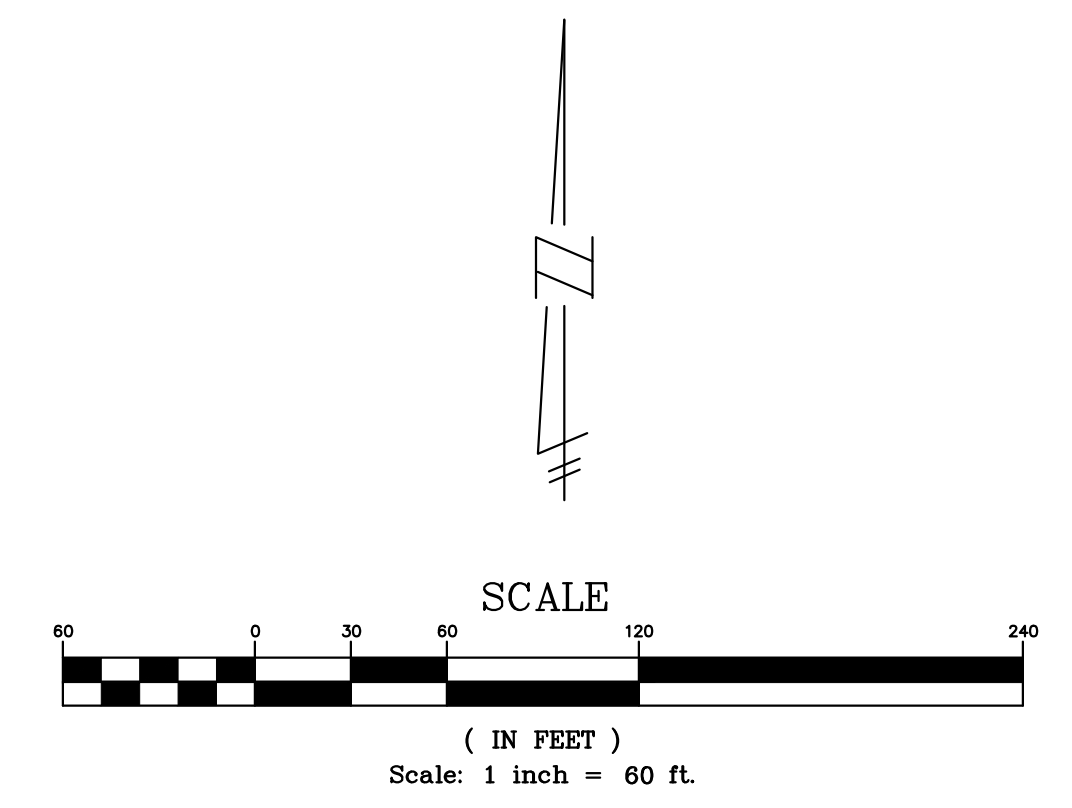
NOTES:

-ELEVATIONS ARE BASED ON NAVD88

-THIS SURVEY MAY BE RELIED UPON BY STULBERG WHITE LAKE INVESTMENT COMPANY, L.L.C., COOLEY L.L.C., AND FAIRVIEW CONSTRUCTION INC. AND THEIR RESPECTIVE TITLE INSURANCE COMPANIES AND BANKS.

-BEARINGS ARE BASED ON STATE PLANE COORDINATES, NAD83 (2011), MICHIGAN SOUTH ZONE.

-THE CENTRAL ANGLE OF 12°58'31" IN THE TITLE DESCRIPTION SHOULD BE CORRECTED TO READ 12°16'13". IT HAS BEEN CORRECTED HEREON.



NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

NOTE:

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.

LEGEND

EXISTING	PROPOSED	EXISTING	PROPOSED

REVISIONS

NO.	ITEM	DATE
1.	REV. PER RCOO PERMITS DEPARTMENT	10-22-19
2.	REV. SAN AND STORM PER OWNER	04-10-20
3.	REV. PER TWP.	02-18-21
4.	REV. PER TWP.	03-17-21
5.	REV. PER OWNER, RCOO AND OCORC	11-21-22
6.	REV. PER TWP.	7-27-23
7.	REVISED PER TWP.	09-21-23
8.	REVISED PER TWP.	01-31-24
9.	REVISED PER TWP.	02-13-24

UTILITY WARNING

UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

811 Know what's below. Call before you dig.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

DATE: 05-01-19
DESIGNED BY: A.A.
CHECKED BY: J.E.

JOB NUMBER: 17-031

WEST VALLEY

MULTI-FAMILY RESIDENTIAL COMMUNITY

SECTION 36, TOWN 3 NORTH, RANGE 8 EAST

WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

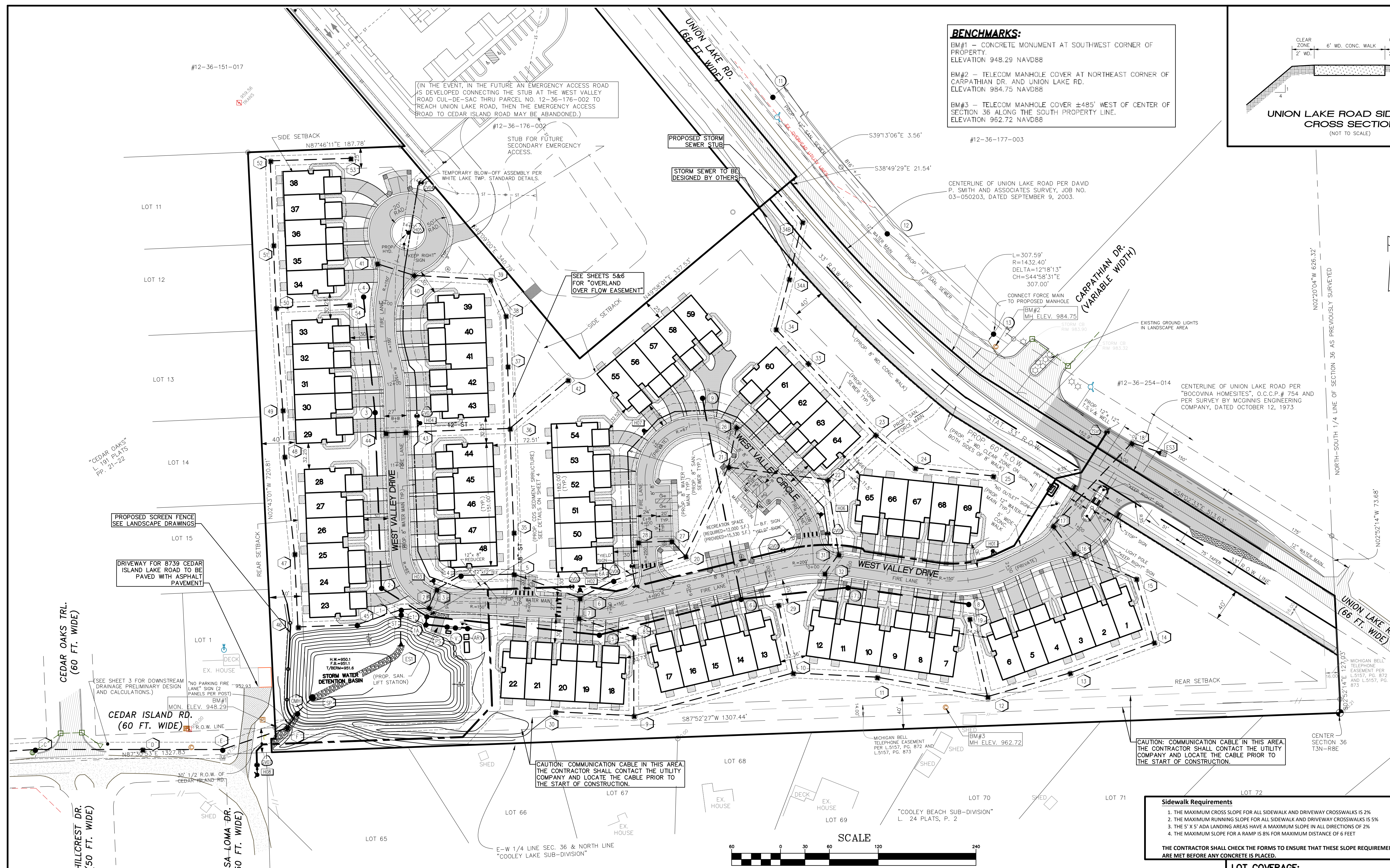
TOPOGRAPHIC AND DEMOLITION PLAN

SEIBER KEAST LEHNER ENGINEERING | SURVEYING

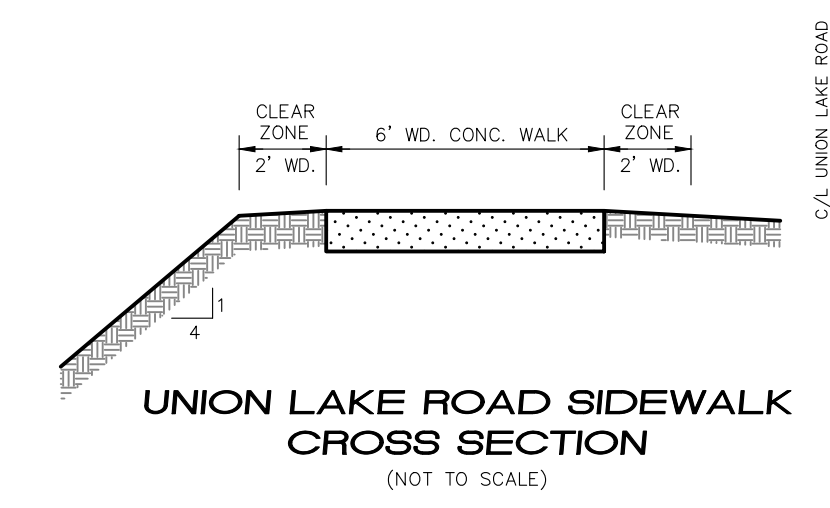
CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 588.412.7050

FARMINGTON HILLS OFFICE: 39208 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3331

SHEET 2



BENCHMARKS:
 BM#1 - CONCRETE MONUMENT AT SOUTHWEST CORNER OF PROPERTY
 ELEVATION 948.29 NAVD88
 BM#2 - TELECOM MANHOLE COVER AT NORTHEAST CORNER OF CARPATHIAN DR. AND UNION LAKE RD.
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 ELEVATION 962.72 NAVD88



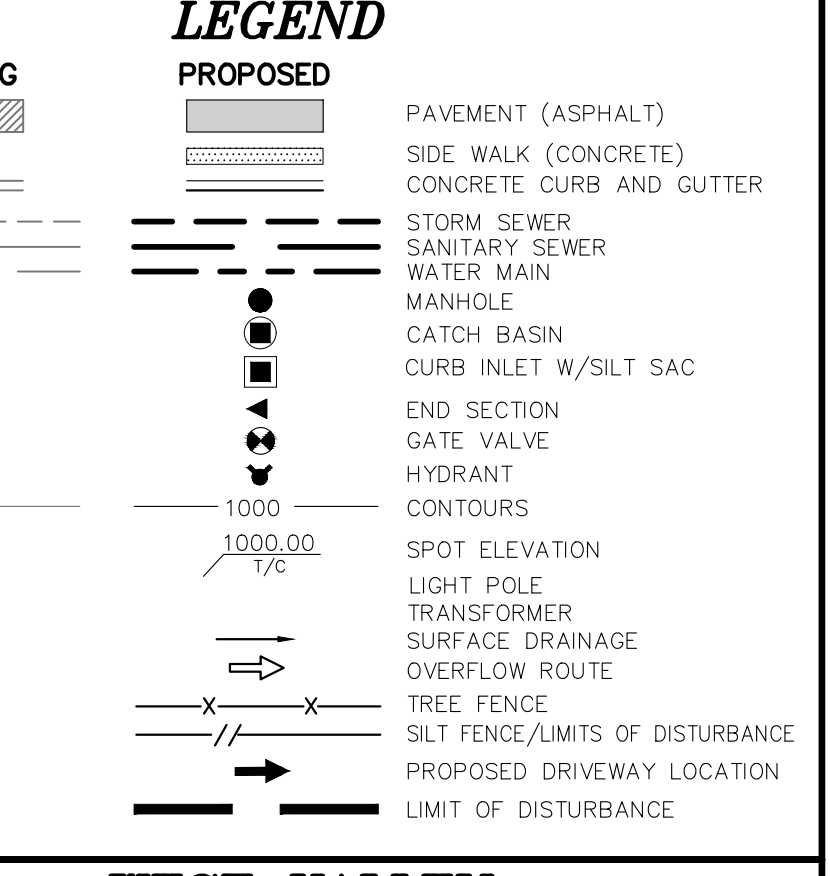
- NOTES**
- ON-SITE SANITARY SEWERS, AND WATER MAINS SHALL BE CENTERED IN A 20'-FOOT W.D. EASEMENT.
 - ALL SANITARY AND WATER MAIN IMPROVEMENTS WILL BECOME PUBLIC PROPERTY.
 - CRITICAL STORM STRUCTURES WILL BE FITTED WITH TRAPS.
 - PROVISIONS PURSUANT TO OAKLAND COUNTY WATER RESOURCE COMMISSION SOIL EROSION CONTROL MANUAL WILL BE UNDERTAKEN INCLUDING, BUT NOT LIMITED TO, SILT FENCE AND INLET FILTERS.
 - "NO PARKING - FIRE LANE" SIGNAGE SHALL BE INSTALLED PROHIBITING PARKING ON ONE SIDE OF THE STREET.
 - PROPOSED GRADES WILL MATCH EXISTING ELEVATIONS AT THE PROPERTY LINE UNLESS RETAINING WALLS ARE PROVIDED OR GRADING EASEMENTS OBTAINED.
 - A PERMIT FROM THE ROAD COMMISSION FOR OAKLAND COUNTY WILL BE REQUIRED FOR ALL WORK IN THE UNION LAKE RD. & CEDAR ISLAND RD. RIGHT-OF-WAY.
 - ALL WATER MAIN SHALL BE CLASS 54 DUCTILE IRON. ALL GATE VALVES SHALL BE PLACED IN GATE WELLS.
 - ALL STRUCTURES EXCEPT FOR INLETS WHICH CONNECT TO CATCH BASINS WILL BE A MINIMUM OF 4 FEET IN DIAMETER.
 - THE DEVELOPMENT SHALL BE CONSTRUCTED AS A SINGLE PHASE.
 - THE CONSTRUCTION TYPE OF THE PROPOSED BUILDINGS IS WOOD CONSTRUCTION WITH BRICK VENEER AND SLAB ON GRADE.
 - THE FRONT PORCH LIGHTS AND THE COACH LIGHTS WILL UTILIZE 75 WATT BULBS.
 - ALL STORM SEWER PIPE SIZES ARE SHOWN ON SHEETS 17-22

SEE SHEET 14-15 FOR PUMP STATION SANITARY BASIS OF DESIGN
 SEE SHEET ND2 FOR LIST OF QUANTITIES
 SEE SHEET 16 FOR OVERALL SANITARY SEWER BASIS OF DESIGN

DENSITY CALCULATION:
 AREA OF RESIDENTIAL SITE = 15.14 Ac.
 AREA OF 60' R.O.W. = 1.21 Ac.
 DENSITY AREA = 15.14-1.21 = 13.93 Ac.
 AREA OF INTERNAL ROADS = 1.39 Ac.
 NET DENSITY AREA = 13.93-1.39 = 12.54 Ac.
RM-1 ZONING:
 FOR 2 BEDROOMS AND DEN
 REQUIRED 6,500 S.F./UNIT
 DEDUCT 10,000 S.F. FOR FIRST UNIT
 TOTAL ALLOWABLE UNITS =
 546,242 - 10,000 / 6,500 = 83 UNITS
 TOTAL UNITS PROVIDED = 69 UNITS
 (4.95 UNITS / ACRE)

LIST OF ALL REQUIRED STATE AND FEDERAL PERMITS

TYPE	AGENCY	STATUS
1. NPDES	EGLE	NOT FILED
2. SANITARY SEWER	EGLE	FILED
3. WATER MAIN	EGLE	FILED



WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
1	REV. PER ROO PERMITS DEPARTMENT	10-22-19
2	REV. SAN AND STORM PER OWNER	09-10-20
3	REV. SAN. ST. & PAV. PER OWNER	5-18-20
4	REVISE PER TWP.	02-18-21
5	REVISE PER TWP.	03-17-21
6	REVISED WATER MAIN PER EGLE	09-11-21
7	REV PER OWNER, ROO AND DECOR	11-21-22
8	REVISED WATERMAIN FOR OWNER	04-05-23
9	REVISED PER TOWNSHIP	04-25-23
10	REVISE PER TWP.	7-27-23
11	REVISED PER TWP.	09-21-23
12	REVISED PER EGLE	01-31-24
13	REVISE PER TWP.	03-13-24

UTILITY WARNING
 UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.
 Know what's below. Call before you dig.
 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

DESIGNED BY: G.N. JOB NUMBER: 17-031
 DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE: 17031-0A.dwg

COMPOSITE UTILITY PLAN

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050
 FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.338.3321

Accessible Parking Spaces

Total Surface Spaces = 165	
Accessible Spaces	
Per 2010 ADA (208.2.3 Residential Facilities)	
Total Required (Minimum 2% of the tot)	4
Total Provided	4
Standard Accessible Spaces	2
Van Accessible Spaces	2

PARKING CALCULATIONS

2 SPACES FOR EACH UNIT, PLUS 1/4 SPACE FOR EACH BDRM.
 2 SPACES FOR EACH UNIT = 138 SPACES
 138 BEDROOMS/4 = 35 SPACES
 TOTAL SPACES REQUIRED = 173

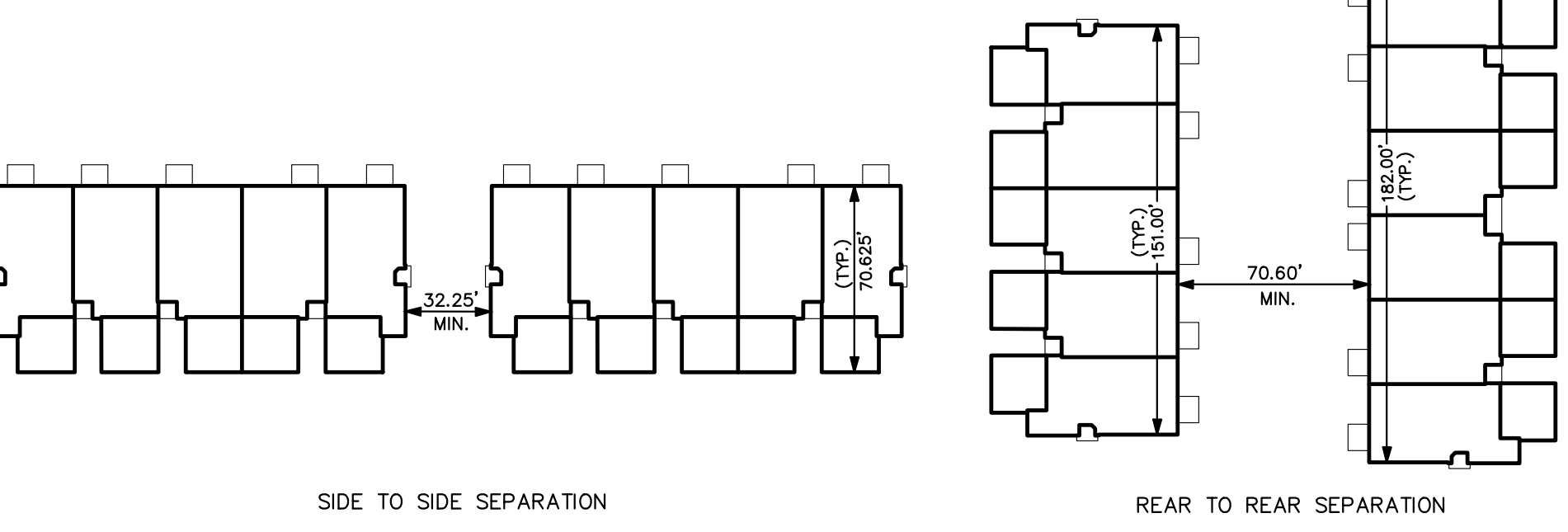
SPACES PROVIDED:
 2 SPACES PER GARAGE = 138
 2 SPACES PER DRIVEWAY = 138
 ADDITIONAL PARKING SPACES:
 STANDARD PARKING 23
 ACCESSIBLE PARKING 4
 TOTAL ADDITIONAL SPACES = 27
 TOTAL SPACES PROVIDED = 303

WETLANDS
 NO WETLANDS EXIST ON SITE.

FLOODPLAIN INFORMATION
 THE SUBJECT PROPERTY LIES WITHIN A ZONE "X" FLOOD HAZARD AREA - "AREAS OF MINIMAL FLOODING", PER THE NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 26125 60477 F, MAP EFFECTIVE 9-29-2006.

SIGN QUANTITIES

SYMBOL	DESCRIPTION	QUANTITY	PANEL POST
(Symbol)	R1-1 30"x30" (STOP) SIGN W/STREET SIGN	1	1
(Symbol)	R4-7 24"x30" (KEEP RIGHT) SIGN	3	3
(Symbol)	R1-2 36"x36"x36" (YIELD) SIGN W/STREET SIGN	2	2
(Symbol)	W14-2 30"x30" (NO OUTLET) SIGN	2	2
(Symbol)	(NO PARKING FIRE LANE) SIGN	10	5
(Symbol)	R7-8 12"x8" BARRIER FREE HANDICAP SIGN	3	3
(Symbol)	R7-8P 12"x6" (VAN ACCESSIBLE) PANEL	3	0



BUILDING SEPARATION
 MIN. SEPARATION BETWEEN BUILDINGS = 20'
 DEPTH OF PROPOSED BUILDINGS = 70.625'

SIDE TO SIDE SEPARATION BETWEEN BUILDINGS REQUIRED:
 70.625' - 40' (PER ORDINANCE) = 30.625'
 ADD 2' FOR EVERY 10' BEYOND 40 = 6.125'
 ADD SECOND BUILDING = 6.125'
 MIN. SEPARATION REQUIRED = 6.125' + 6.125' + 20' = 32.25'

REAR TO REAR SEPARATION BETWEEN BUILDINGS REQUIRED:
 BUILDING LENGTH = 151.00'
 151.00 - 40 = 111, 111 X 2 = 22.2
 BUILDING LENGTH = 182.00'
 182.00 - 40 = 142.00, 14.2 X 2 = 28.4
 MIN. SEPARATION REQUIRED = 22.2' + 28.4' + 20' = 70.6'

Sidewalk Requirements

- THE MAXIMUM CROSS SLOPE FOR ALL SIDEWALK AND DRIVEWAY CROSSWALKS IS 2%
- THE MAXIMUM RUNNING SLOPE FOR ALL SIDEWALK AND DRIVEWAY CROSSWALKS IS 5%
- THE 5' X 5' ADA LANDING AREAS HAVE A MAXIMUM SLOPE IN ALL DIRECTIONS OF 2%
- THE MAXIMUM SLOPE FOR A RAMP IS 8% FOR MAXIMUM DISTANCE OF 6 FEET

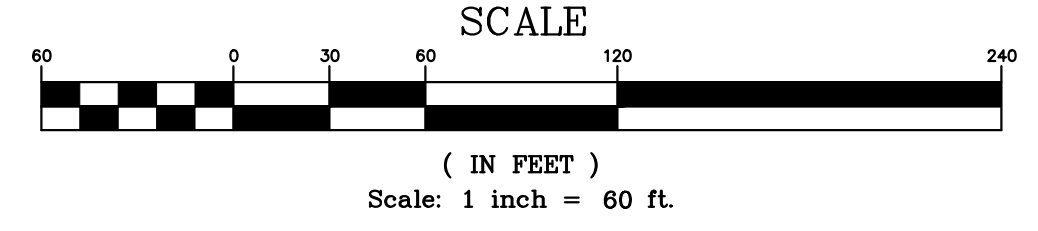
THE CONTRACTOR SHALL CHECK THE FORMS TO ENSURE THAT THESE SLOPE REQUIREMENTS ARE MET BEFORE ANY CONCRETE IS PLACED.

LOT COVERAGE:

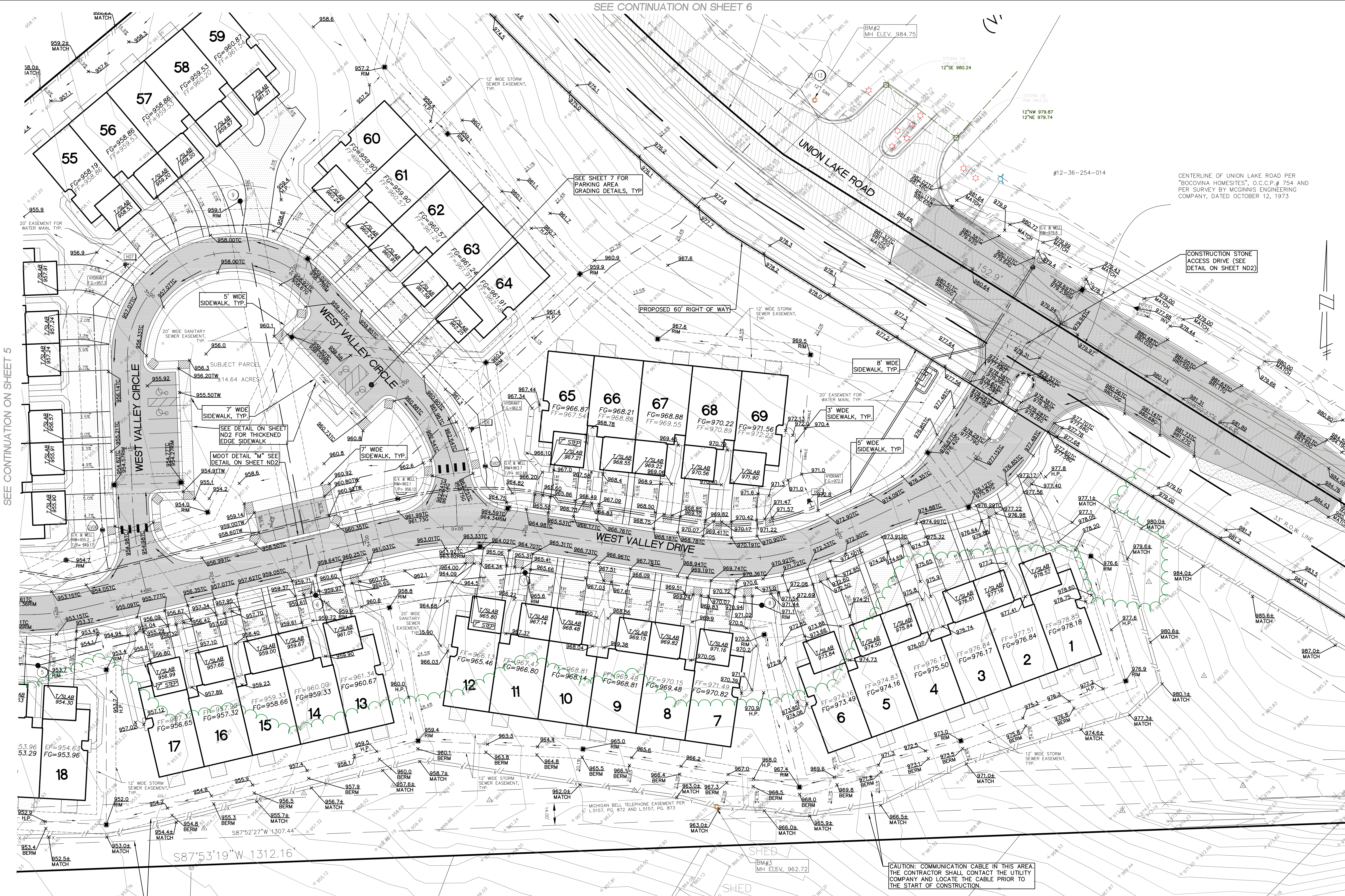
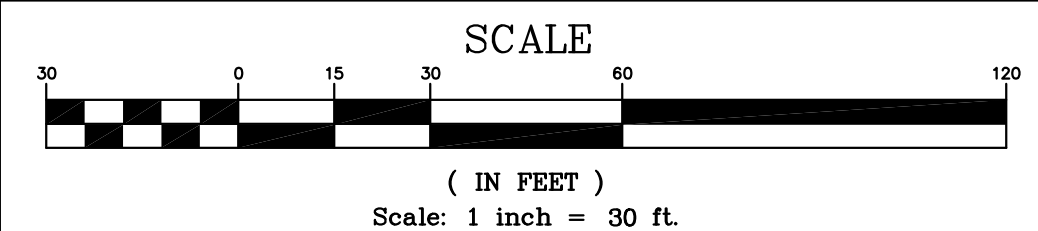
GROSS AREA OF SITE	= 15.14 Ac.
BUILDING AREA	= 3.05 Ac.
MAX. LOT COVERAGE ALLOWED	= 20%
PROPOSED LOT COVERAGE	= 3.05 / 15.14 = 20%

PROPOSED IMPROVEMENTS

- MUNICIPAL SEWER TO BE PROVIDED BY CONSTRUCTING A GRAVITY SEWER FLOWING TO A PROPOSED LIFT STATION AT THE SOUTHWEST CORNER OF THE SITE, THEN DISCHARGING THRU A FORCE MAIN TO A PROPOSED MANHOLE NORTHWEST OF CARPATHIAN DRIVE AND NORTHEAST SIDE OF UNION LAKE RD.
- WATER SUPPLY TO BE PROVIDED BY CONNECTING TO AN EXISTING 12" WATERMAIN ALONG UNION LAKE ROAD. PROPOSED WATERMANS SHALL BE 12" AND 8" AS SHOWN ON THE PLANS.
- ON-SITE STORM WATER DETENTION SHALL BE PROVIDED PER OAKLAND COUNTY WATER RESOURCE COMMISSION STANDARDS. ALL STORM DRAINAGE EASEMENTS SHALL BE A MINIMUM OF 20' WIDE IF NECESSARY.
- ROADWAYS SHALL BE 27' W.D. AND 24' W.D. WITH CONC. CURB & GUTTER WITH ASPHALT PAVEMENT. ALL ROADWAYS SHALL BE PRIVATE. ALL INTERIOR SIDEWALKS SHALL BE 5' WIDE, AN 8' WIDE CONC. SIDEWALK TO BE CONSTRUCTED ALONG SOUTH R.O.W. OF UNION LAKE ROAD AS SHOWN. SEE PAVEMENT CROSS SECTION AND CURB DETAILS ON SHEET 4.
- ALL ELECTRIC, CABLE TV & TELEPHONE LINES SHALL BE LOCATED UNDERGROUND AND SHALL BE PLACED WITHIN EASEMENTS DEDICATED FOR SUCH USE.
- TRASH DISPOSAL SHALL BE BY CURB SIDE PICKUP.
- LIGHTING SHALL BE PROVIDED BY PHOTOCELL LIGHTS LOCATED ON THE FRONT OF EACH BUILDING.



SEE CONTINUATION ON SHEET 6



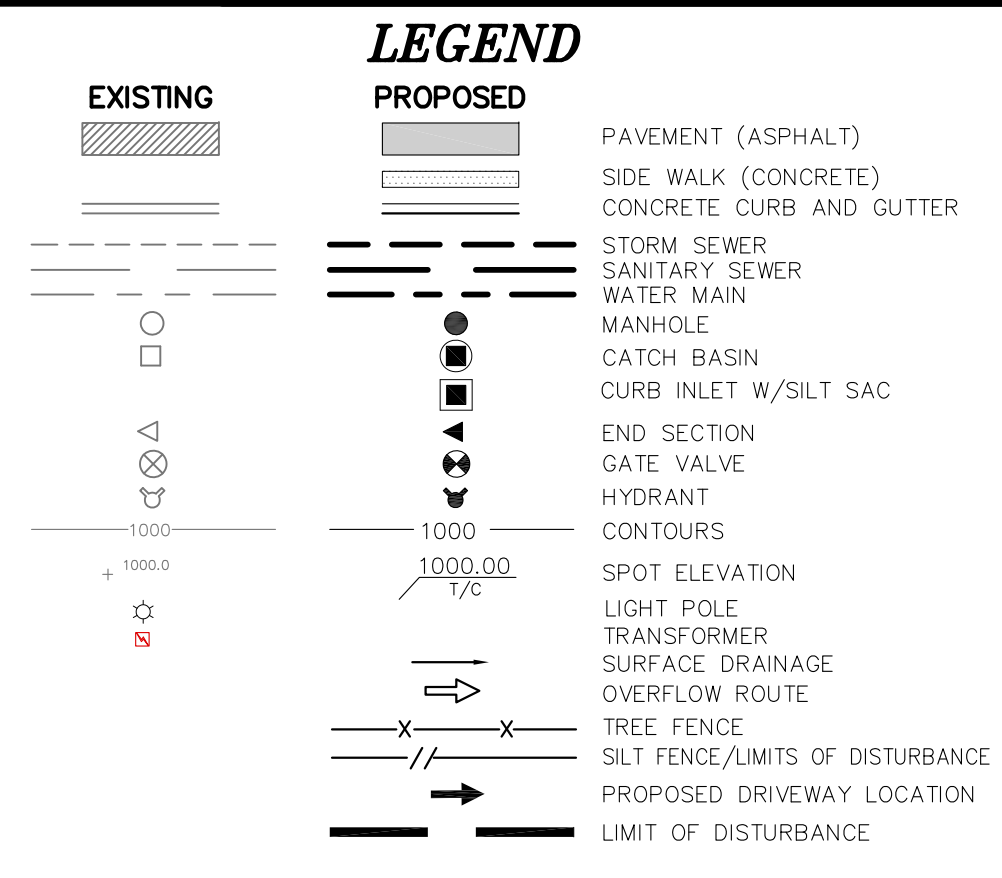
FOR DRIVEWAY AND SIDEWALK GRADING- SEE DETAIL ON SHEET ND2

- Sidewalk Requirements**
1. THE MAXIMUM CROSS SLOPE FOR ALL SIDEWALK AND DRIVEWAY CROSSWALKS IS 2%
 2. THE MAXIMUM RUNNING SLOPE FOR ALL SIDEWALK AND DRIVEWAY CROSSWALKS IS 5%
 3. THE 5' X 5' ADA LANDING AREAS HAVE A MAXIMUM SLOPE IN ALL DIRECTIONS OF 2%
 4. THE MAXIMUM SLOPE FOR A RAMP IS 8% FOR MAXIMUM DISTANCE OF 6 FEET

THE CONTRACTOR SHALL CHECK THE FORMS TO ENSURE THAT THESE SLOPE REQUIREMENTS ARE MET BEFORE ANY CONCRETE IS PLACED.

- S.E.S.C. NOTES**
1. DEVELOPER SHALL MAINTAIN ALL SOIL EROSION CONTROLS WEEKLY AND AFTER EVERY STORM EVENT.
 2. SEE SHEET ND1 FOR SOIL EROSION CONTROL MAINTENANCE AND SOIL EROSION CONTROL SEQUENCE OF CONSTRUCTION.

- GRADING NOTES**
1. PROVIDE MINIMUM 2% SLOPE IN SIDE YARD AND REAR YARD SWALES.
 2. MAINTAIN A MAXIMUM 1V:3H SLOPE FROM HOUSE TO SIDE YARD SWALES.
 3. AFTER INITIAL EXAMINATION & GRADING OF THE DETENTION BASIN, SILT FENCE SHALL BE PLACED AROUND THE BASINS UNTIL PERMANENT VEGETATION IS ESTABLISHED.



WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING	
NO.	ITEM	DATE	UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.	
1	REV. PER RCDC PERMITS DEPARTMENT	10-22-19	<p>811 Know what's below. Call before you dig.</p> <p>THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.</p>	
2	REV. SAN AND STORM PER OWNER	04-10-20		
3	REV. SAN, ST. & PAV. PER OWNER	5-18-20		
4	REVISE PER TWP.	02-18-21		
5	REVISE PER TWP.	03-17-21		
7	REV PER OWNER, RCDC AND OCRC	11-21-22		
8	REVISED WATERMAIN FOR OWNER	04-05-23		
9	REVISED PER TOWNSHIP	04-25-23		
10	REVISE PER TWP.	7-27-23		
11	REVISED PER TWP.	09-21-23		
12	REVISED PER EGE	01-31-24		
13	REVISE PER TWP	02-13-24		

DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031 CHECKED BY: J.E. DRAWING FILE: 17031-GR.dwg

GRADING AND S.E.S.C. PLAN

SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 38905 COUNTRY CLUB DRIVE, SUITE 3 CLINTON TOWNSHIP, MI 48038 566-612-7050

FARMINGTON HILLS OFFICE: 38905 COUNTRY CLUB DRIVE, SUITE 3 FARMINGTON HILLS, MI 48331 248-308-9331

SHEET 4

SEE CONTINUATION ON SHEET 5

SEE SHEET ND2 FOR UNIT SIDEWALK DETAILS

CAUTION: COMMUNICATION CABLE IN THIS AREA. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY AND LOCATE THE CABLE PRIOR TO THE START OF CONSTRUCTION.

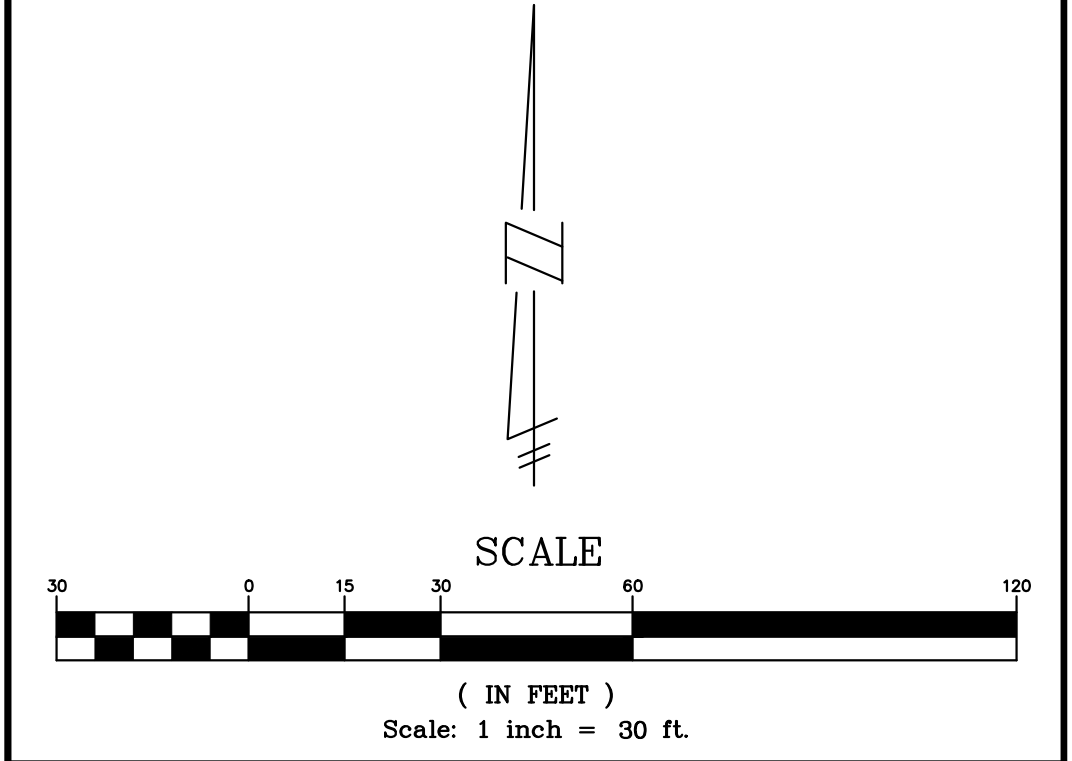
CAUTION: COMMUNICATION CABLE IN THIS AREA. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY AND LOCATE THE CABLE PRIOR TO THE START OF CONSTRUCTION.

SEE SHEET 7 FOR PARKING AREA GRADING DETAILS, TYP

CENTERLINE OF UNION LAKE ROAD PER "BOGDUNA HOMESITES", D.C.P.# 754 AND PER SURVEY BY MCGINNIS ENGINEERING COMPANY, DATED OCTOBER 12, 1973

S87°53'19"W 1312.16

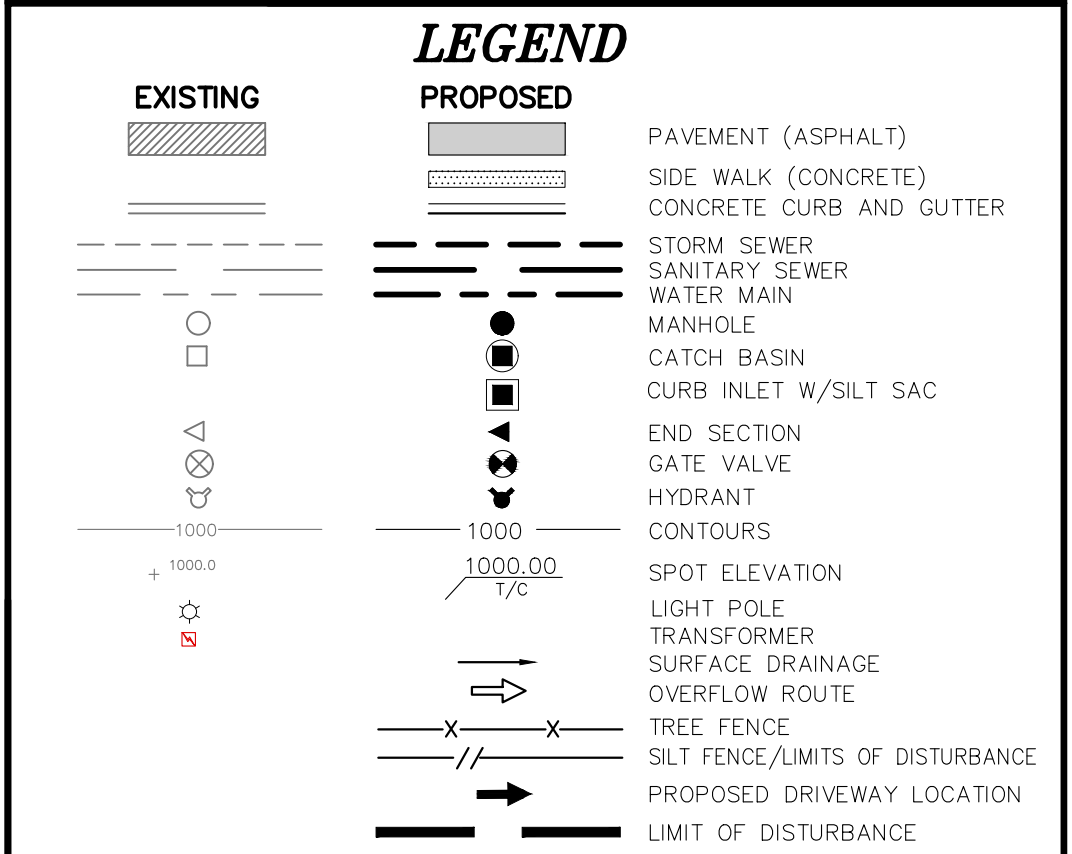
SEE CONTINUATION ON SHEET 6



NOTE: SEE SHEET 29 FOR S.E.S.C. SEQUENCE OF CONSTRUCTION, S.E.S.C. NOTES, GRADING NOTES AND R.C.O.C. NOTES

FOR DRIVEWAY AND SIDEWALK GRADING- SEE DETAIL ON SHEET ND2

- Sidewalk Requirements**
1. THE MAXIMUM CROSS SLOPE FOR ALL SIDEWALK AND DRIVEWAY CROSSWALKS IS 2%
 2. THE MAXIMUM RUNNING SLOPE FOR ALL SIDEWALK AND DRIVEWAY CROSSWALKS IS 5%
 3. THE 5' X 3' ADA LANDING AREAS HAVE A MAXIMUM SLOPE IN ALL DIRECTIONS OF 2%
 4. THE MAXIMUM SLOPE FOR A RAMP IS 8% FOR MAXIMUM DISTANCE OF 6 FEET
- THE CONTRACTOR SHALL CHECK THE FORMS TO ENSURE THAT THESE SLOPE REQUIREMENTS ARE MET BEFORE ANY CONCRETE IS PLACED.



**WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN**

REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	
1.	REV. PER ROD PERMITS DEPARTMENT	10-22-19	UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED. Know what's below. Call before you dig. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.
2.	REV. SAN AND STORM PER OWNER	04-10-20	
3.	REV. SAN, ST. & PAV. PER OWNER	5-18-20	
4.	REVISE PER TWP.	02-18-21	
5.	REVISE PER TWP.	03-17-21	
7.	REV PER OWNER, R.O.C. AND O.C.M.C.	11-21-23	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP	04-25-23	
10.	REVISED PER TWP.	7-27-23	
11.	REVISED PER TWP.	09-21-23	
12.	REVISED PER EOLE	01-31-24	
13.	REVISE PER TWP.	03-13-25	

DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE: 17031-GR.dwg

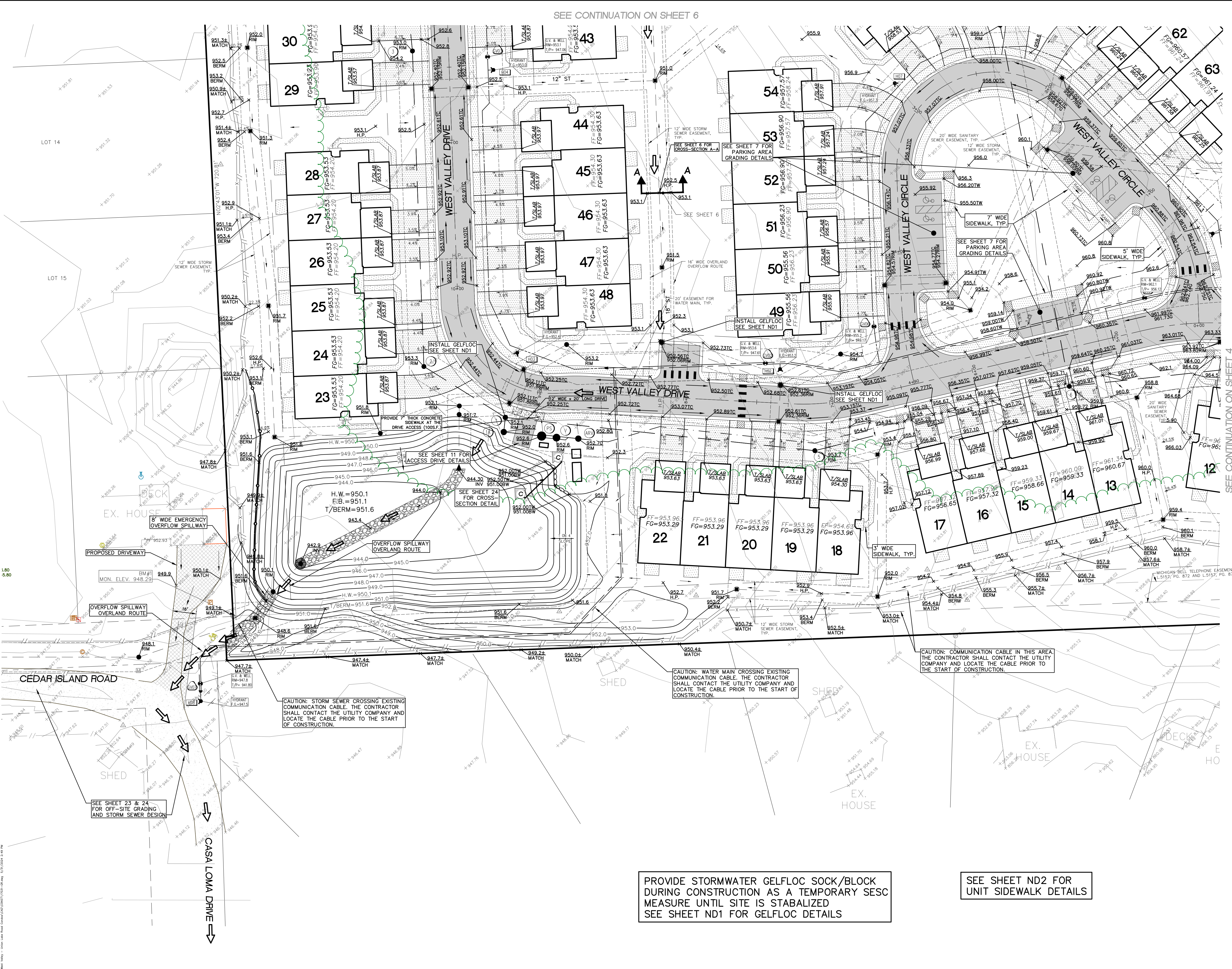
GRADING AND S.E.S.C. PLAN

SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 5



PROVIDE STORMWATER GELFLOC SOCK/BLOCK DURING CONSTRUCTION AS A TEMPORARY SESC MEASURE UNTIL SITE IS STABILIZED SEE SHEET ND1 FOR GELFLOC DETAILS

SEE SHEET ND2 FOR UNIT SIDEWALK DETAILS

CAUTION: WATER MAIN CROSSING EXISTING COMMUNICATION CABLE. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY AND LOCATE THE CABLE PRIOR TO THE START OF CONSTRUCTION.

CAUTION: COMMUNICATION CABLE IN THIS AREA. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY AND LOCATE THE CABLE PRIOR TO THE START OF CONSTRUCTION.

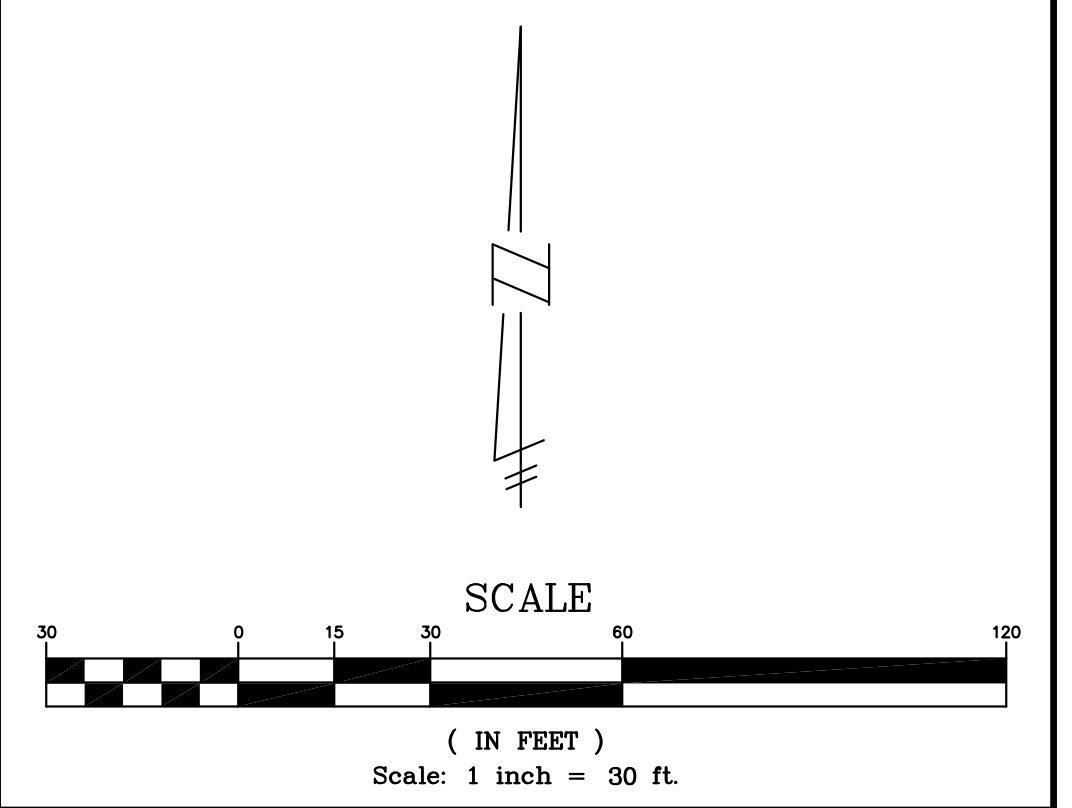
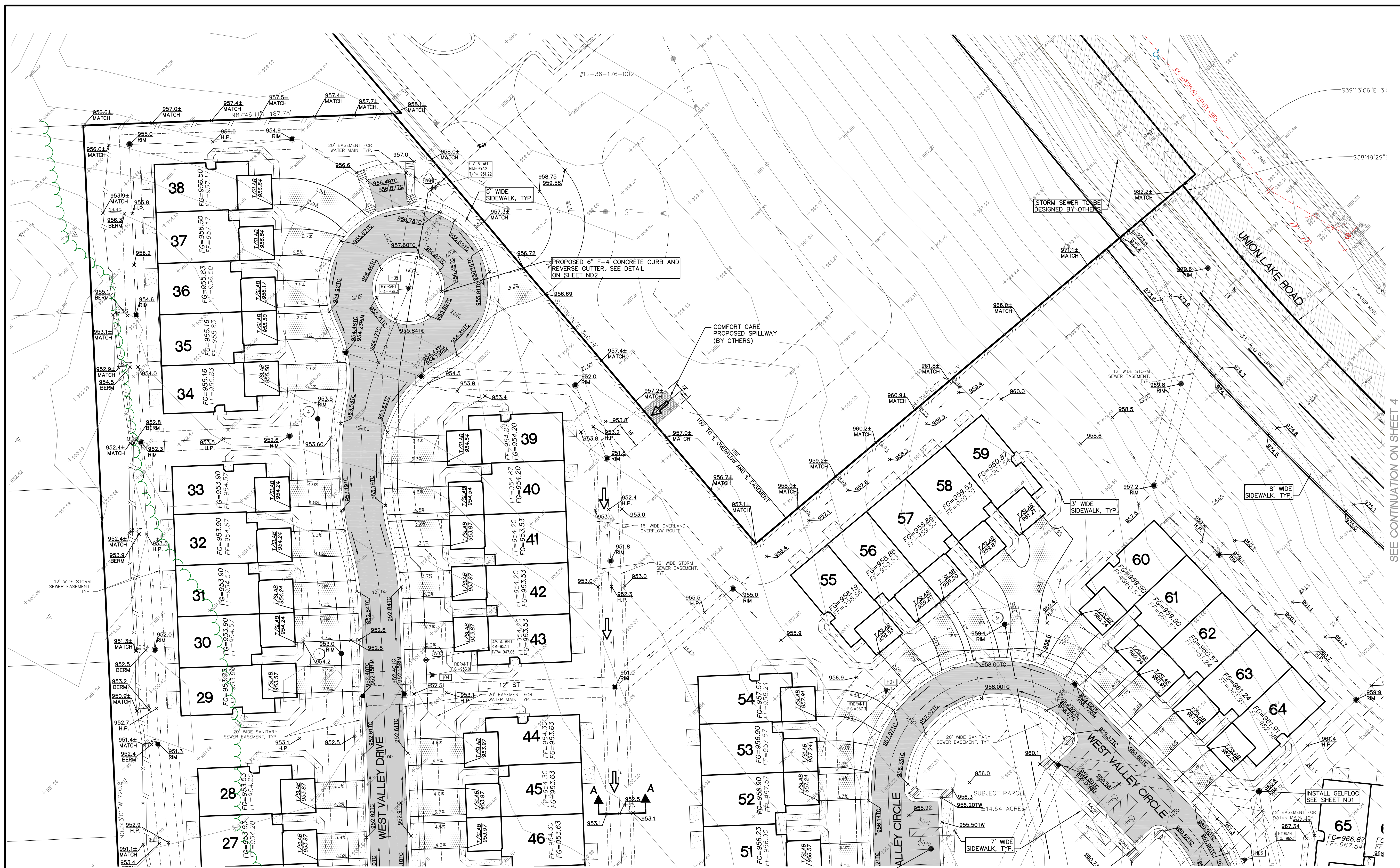
CAUTION: STORM SEWER CROSSING EXISTING COMMUNICATION CABLE. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY AND LOCATE THE CABLE PRIOR TO THE START OF CONSTRUCTION.

SEE SHEET 23 & 24 FOR OFF-SITE GRADING AND STORM SEWER DESIGN

CASA LOMA DRIVE

SEE CONTINUATION ON SHEET 4

14. REV. PER TWP. 06-10-24



NOTE: SEE SHEET 29 FOR S.E.S.C. SEQUENCE OF CONSTRUCTION, S.E.S.C. NOTES, GRADING NOTES AND R.C.O.C. NOTES

FOR DRIVEWAY AND SIDEWALK GRADING- SEE DETAIL ON SHEET ND2

- Sidewalk Requirements**
1. THE MAXIMUM CROSS SLOPE FOR ALL SIDEWALK AND DRIVEWAY CROSSWALKS IS 2%
 2. THE MAXIMUM RUNNING SLOPE FOR ALL SIDEWALK AND DRIVEWAY CROSSWALKS IS 5%
 3. THE 5' X 5' ADA LANDING AREAS HAVE A MAXIMUM SLOPE IN ALL DIRECTIONS OF 2%
 4. THE MAXIMUM SLOPE FOR A RAMP IS 8% FOR MAXIMUM DISTANCE OF 6 FEET
- THE CONTRACTOR SHALL CHECK THE FORMS TO ENSURE THAT THESE SLOPE REQUIREMENTS ARE MET BEFORE ANY CONCRETE IS PLACED.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
[Symbol]	[Symbol]	PAVEMENT (ASPHALT)
[Symbol]	[Symbol]	SIDE WALK (CONCRETE)
[Symbol]	[Symbol]	CONCRETE CURB AND GUTTER
[Symbol]	[Symbol]	STORM SEWER
[Symbol]	[Symbol]	SANITARY SEWER
[Symbol]	[Symbol]	WATER MAIN
[Symbol]	[Symbol]	MANHOLE
[Symbol]	[Symbol]	CATCH BASIN
[Symbol]	[Symbol]	CURB INLET W/SILT SAC
[Symbol]	[Symbol]	END SECTION
[Symbol]	[Symbol]	GATE VALVE
[Symbol]	[Symbol]	HYDRANT
[Symbol]	[Symbol]	CONTOURS
[Symbol]	[Symbol]	1000.00
[Symbol]	[Symbol]	SPOT ELEVATION
[Symbol]	[Symbol]	LIGHT POLE
[Symbol]	[Symbol]	TRANSFORMER
[Symbol]	[Symbol]	SURFACE DRAINAGE
[Symbol]	[Symbol]	OVERFLOW ROUTE
[Symbol]	[Symbol]	TREE FENCE
[Symbol]	[Symbol]	SILT FENCE/LIMITS OF DISTURBANCE
[Symbol]	[Symbol]	PROPOSED DRIVEWAY LOCATION
[Symbol]	[Symbol]	LIMIT OF DISTURBANCE

WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
1	REV. PER RCOC PERMITS DEPARTMENT	10-22-19
2	REV. SAN AND STORM PER OWNER	04-10-20
3	REV. SAN, ST. & PAV. PER OWNER	5-18-20
4	REVISE PER TWP.	02-18-21
5	REVISE PER TWP.	03-17-21
7	REV PER OWNER, RCOC AND OCWR	11-21-22
8	REVISED WATERMAIN FOR OWNER	04-05-23
9	REVISED PER TOWNSHIP	04-25-23
10	REVISE PER TWP.	7-27-23
11	REVISED PER EGLE	09-21-23
12	REVISED PER EGLE	01-31-24
13	REVISE PER TWP	02-13-24

UTILITY WARNING
UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

811 Know what's below. Call before you dig.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE: 17031-GR.dwg

GRADING AND S.E.S.C. PLAN

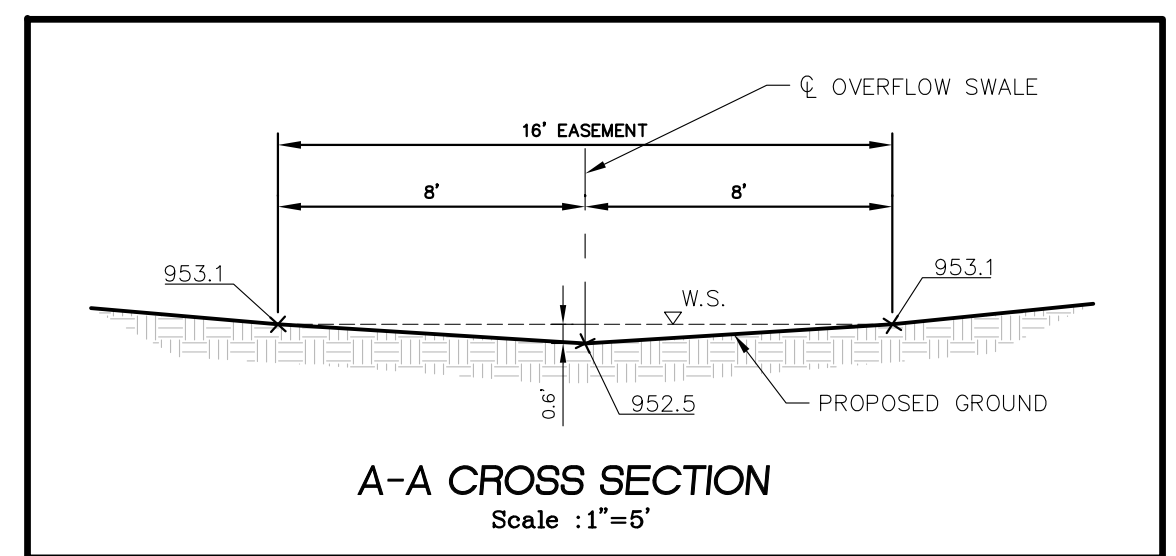
SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 N. HUNTERS HILL ROAD, SUITE 3, CLINTON TOWNSHIP, MI 48038
FARMINGTON HILLS OFFICE: 38908 COUNTRY CLUB DRIVE, SUITE C8, FARMINGTON HILLS, MI 48331

SHEET 6

Ditch Cross Section at Unit 45

IF:	Water depth = 0.6 ft
	Slope (S) = 0.02 ft/ft
	Area (A) = 4.8 s.f.
	n = 0.025
	wetted perimeter (P) = 18.04494 ft
	hydraulic radius (R) = 0.29916 ft
	Ditch width = 16 ft (with equal side slopes)
And:	$Q = (1.49)nAR^{2/3}S^{1/2}$
Then:	Q = 18.10 cfs
	10-year flow from the Comfort Care Basin = 13.95 cfs



PROVIDE STORMWATER GELFLOC SOCK/BLOCK DURING CONSTRUCTION AS A TEMPORARY SESC MEASURE UNTIL SITE IS STABILIZED
SEE SHEET ND1 FOR GELFLOC DETAILS

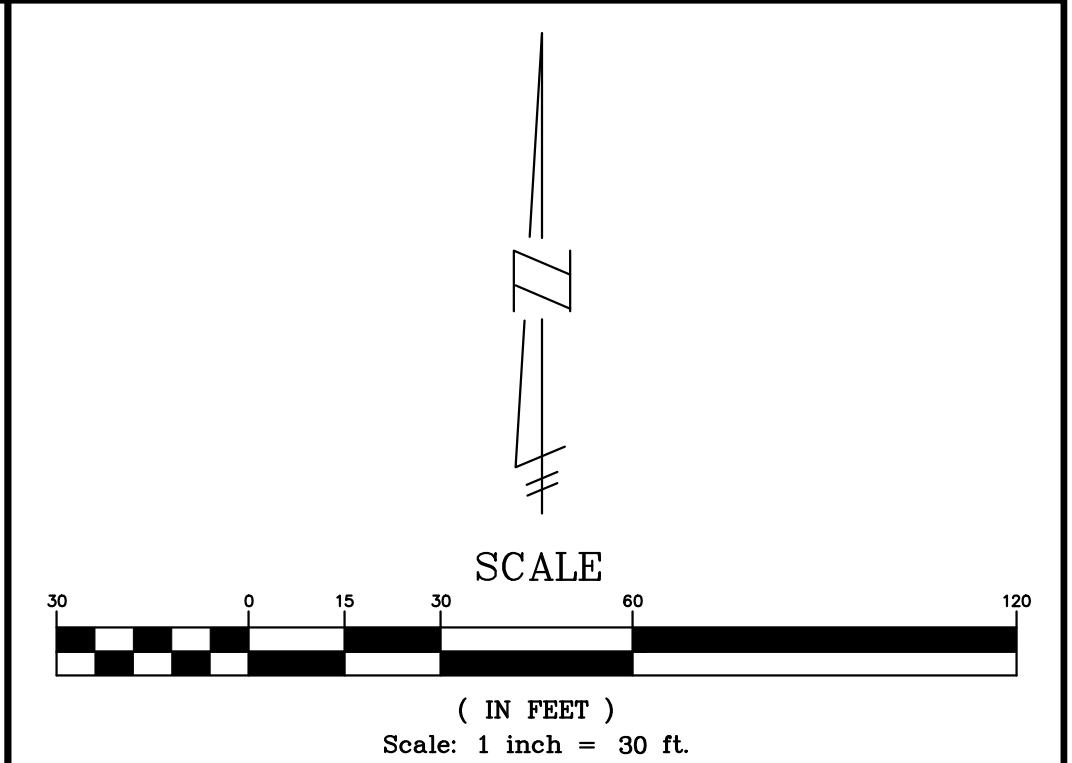
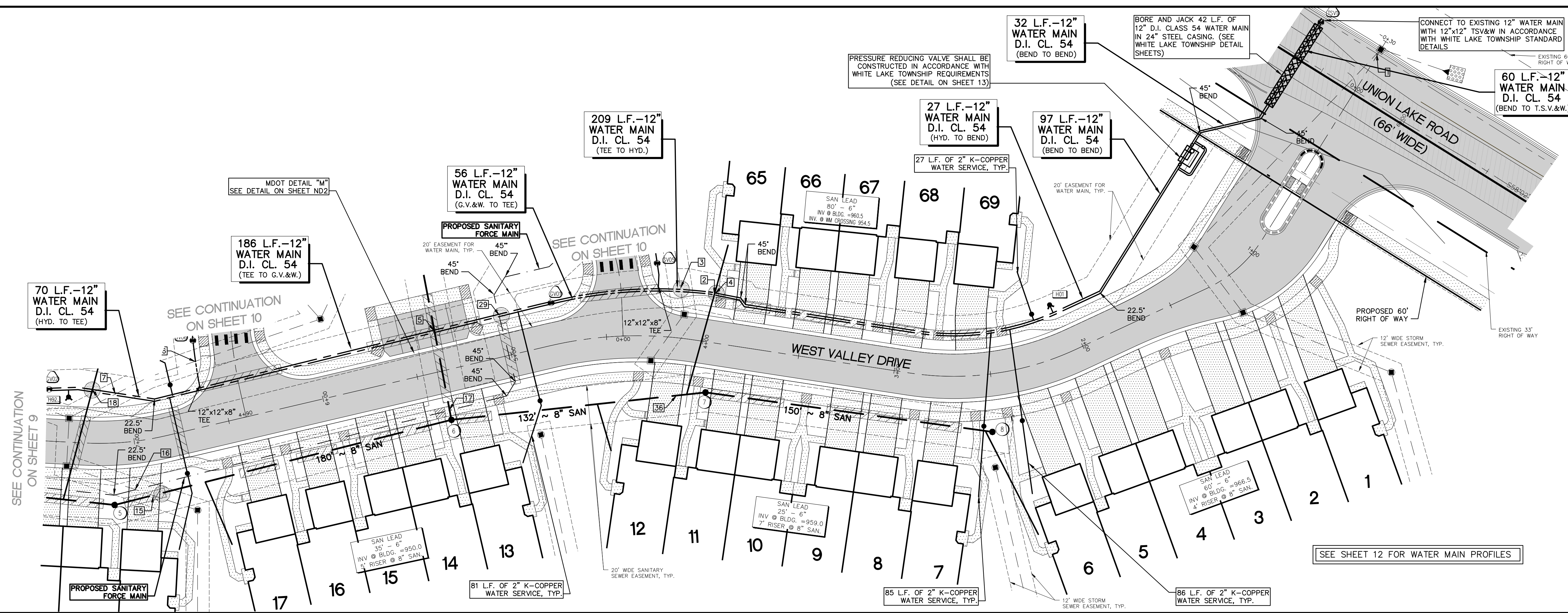
SEE SHEET ND2 FOR UNIT SIDEWALK DETAILS

SEE CONTINUATION ON SHEET 5

SEE SHEET 7 FOR PARKING AREA GRADING DETAILS, TYP.

SEE CONTINUATION ON SHEET 4

SEE CONTINUATION ON SHEET 4



SEE SHEET 14 FOR SANITARY BASIS OF DESIGN

SEE CONTINUATION ON SHEET 9

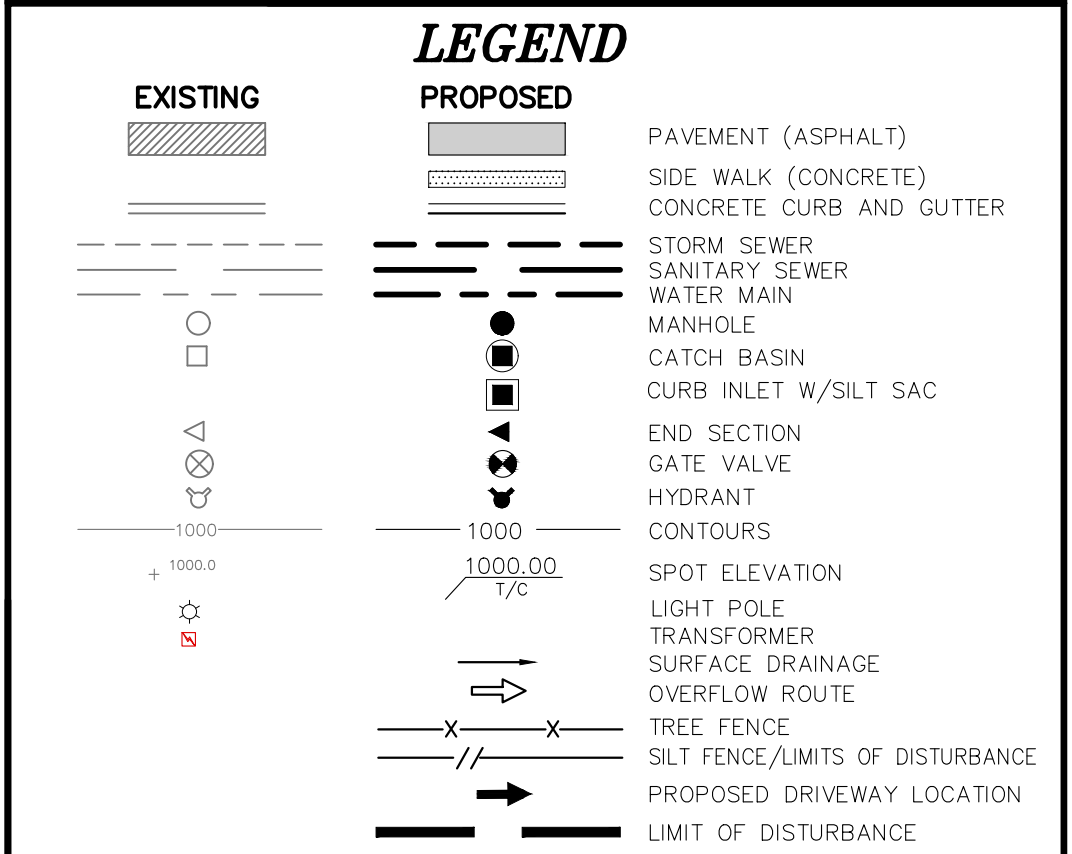
SEE CONTINUATION ON SHEET 10

SEE SHEET 12 FOR WATER MAIN PROFILES

UTILITY CROSSING- MAINTAIN 18" MINIMUM VERTICAL SEPARATION BETWEEN UTILITIES.

COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT WEIGHT.

- ### NOTES
1. ALL GRAVITY SANITARY SEWER SHALL BE PVC TRUSS PIPE OR APPROVED EQUIVALENT.
 2. ALL GRAVITY SANITARY SEWER LEADS SHALL BE SDR 23.5 PVC PIPE.
 3. ALL TRENCHES WITHIN 1 ON 1 SLOPE FROM TOP OF CURBS SHALL BE BACKFILLED WITH GRANULAR MATERIAL CLASS II AND COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT.
 4. SANITARY LEADS SHALL BE A MINIMUM OF 1% GRADE, A MAXIMUM OF 150 LF AND A MINIMUM 6" DIAMETER.
 5. SANITARY LEADS SHALL BE BURIED AT LEAST 5 FEET DEEP WHERE UNDER THE INFLUENCE OF PAVEMENT.
 6. ALL SANITARY MANHOLES SHALL BE 4' DIAMETER UNLESS OTHERWISE NOTED.
 7. MINIMUM DEPTH ON FORCEMAIN IS 6.0' TO TOP OF PIPE



WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	
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2.	REV. SAN AND STORM PER OWNER	04-10-20	
3.	REV. SAN, ST. & PAV. PER OWNER	5-18-20	
4.	REVISE PER TWP.	02-18-21	
5.	REVISE PER TWP.	03-17-21	
7.	REV PER OWNER, RCOD AND DCRCM	11-21-23	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP	04-25-23	
10.	REVISED PER TWP.	7-27-23	
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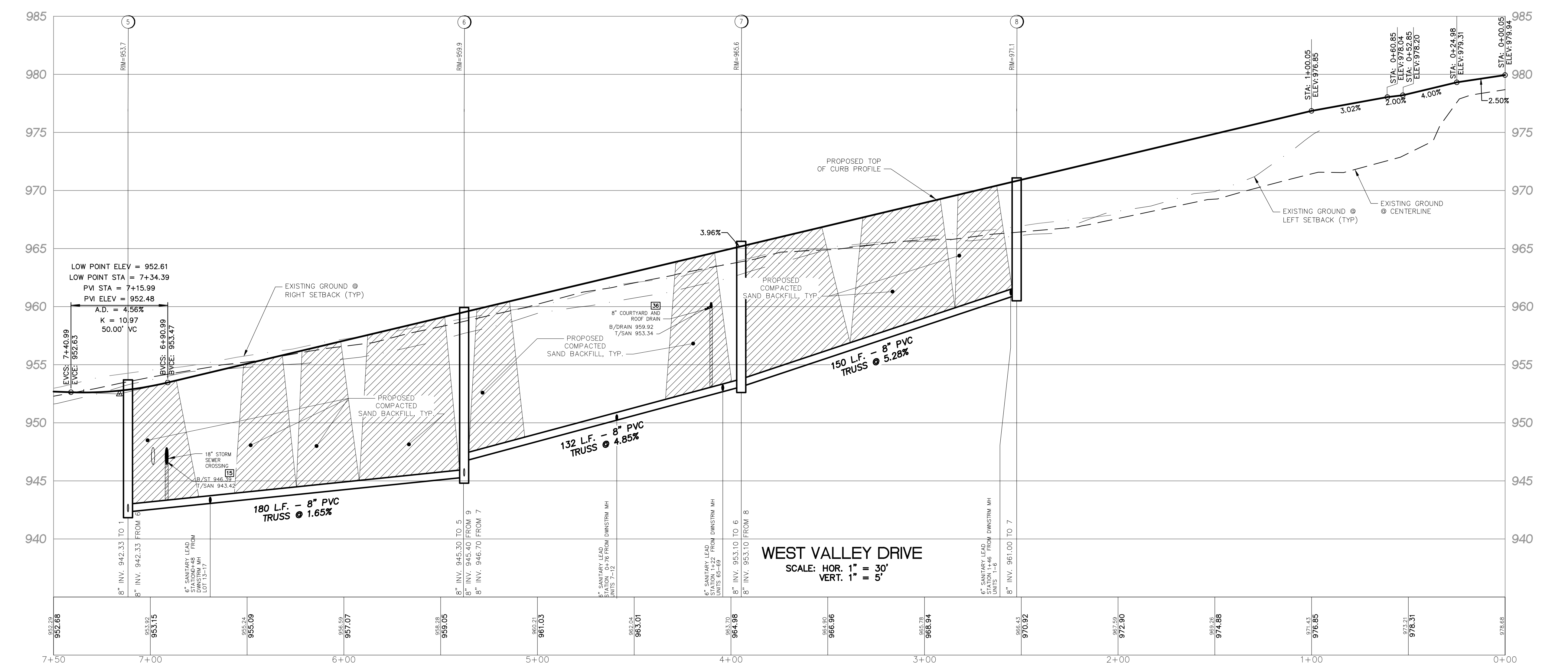
DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE: 17031-RD.dwg

ROAD, SANITARY SEWER & WATER MAIN PLAN

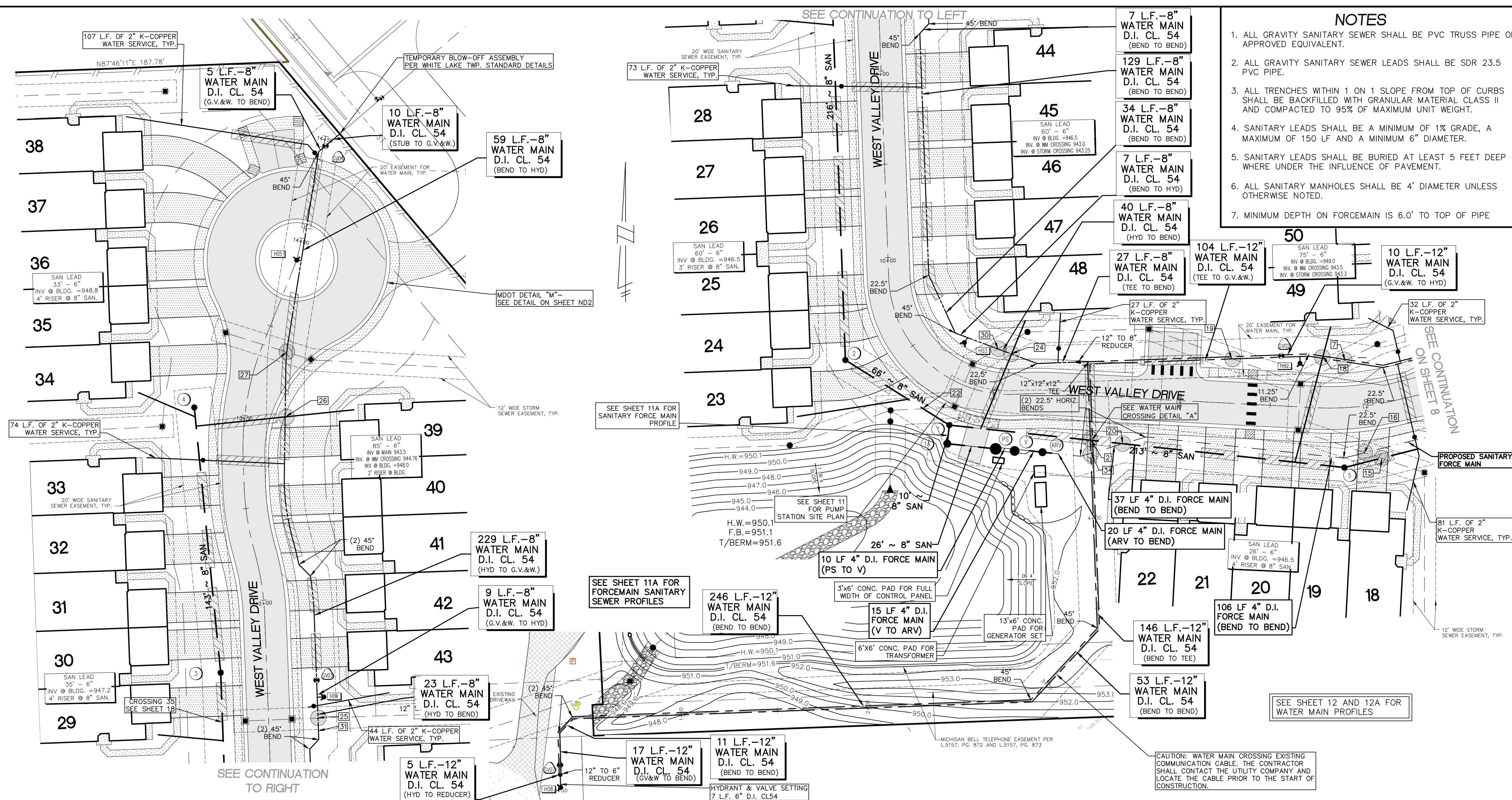
CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

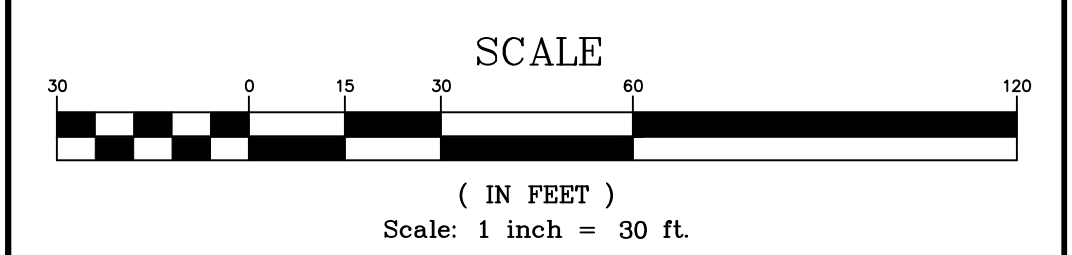
SHEET
8



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 G.N.
 J.E.
 17-031-RD.dwg

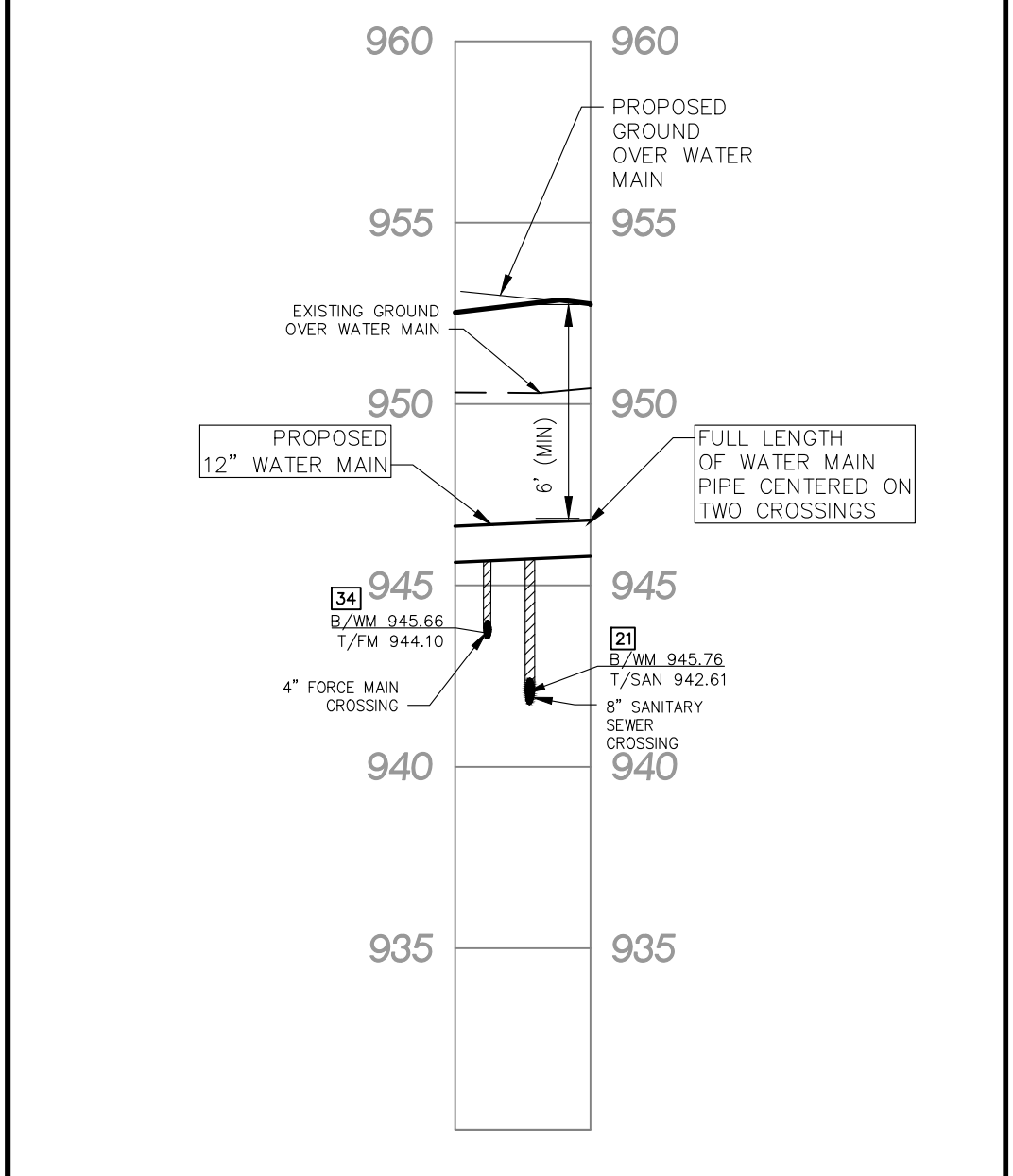


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UTILITY CROSSING- MAINTAIN 18" MINIMUM VERTICAL SEPARATION BETWEEN UTILITIES.

COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT DENSITY.



LEGEND

EXISTING	PROPOSED	DESCRIPTION
[Symbol]	[Symbol]	PAVEMENT (ASPHALT)
[Symbol]	[Symbol]	SIDE WALK (CONCRETE)
[Symbol]	[Symbol]	CONCRETE CURB AND GUTTER
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[Symbol]	[Symbol]	CATCH BASIN
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[Symbol]	[Symbol]	END SECTION
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[Symbol]	[Symbol]	HYDRANT
[Symbol]	[Symbol]	CONTOURS
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[Symbol]	[Symbol]	TREE FENCE
[Symbol]	[Symbol]	SILT FENCE/LIMITS OF DISTURBANCE
[Symbol]	[Symbol]	PROPOSED DRIVEWAY LOCATION
[Symbol]	[Symbol]	LIMIT OF DISTURBANCE

WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
1.	REV. PER ROAD PERMITS DEPARTMENT	10-22-19
2.	REV. SAN AND STORM PER OWNER	04-10-20
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6.	REVISED WATER MAIN PER EGE	05-11-21
7.	REV PER OWNER, ROAD AND O&M	11-21-22
8.	REVISED WATERMAIN FOR OWNER	04-05-23
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DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-091
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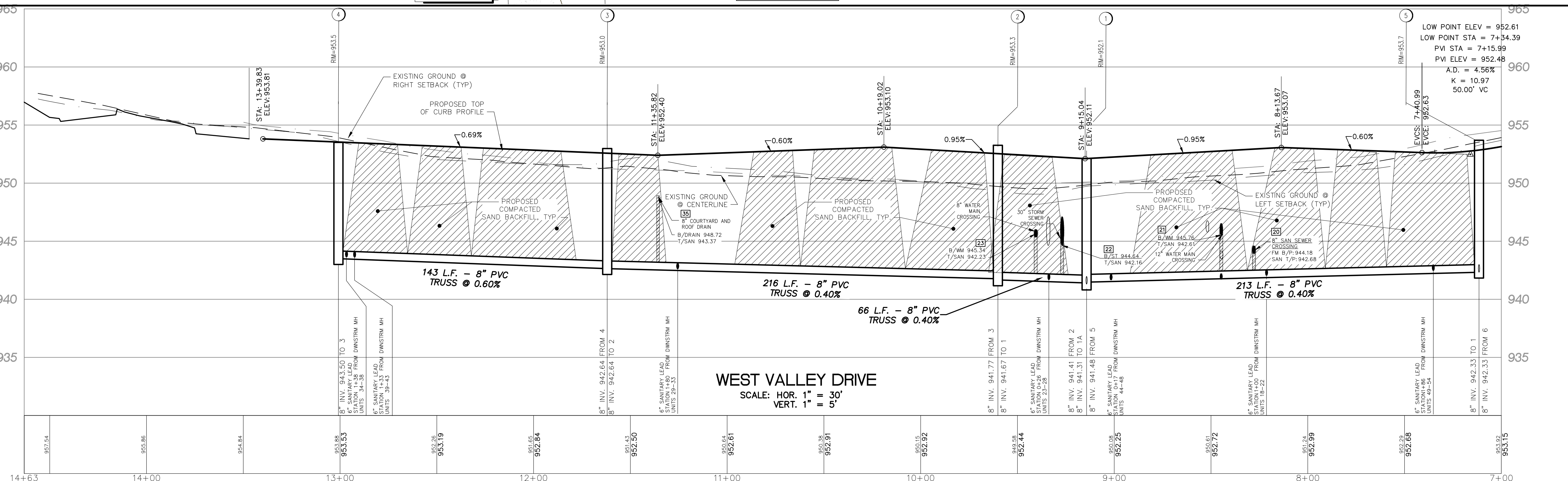
ROAD, SANITARY SEWER, FORCE MAIN & WATER MAIN PLAN

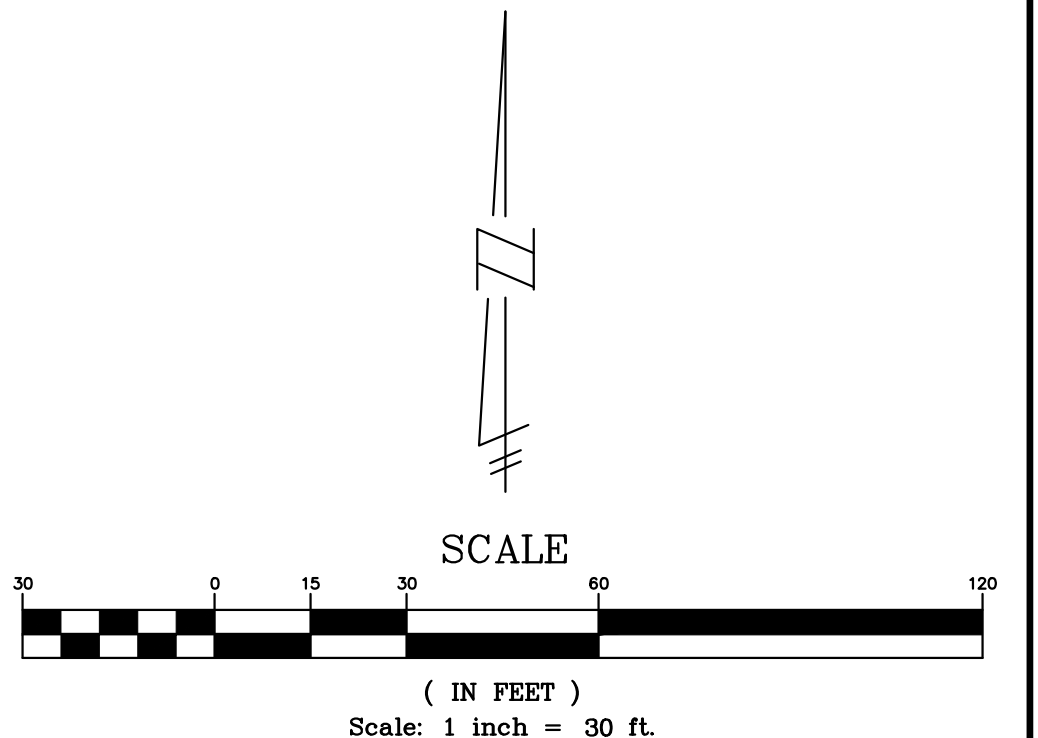
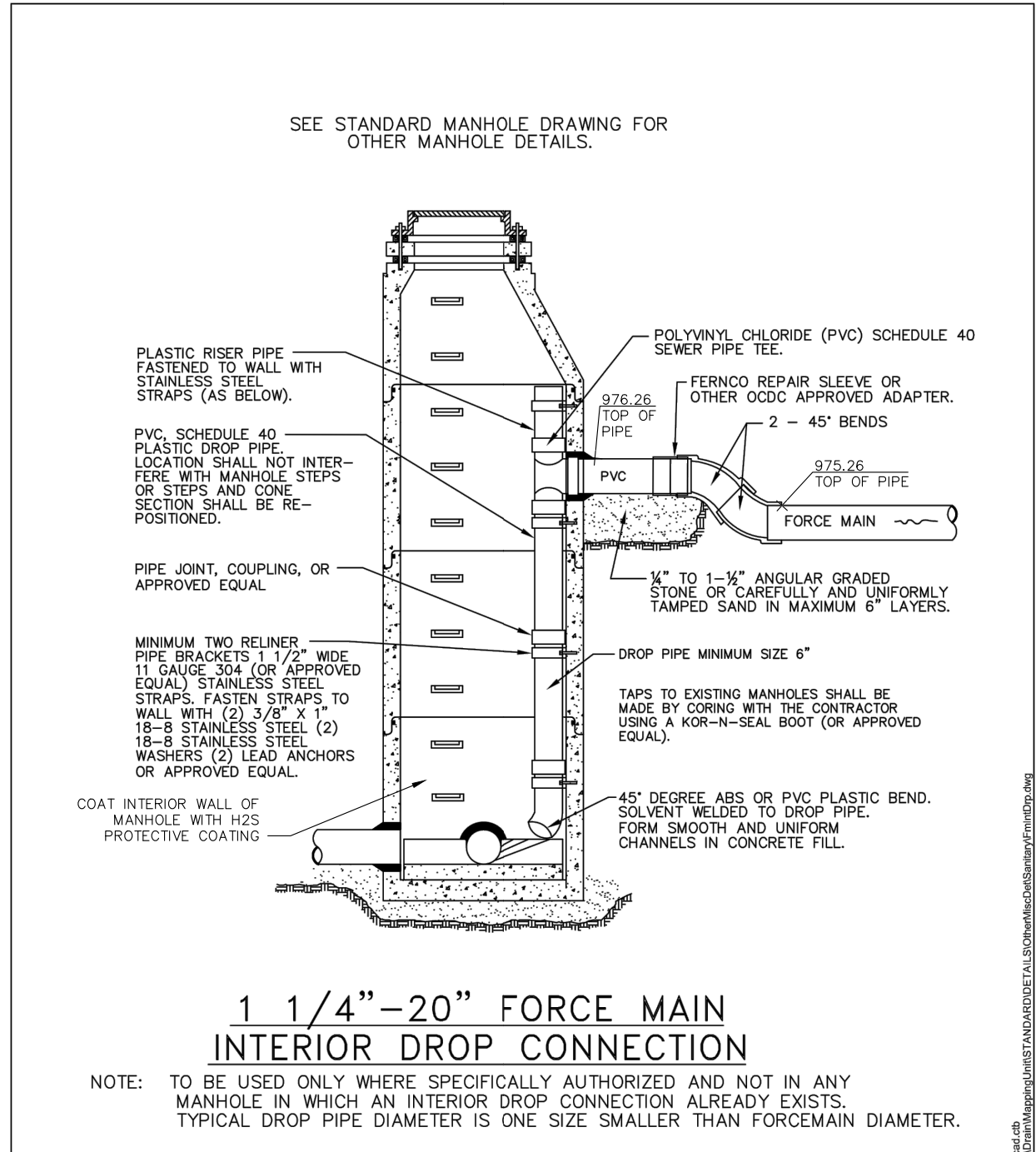
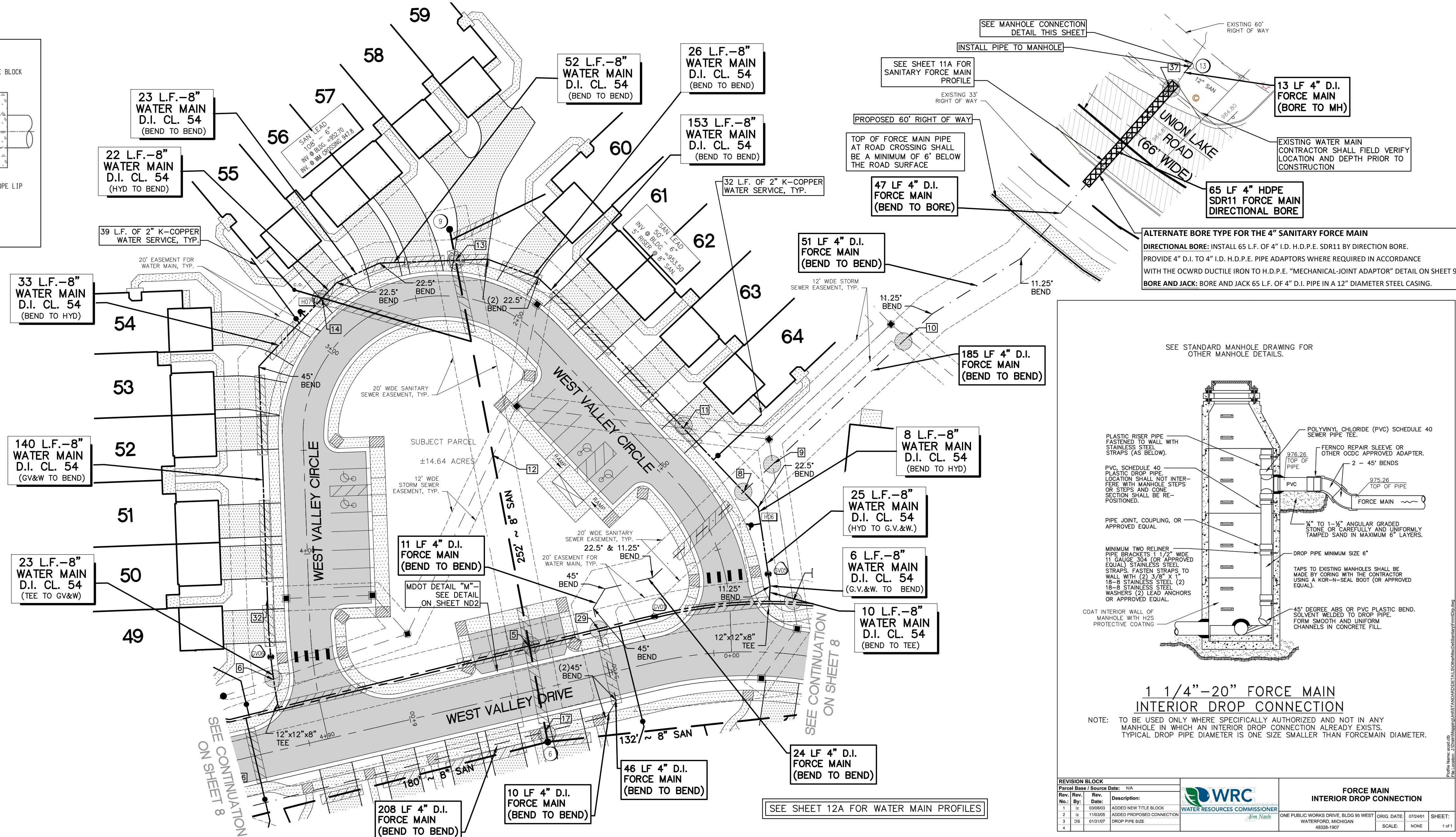
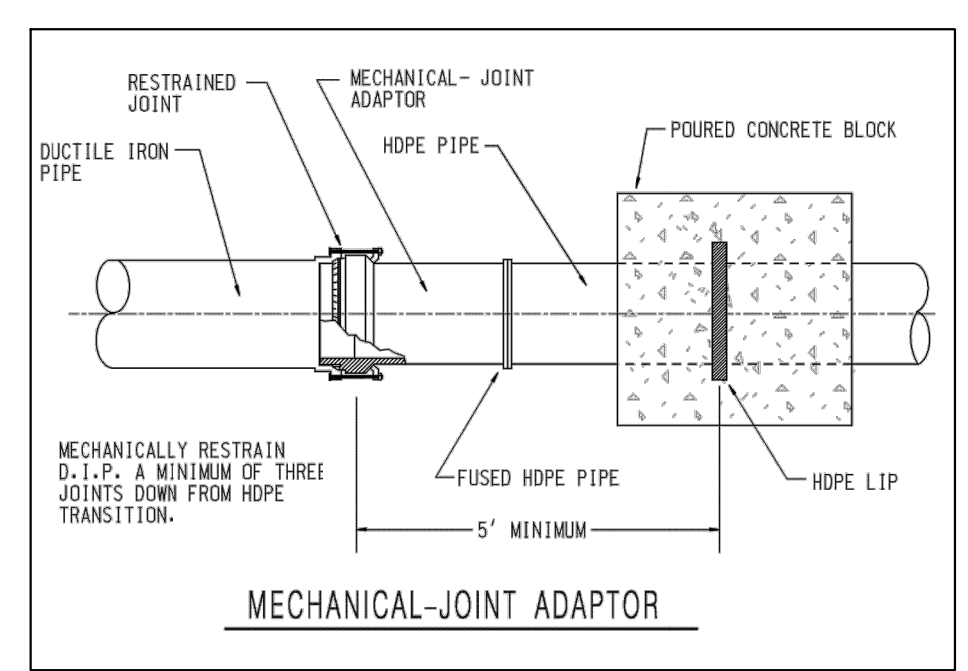
SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.412.7050

FARMINGTON HILLS OFFICE: 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 9

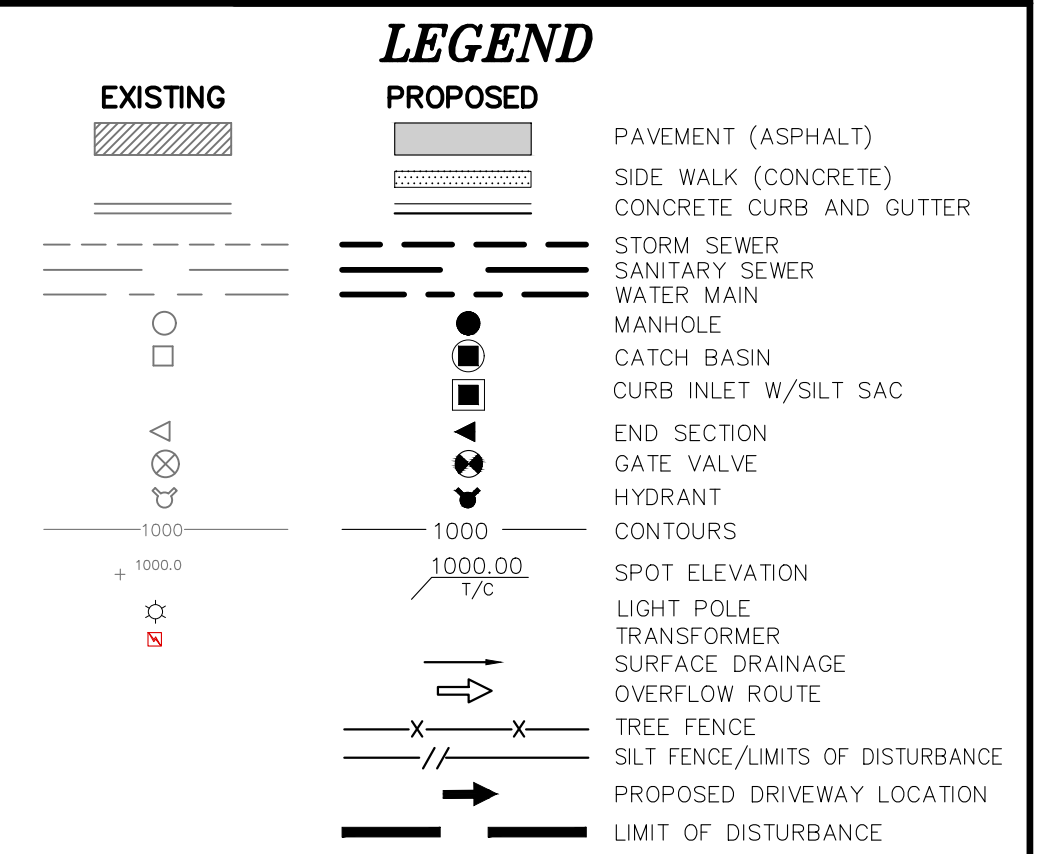




UTILITY CROSSING- MAINTAIN 18\"/>

COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT DENSITY.

- NOTES**
1. ALL GRAVITY SANITARY SEWER SHALL BE PVC TRUSS PIPE OR APPROVED EQUIVALENT.
 2. ALL GRAVITY SANITARY SEWER LEADS SHALL BE SDR 23.5 PVC PIPE.
 3. ALL TRENCHES WITHIN 1 ON 1 SLOPE FROM TOP OF CURBS SHALL BE BACKFILLED WITH GRANULAR MATERIAL CLASS II AND COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT.
 4. SANITARY LEADS SHALL BE A MINIMUM OF 1% GRADE, A MAXIMUM OF 150 LF AND A MINIMUM 6\"/>
 - 5. SANITARY LEADS SHALL BE BURIED AT LEAST 5 FEET DEEP WHERE UNDER THE INFLUENCE OF PAVEMENT.
 - 6. ALL SANITARY MANHOLES SHALL BE 4\"/>
 - 7. MINIMUM DEPTH ON FORCEMAIN IS 6.0' TO TOP OF PIPE



WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	DESCRIPTION
1.	REV. PER ROOF PERMITS DEPARTMENT	10-22-19	UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.
2.	REV. SAN AND STORM PER OWNER	04-10-20	
3.	REV. SAN, ST. & PAV. PER OWNER	5-18-20	
4.	REVISE PER TWP.	02-18-21	
5.	REVISE PER TWP.	03-17-21	
7.	REV PER OWNER, RCOG AND DCORC	11-21-23	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP	04-25-23	
10.	REVISED PER TWP.	7-27-23	
11.	REVISED PER TWP.	09-21-23	
12.	REVISED PER EOLE	01-31-24	
13.	REVISE PER TWP.	03-11-25	

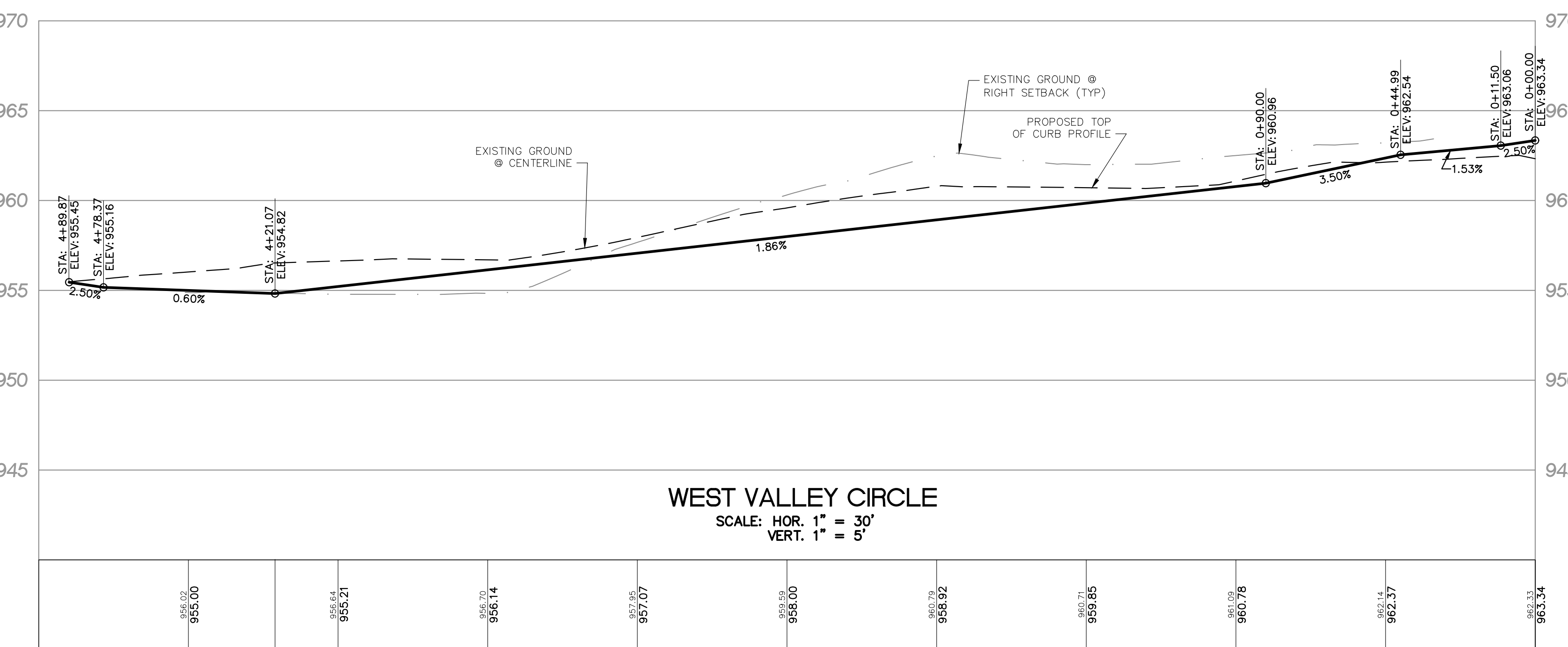
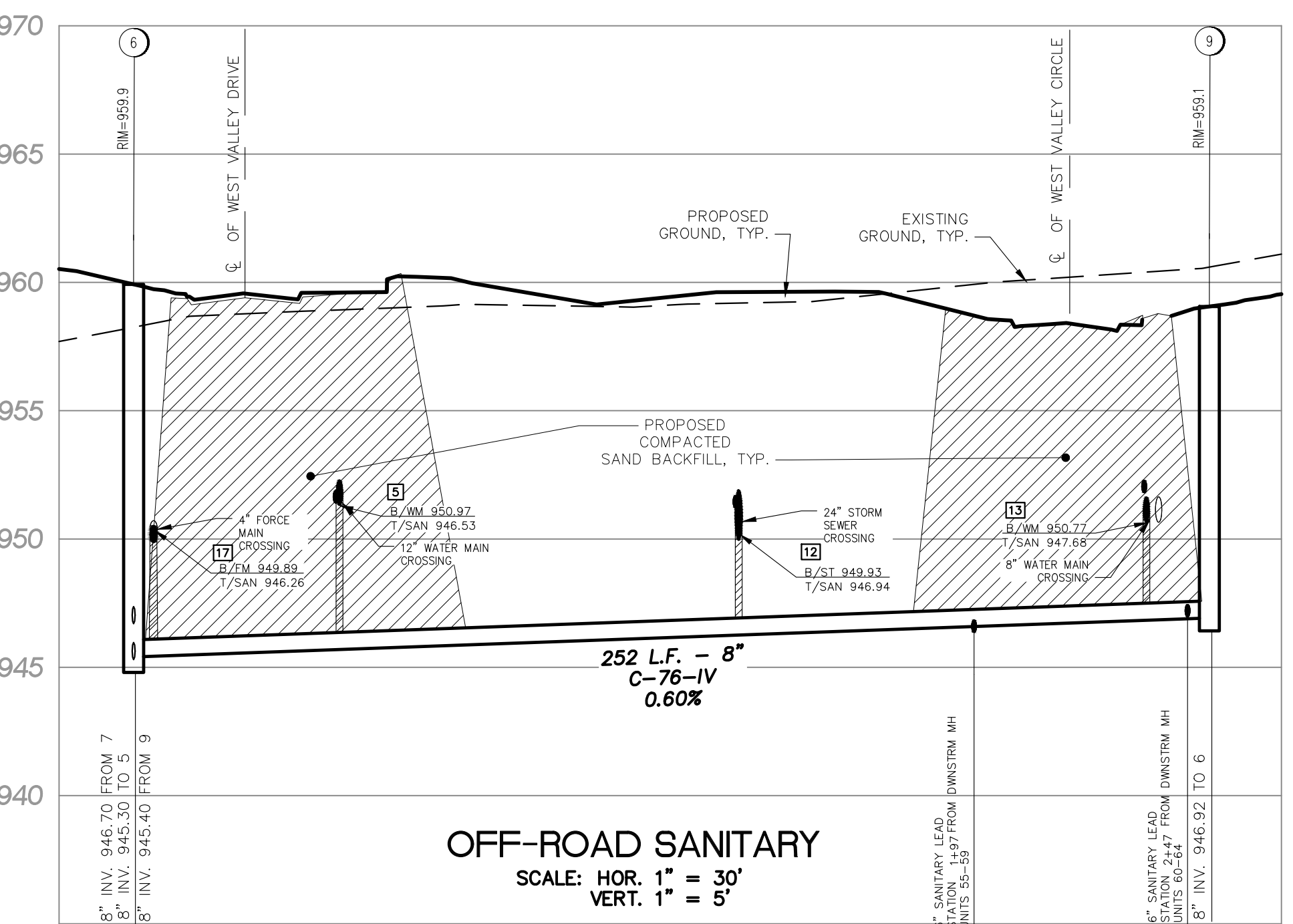
DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
 CHECKED BY: J.E. DRAWING FILE: 17031-RD.dwg
ROAD, SANITARY SEWER, FORCE MAIN & WATER MAIN PLAN

SKL SEIBER KEAST LEHNER ENGINEERING | LEVING

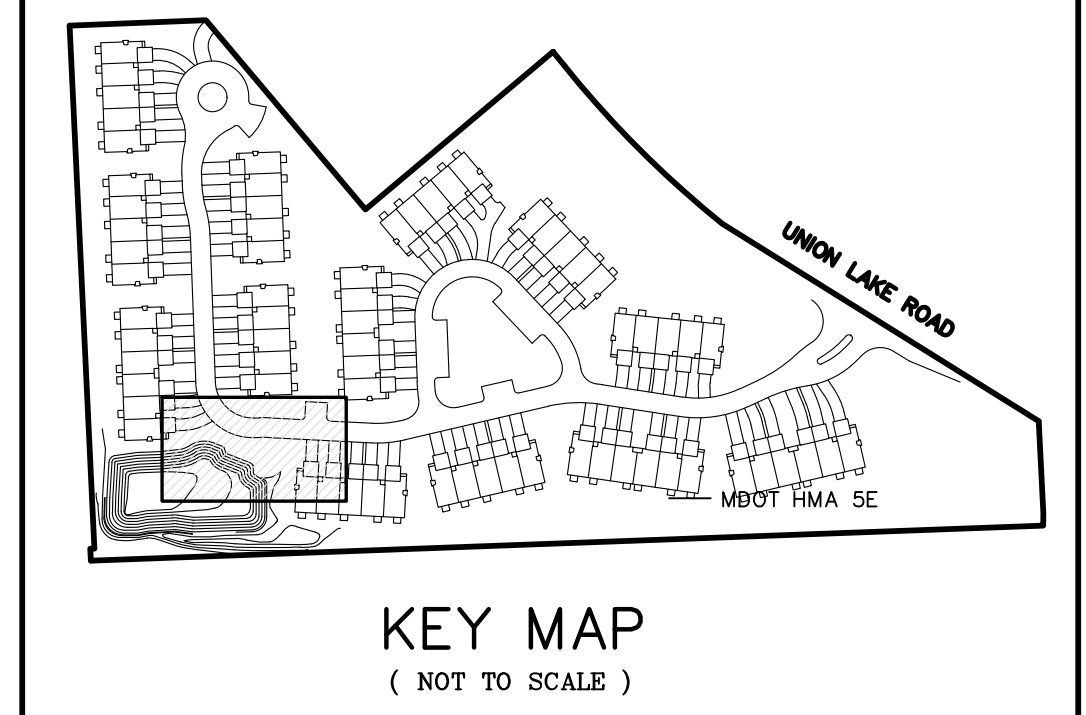
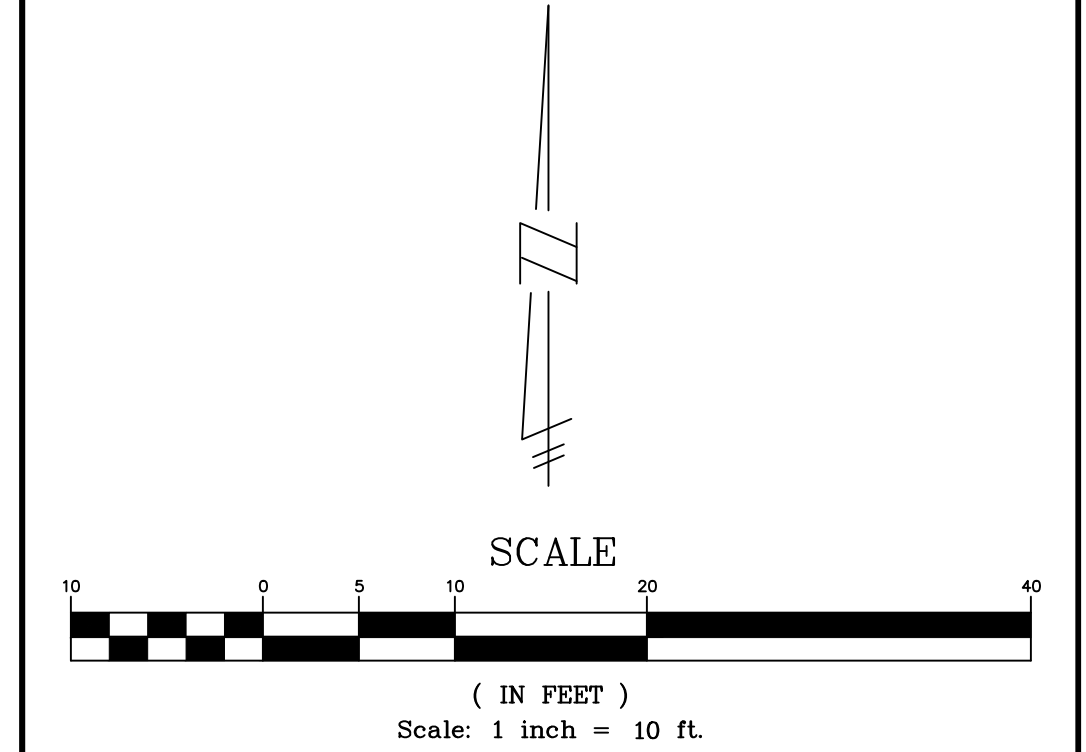
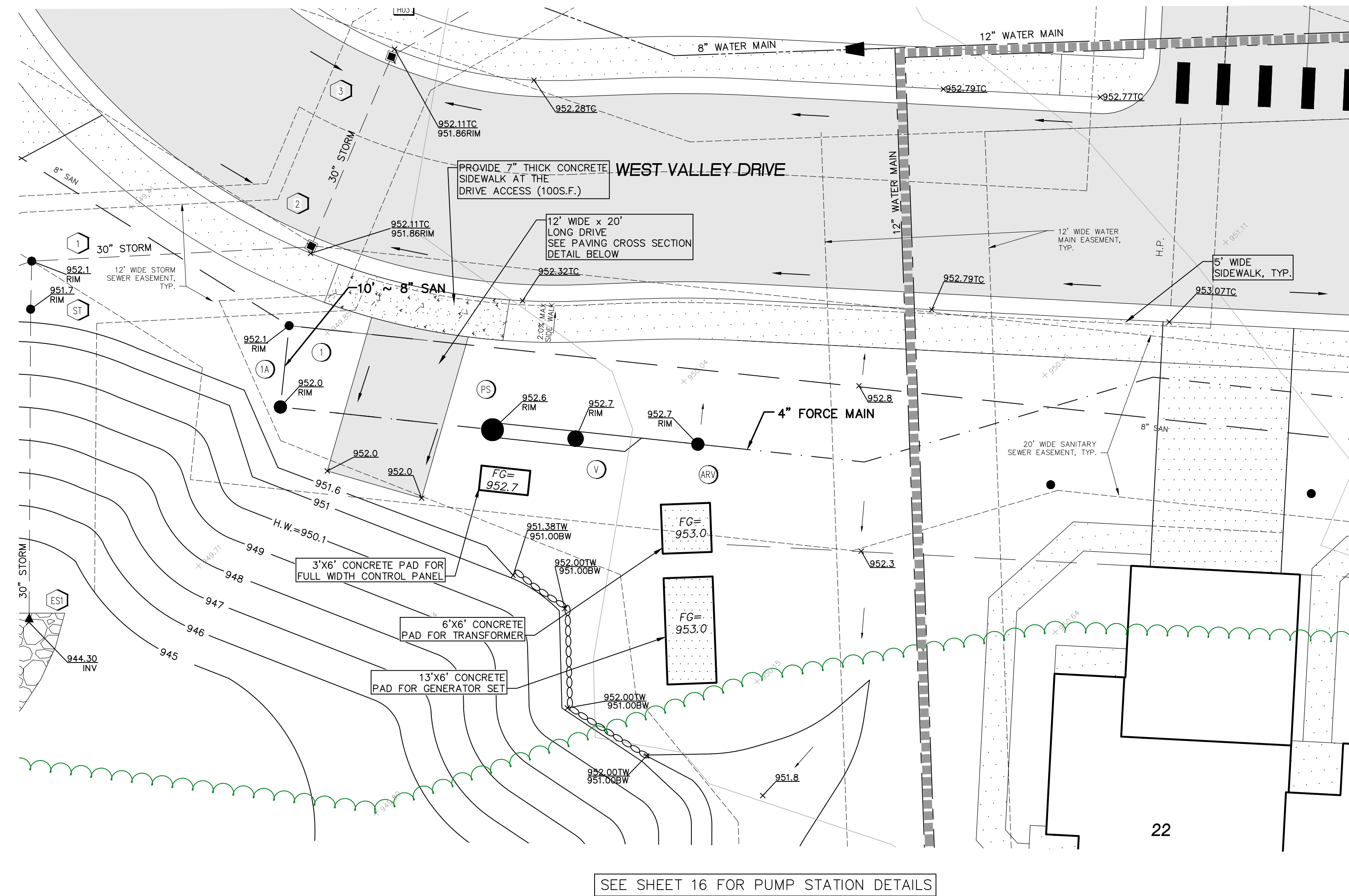
CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

FARMINGTON HILLS OFFICE: 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 10

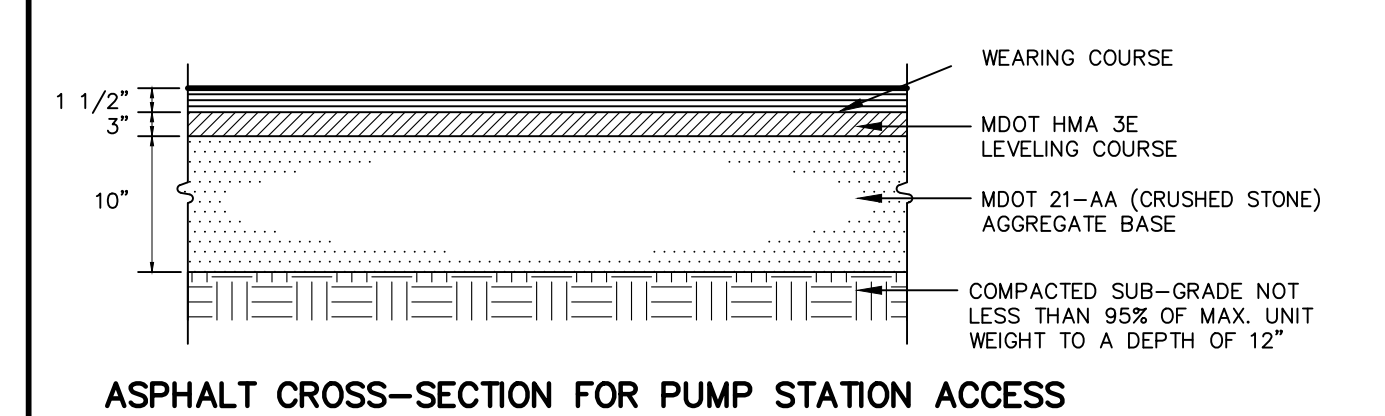
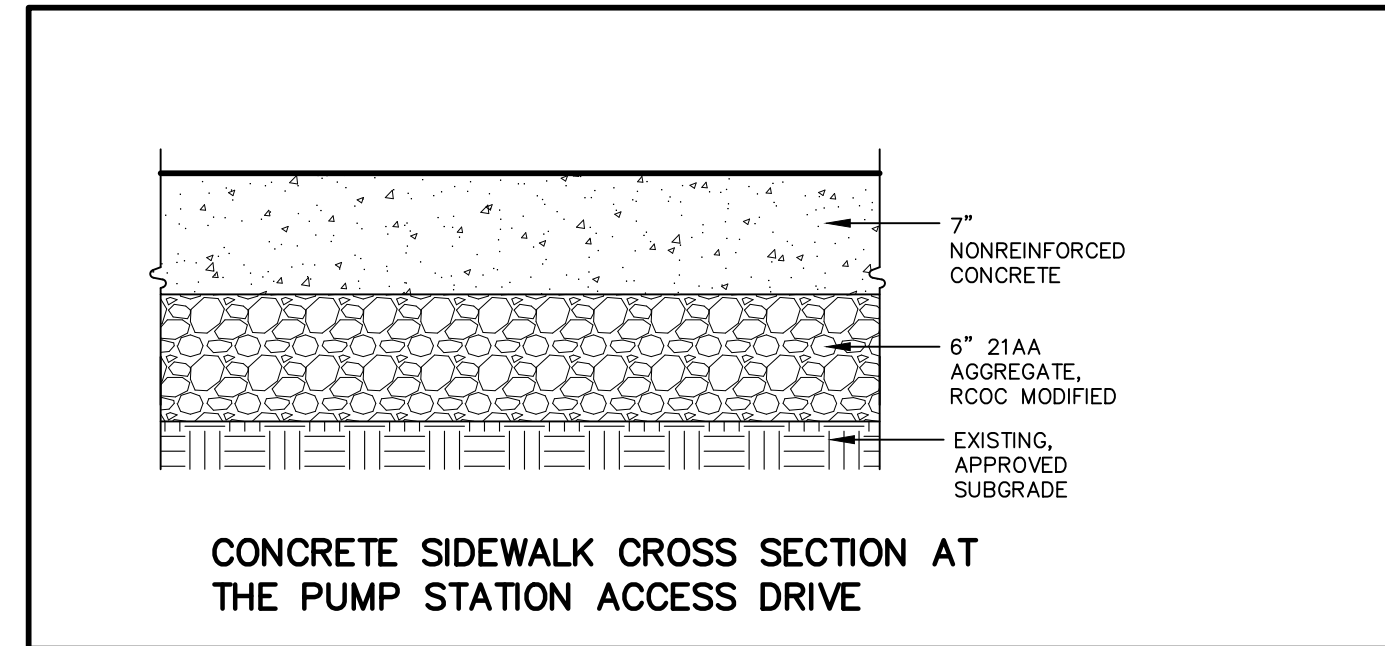


17031-RD.dwg, 08/23/19, 10:00 AM, G.N., 17031-RD.dwg, 10/22/19, 10:00 AM, G.N.



LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT (ASPHALT)
		SIDE WALK (CONCRETE)
		CONCRETE CURB AND GUTTER
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		MANHOLE
		CATCH BASIN
		CURB INLET W/SILT SAC
		END SECTION
		GATE VALVE
		HYDRANT
		CONTOURS
		SPOT ELEVATION
		LIGHT POLE
		TRANSFORMER
		SURFACE DRAINAGE
		OVERFLOW ROUTE
		TREE FENCE
		SILT FENCE/LIMITS OF DISTURBANCE
		PROPOSED DRIVEWAY LOCATION
		LIMIT OF DISTURBANCE



WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
1.	REV. PER RCOC PERMITS DEPARTMENT	10-22-19
2.	REV. SAN AND STORM PER OWNER	04-10-20
3.	REV. SAN, ST. & PAV. PER OWNER	5-18-20
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5.	REVISE PER TWP.	03-17-21
7.	REV PER OWNER, RCOC AND OCMRC	11-21-23
8.	REVISED WATERMAIN FOR OWNER	04-05-23
9.	REVISED PER TOWNSHIP	04-25-23
10.	REVISED PER TWP.	7-27-23
11.	REVISED PER TWP.	09-21-23
12.	REVISED PER EOLE	01-31-24
13.	REVISE PER TWP.	03-13-25

UTILITY WARNING
UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

811 Know what's below. Call before you dig.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE: 17031-PS.SP.dwg

PUMP STATION SITE PLAN

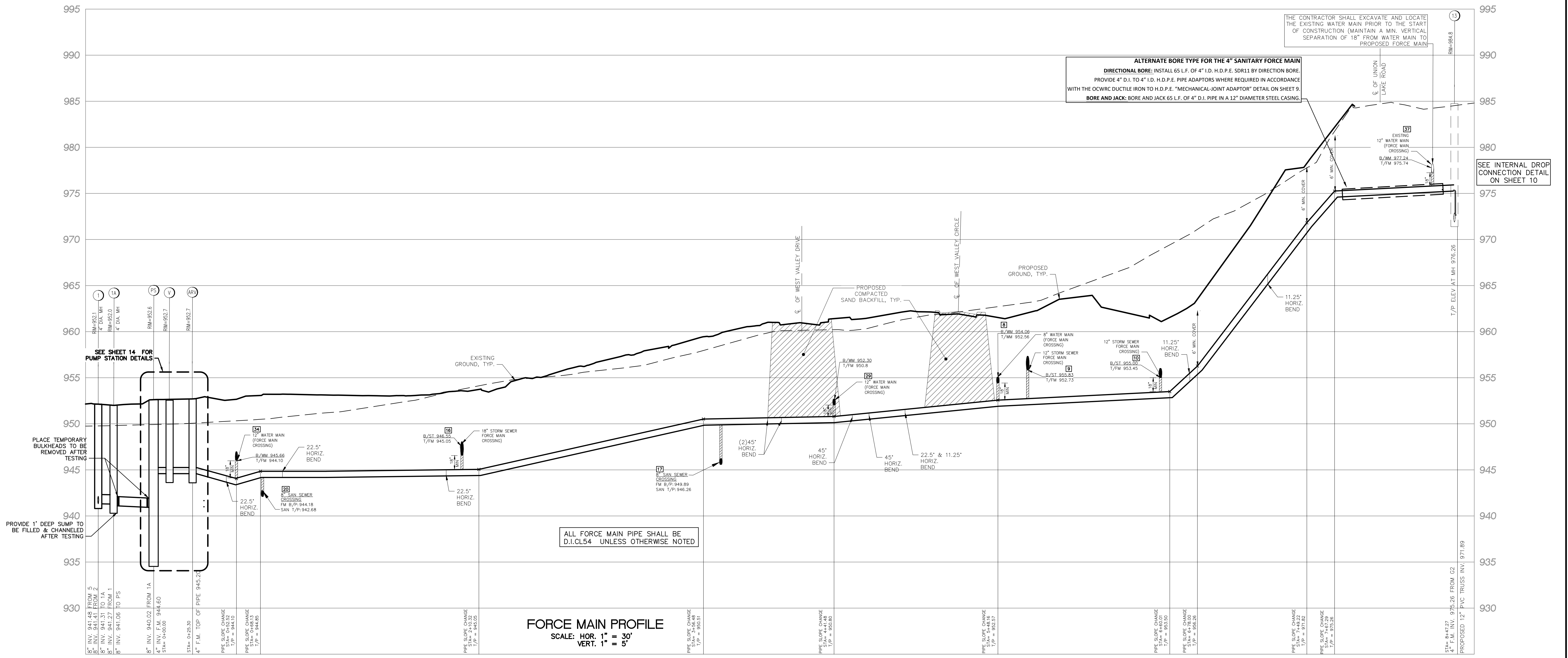
SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

FARMINGTON HILLS OFFICE: 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 11

P:\2025 West Valley - Utility Main Road\Drawings\250325\250325-PS.dwg, 10/22/2019 10:28 AM



FORCE MAIN PROFILE
 SCALE: HOR. 1" = 30'
 VERT. 1" = 5'

ALL FORCE MAIN PIPE SHALL BE
 D.I.CL54 UNLESS OTHERWISE NOTED

ALTERNATE BORE TYPE FOR THE 4" SANITARY FORCE MAIN
 DIRECTIONAL BORE: INSTALL 65 L.F. OF 4" I.D. H.D.P.E. SDR11 BY DIRECTION BORE.
 PROVIDE 4" D.I. TO 4" I.D. H.D.P.E. PIPE ADAPTORS WHERE REQUIRED IN ACCORDANCE
 WITH THE OCWRC DUCTILE IRON TO H.D.P.E. "MECHANICAL-JOINT ADAPTOR" DETAIL ON SHEET 9.
 BORE AND JACK: BORE AND JACK 65 L.F. OF 4" D.I. PIPE IN A 12" DIAMETER STEEL CASING.

THE CONTRACTOR SHALL EXCAVATE AND LOCATE
 THE EXISTING WATER MAIN PRIOR TO THE START
 OF CONSTRUCTION (MAINTAIN A MIN. VERTICAL
 SEPARATION OF 18" FROM WATER MAIN TO
 PROPOSED FORCE MAIN)


SEE INTERNAL DROP
 CONNECTION DETAIL
 ON SHEET 10

SEE SHEET 14 FOR
 PUMP STATION DETAILS

PLACE TEMPORARY
 BULKHEADS TO BE
 REMOVED AFTER
 TESTING


PROVIDE 1' DEEP SUMP TO
 BE FILLED & CHANNELLED
 AFTER TESTING

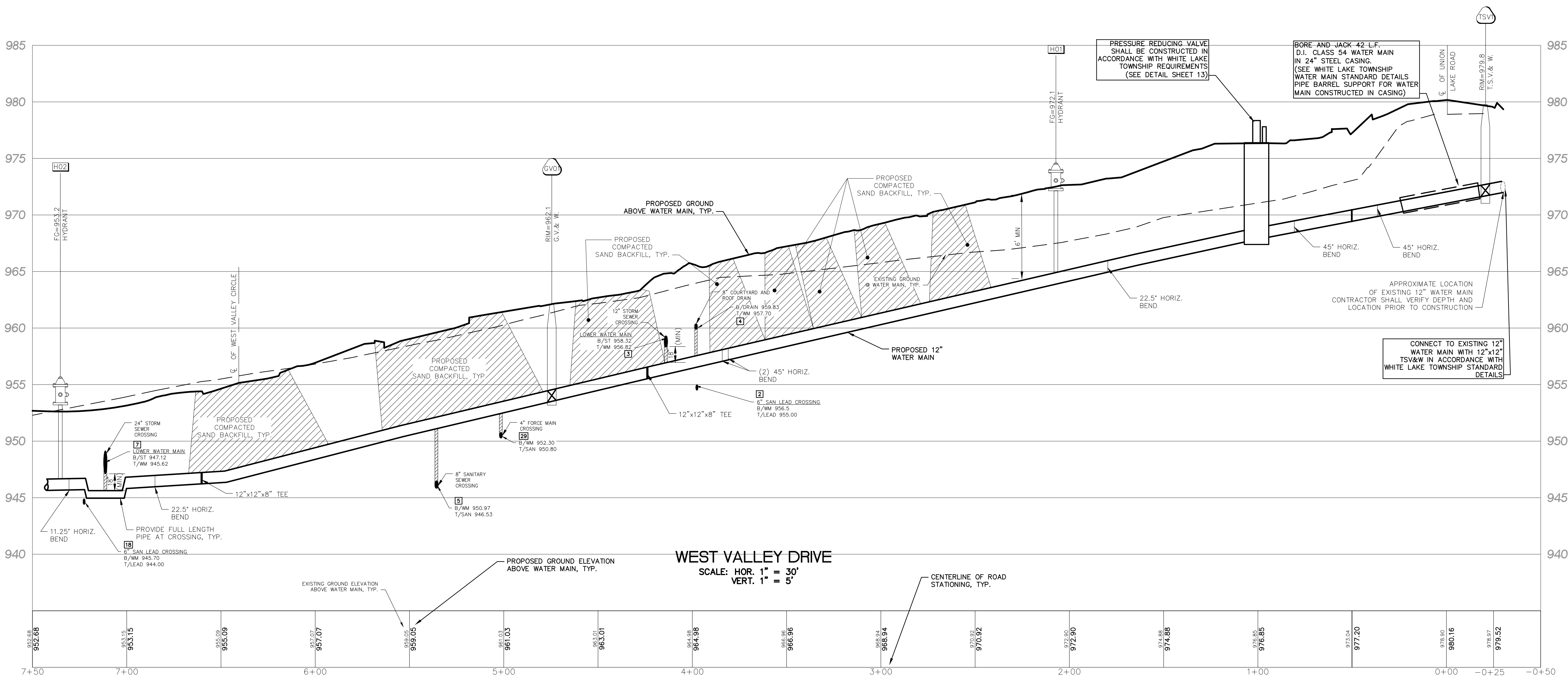
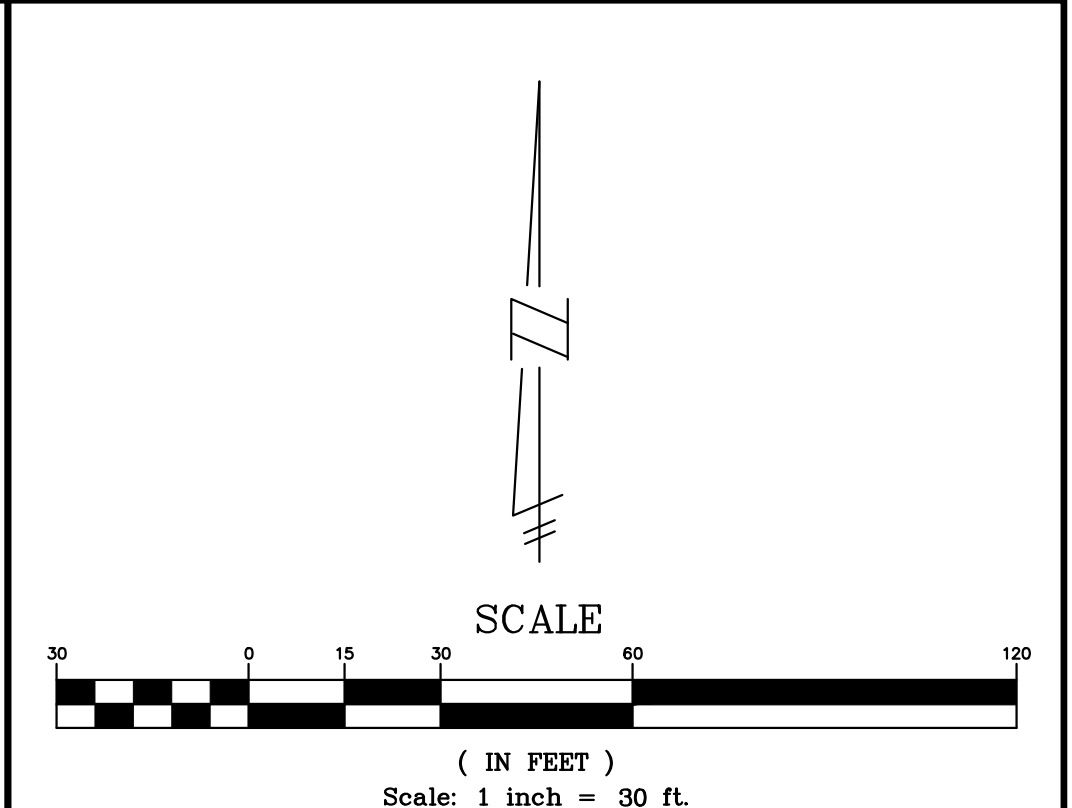
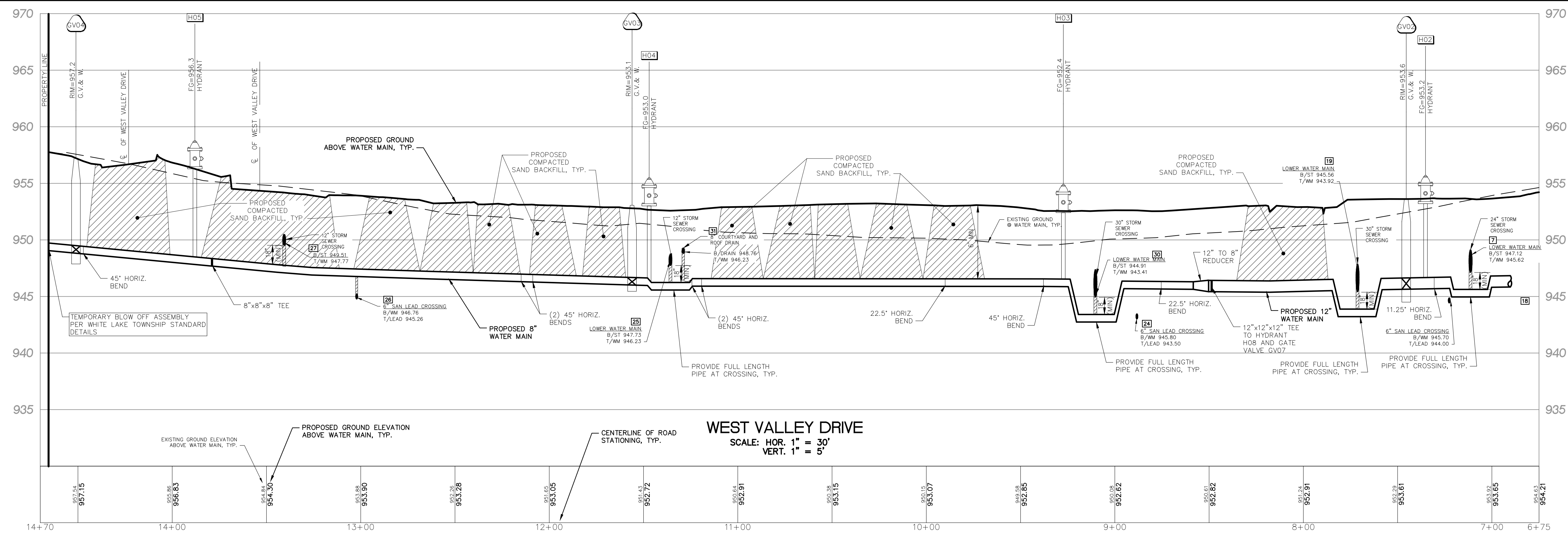
WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
 SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
 WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	
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5.	REVISE PER TWP.	03-17-21	
7.	REV PER OWNER, RCOD AND OCWRC	11-21-23	 Know what's below. Call before you dig. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.
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13.	REVISED PER TWP.	03-13-24	
13.	REVISED PER TWP.	03-13-24	

DESIGNED BY: G.N. JOB NUMBER: 17-031
 DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE: 17031-RD.dwg

FORCE MAIN PROFILE

 SEIBER KEAST LEHNER ENGINEERING SURVEYING <small>CLINTON TOWNSHIP OFFICE 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050</small>	<small>FARMINGTON HILLS OFFICE 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321</small>	SHEET
		11A



UTILITY CROSSING- MAINTAIN 18" MINIMUM VERTICAL SEPARATION BETWEEN UTILITIES.

COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT DENSITY.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
[Symbol]	[Symbol]	PAVEMENT (ASPHALT)
[Symbol]	[Symbol]	SIDE WALK (CONCRETE)
[Symbol]	[Symbol]	CONCRETE CURB AND GUTTER
[Symbol]	[Symbol]	STORM SEWER
[Symbol]	[Symbol]	SANITARY SEWER
[Symbol]	[Symbol]	WATER MAIN
[Symbol]	[Symbol]	MANHOLE
[Symbol]	[Symbol]	CATCH BASIN
[Symbol]	[Symbol]	CURB INLET W/SILT SAC
[Symbol]	[Symbol]	END SECTION
[Symbol]	[Symbol]	GATE VALVE
[Symbol]	[Symbol]	HYDRANT
[Symbol]	[Symbol]	CONTOURS
[Symbol]	[Symbol]	SPOT ELEVATION
[Symbol]	[Symbol]	LIGHT POLE
[Symbol]	[Symbol]	TRANSFORMER
[Symbol]	[Symbol]	SURFACE DRAINAGE
[Symbol]	[Symbol]	OVERFLOW ROUTE
[Symbol]	[Symbol]	TREE FENCE
[Symbol]	[Symbol]	SILT FENCE/LIMITS OF DISTURBANCE
[Symbol]	[Symbol]	PROPOSED DRIVEWAY LOCATION
[Symbol]	[Symbol]	LIMIT OF DISTURBANCE

WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
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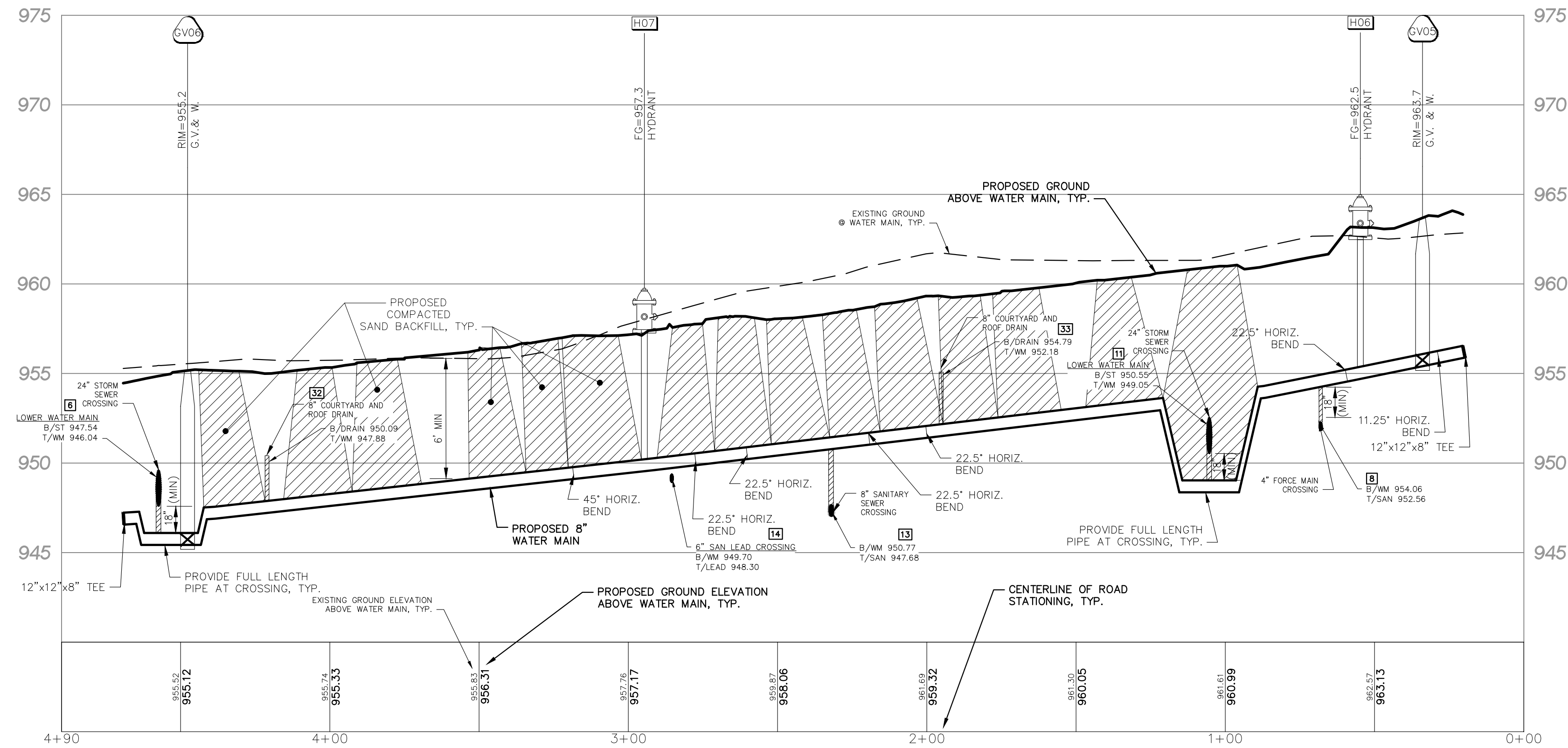
WATER MAIN PROFILES

SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

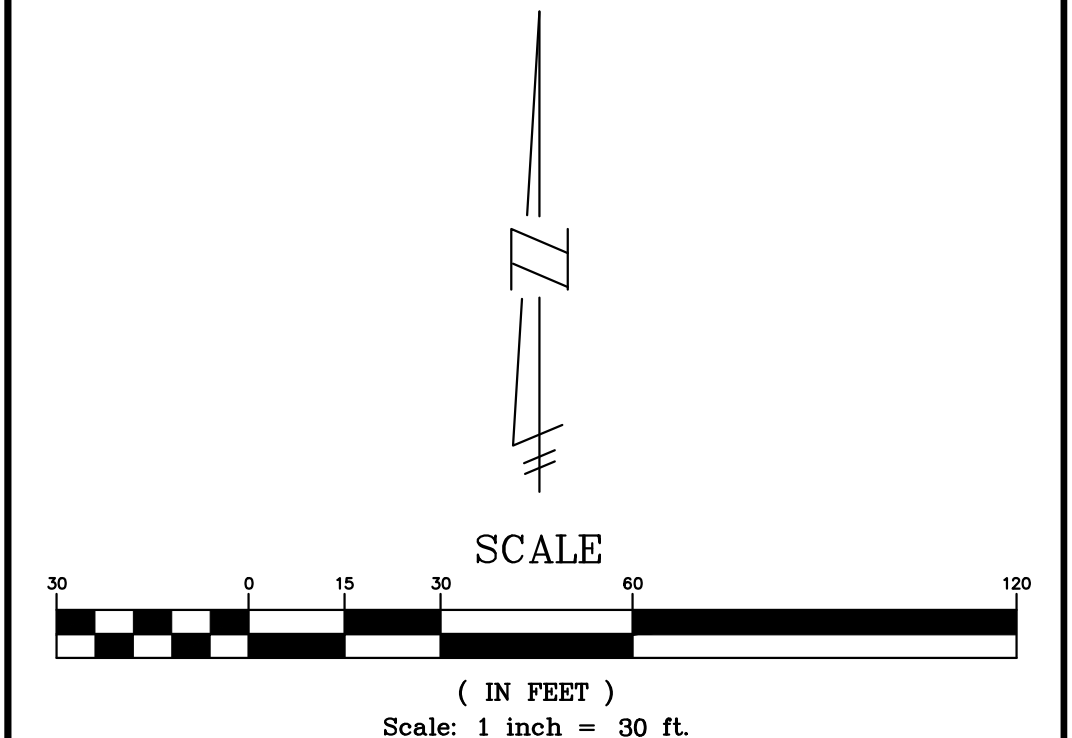
FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3331

SHEET 12

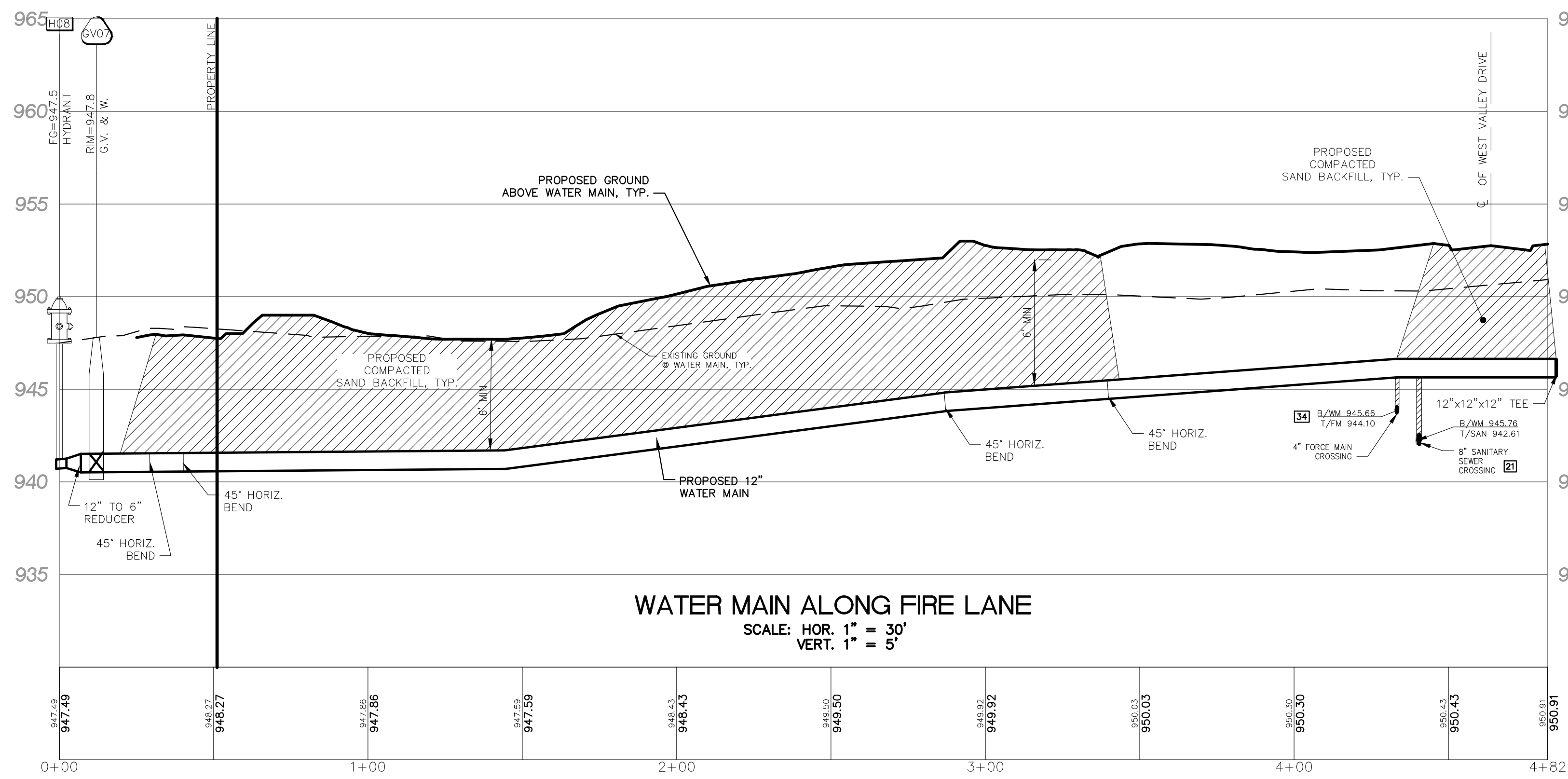


WEST VALLEY CIRCLE

SCALE: HOR. 1" = 30'
VERT. 1" = 5'



CROSSING TABLE					
CROSSING #	PIPE BELOW	T/PIPE ELEV	PIPE ABOVE	B/PIPE ELEV	SEPERATION
1	12" WM	971.00	12" STORM	973.21	1.50'
2	6" SAN LEAD	955.00	12" WM	956.50	1.50'
3	12" WM	956.82	12" STORM	958.32	1.50'
4	12" WM	957.70	8" DRAIN	959.83	2.13'
5	8" SAN	946.53	12" WM	950.97	4.44'
6	8" WM	946.04	24" STORM	947.54	1.50'
7	12" WM	945.62	24" STORM	947.12	1.50'
8	4" FM	952.56	8" WM	954.06	1.50'
9	4" FM	952.73	12" STORM	955.83	3.10'
10	4" FM	953.45	12" STORM	955.00	1.55'
11	8" WM	949.05	24" STORM	950.55	1.50'
12	8" SAN	946.94	24" STORM	949.93	2.99'
13	8" SAN	947.68	8" WM	950.77	3.09'
14	6" SAN LEAD	948.30	8" WM	949.70	1.40'
15	8" SAN	943.42	18" STORM	946.39	2.97'
16	4" FM	945.05	18" STORM	946.55	1.50'
17	8" SAN	946.26	4" FM	949.89	3.63'
18	6" SAN LEAD	944.00	12" WM	945.70	1.70'
19	12" WM	943.92	30" STORM	945.56	1.64'
20	8" SAN	942.68	4" FM	944.18	1.50'
21	8" SAN	942.61	12" WM	945.76	3.15'
22	8" SAN	942.16	30" STORM	944.64	2.48'
24	6" SAN LEAD	943.50	8" WM	945.80	2.30'
25	8" WM	946.23	12" STORM	947.73	1.50'
26	6" SAN LEAD	945.26	8" WM	946.76	1.50'
27	8" WM	947.77	12" STORM	949.51	1.74'
29	4" FM	950.80	12" WM	952.30	1.50'
30	8" WM	943.41	30" STORM	944.91	1.50'
31	8" WM	946.23	8" DRAIN	948.76	2.53'
32	8" WM	947.88	8" DRAIN	950.09	2.21'
33	8" WM	952.18	8" DRAIN	954.79	2.61'
34	4" FM	944.10	12" WM	945.66	1.56'
35	8" SAN	943.37	8" DRAIN	948.72	5.35'
36	8" SAN	953.34	8" DRAIN	959.92	6.58'
37	EX. 12" WM	977.24	4" FM	975.74	1.50'



WATER MAIN ALONG FIRE LANE

SCALE: HOR. 1" = 30'
VERT. 1" = 5'

UTILITY CROSSING- MAINTAIN 18" MINIMUM VERTICAL SEPERATION BETWEEN UTILITIES.

COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT DENSITY.

LEGEND

	EXISTING		PROPOSED	PAVEMENT (ASPHALT)
				SIDE WALK (CONCRETE)
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				SANITARY SEWER
				WATER MAIN
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WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

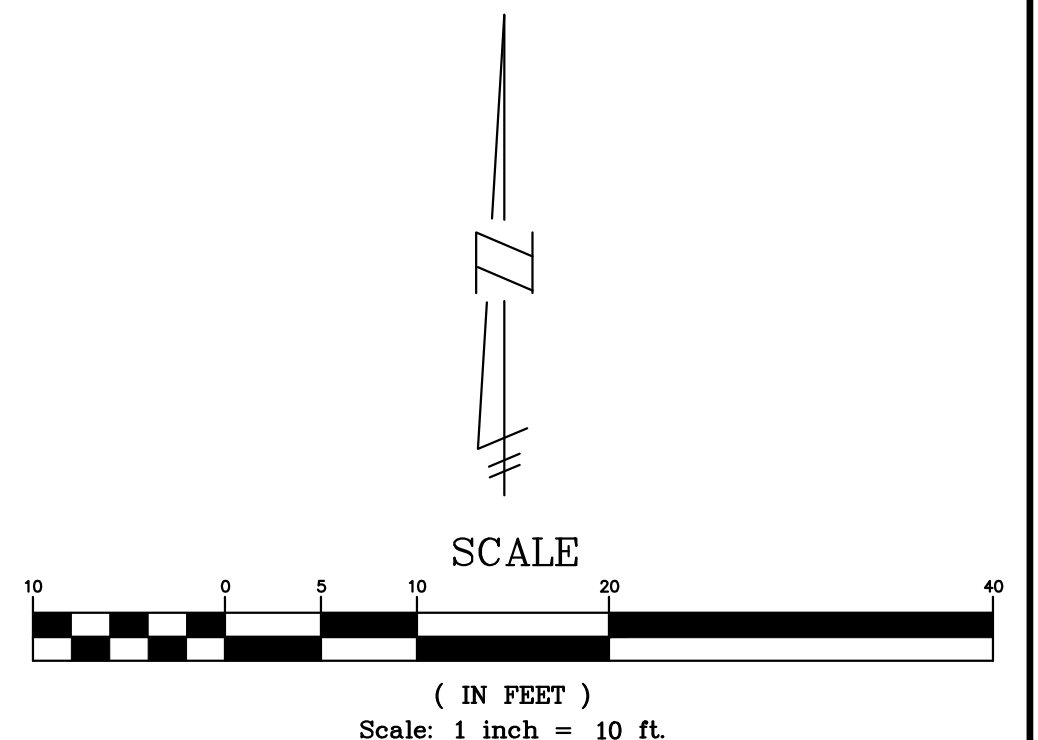
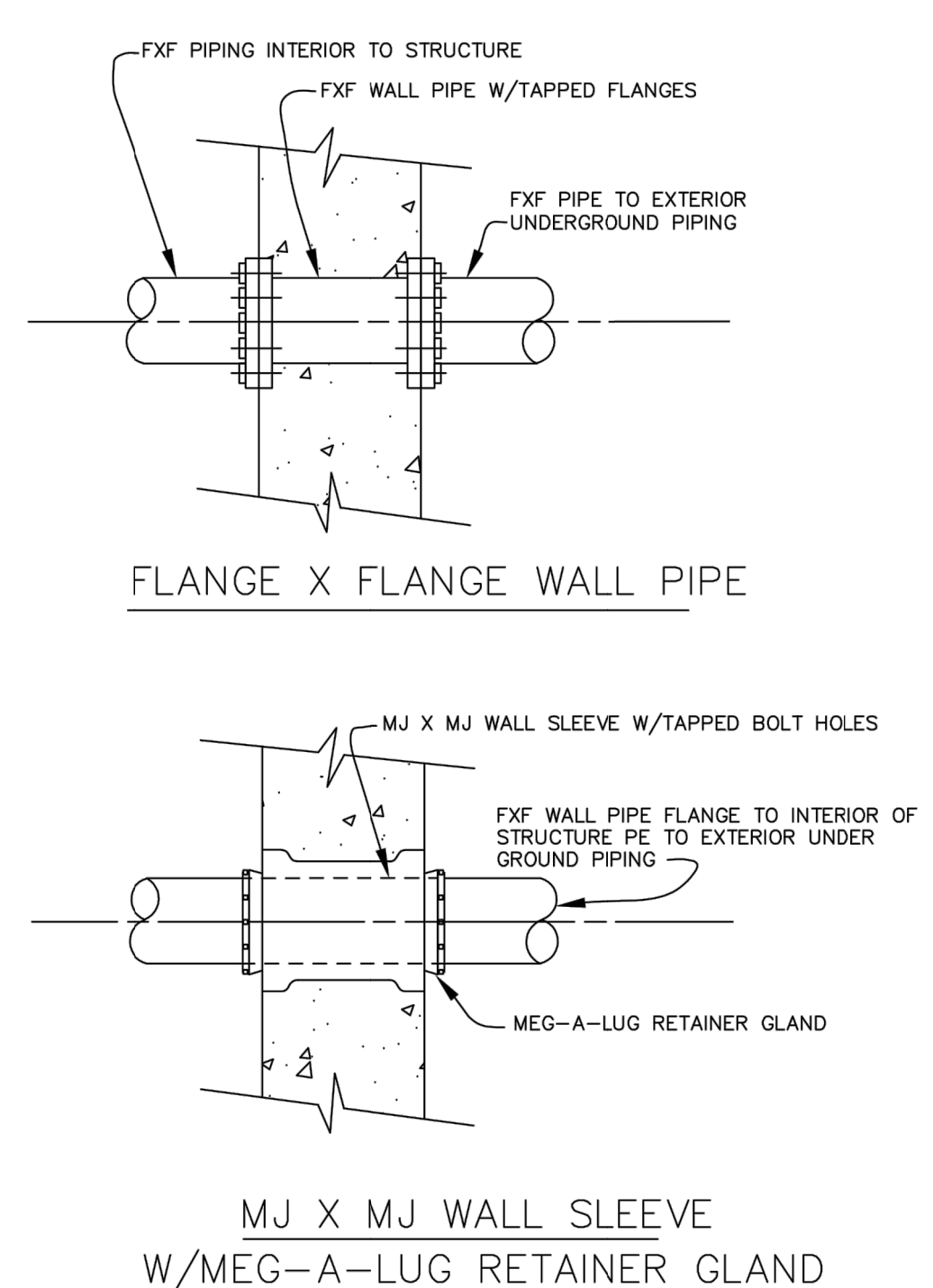
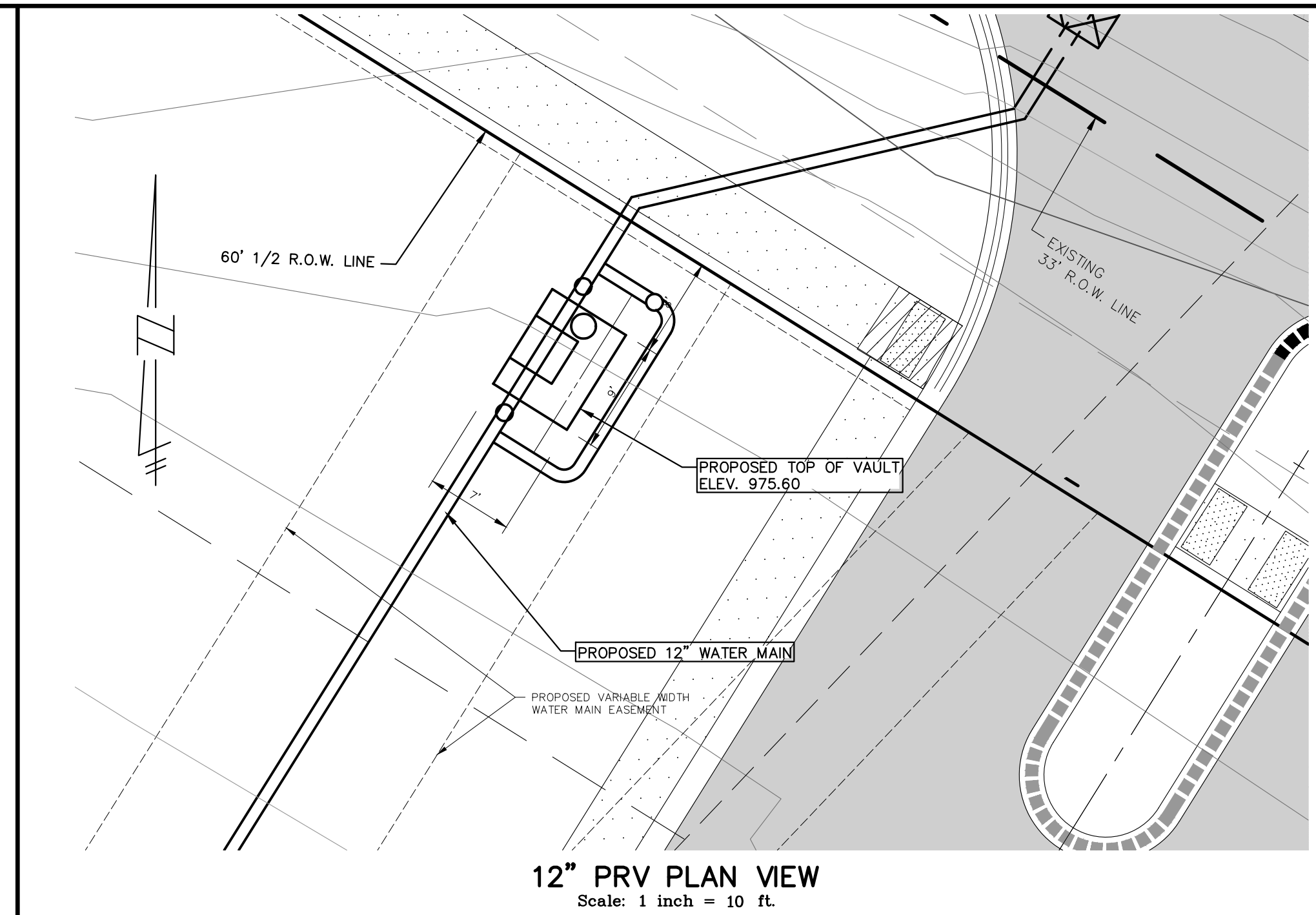
REVISIONS			UTILITY WARNING
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DESIGNED BY: G.N. JOB NUMBER: 17-031
DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE: 17031-RD.dwg

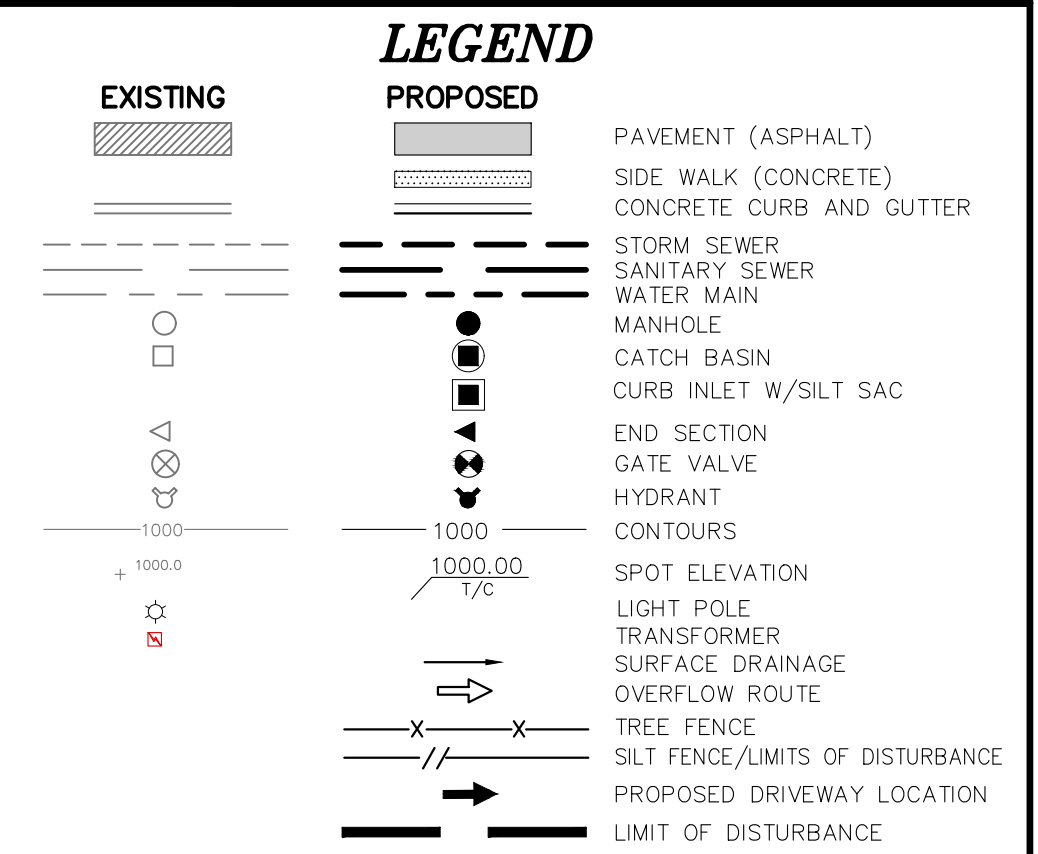
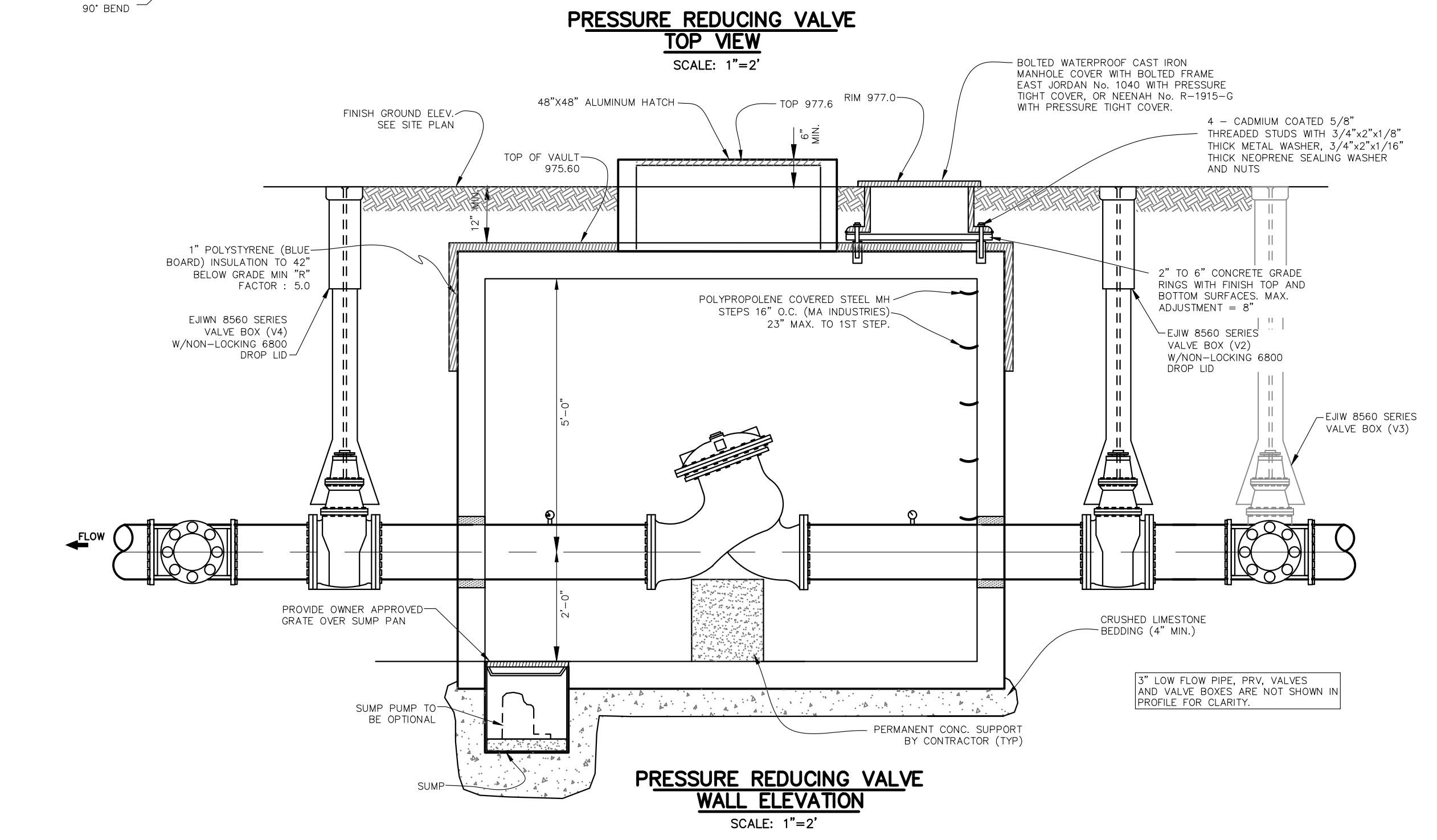
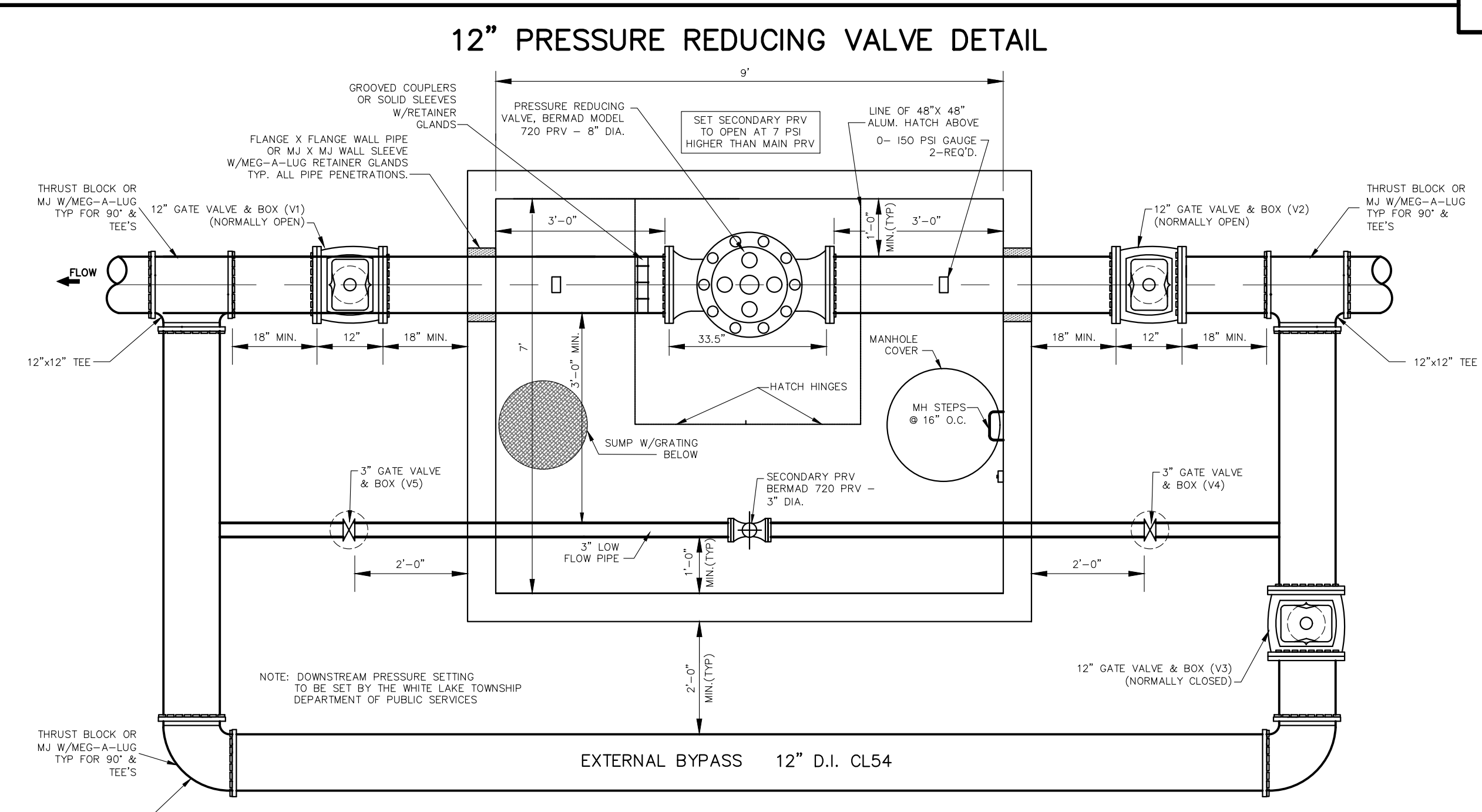
WATER MAIN PROFILES

SKL SEIBER KEAST LEHNER
ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050
FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3331



- GENERAL NOTES VAULT**
- THE CONTRACTOR SHALL NOTIFY WHITE LAKE TOWNSHIP AND CALL 811 FOR EXISTING UTILITY LOCATIONS A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE TO EXISTING UTILITIES.
 - ALL CONSTRUCTION MUST CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY WHITE LAKE TOWNSHIP.
 - ALL SOIL EROSION AND SILT MUST BE CONTROLLED AND CONTAINED ON SITE.
 - ALL PUBLIC WATER MAIN PIPE SHALL BE CLASS 54 DUCTILE IRON WITH DOUBLE CEMENT LINING.
 - THRUST BLOCKS ARE REQUIRED FOR ALL TEES AND BENDS OUTSIDE VAULT.
 - ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4500 P.S.I., AND SHALL BE AIR-ENTRAINED.
 - EXCAVATION AREA FOR VAULT SHALL BE OVER EXCAVATED 6" AND BACK FILLED WITH 6" OF CRUSHED LIMESTONE. ALL BACK FILL SHALL BE 95% COMPACTION.
 - ALL JOINTS BETWEEN PIPES AND WALL SLEEVES SHALL HAVE A WATERPROOF SEALANT.
 - ALL JOINTS BETWEEN PRECAST SECTIONS INCLUDING TOP SHALL BE SEALED WITH BUTYL ROPE TYPE SEALANT.
 - HATCH SHALL BE 48" X 48" ALUMINUM EQUAL TO BILCO TYPE "J", 300psf LOADING, WITH LOCK HASP.
 - THE VAULT SHALL BE DESIGNED FOR AN H-20 LOADING WITH 12" OF BACKFILL.
 - ALL EXTERIOR CONCRETE SURFACES SHALL BE WATERPROOFED WITH MASTIC ASPHALT COATING (50 ML. THICKNESS). ALL INTERIOR CONCRETE SURFACES SHALL BE SEALED WITH ONE COAT OF THOROSEAL AND TWO TOP COATS OF HEBULD MASONRY SEALANT (50 ML. THICKNESS).
 - SHOP DRAWINGS FOR THE VAULT, HATCH AND ALL PIPING AND APPURTANANCES SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW AND APPROVAL.
 - SOIL BORING OR TEST PIT LOG SHALL BE PROVIDED WITH OR PRIOR TO SHOP DRAWINGS. SOILS AND WATER TABLE INFORMATION TO A MINIMUM OF TEN FEET BELOW THE GROUND SURFACE SHALL BE PROVIDED.



WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	<p>UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.</p> <p>811 Know what's below. Call before you dig.</p> <p>THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.</p>
1.	REV. PER R.O.C. PERMITS DEPARTMENT	10-22-19	
2.	REV. SAN AND STORM PER OWNER	04-10-20	
3.	REV. SAN. ST. & PAV. PER OWNER	5-18-20	
4.	REVISE PER TWP.	02-18-21	
5.	REVISE PER TWP.	03-17-21	
7.	REV PER OWNER, R.O.C. AND O.C.M.C.	11-21-23	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP	04-25-23	
10.	REVISED PER TWP.	7-27-23	
11.	REVISED PER TWP.	09-21-23	
12.	REVISED PER E.O.L.	01-31-24	
13.	REVISE PER TWP.	03-18-25	

DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE: 17031-RD.dwg

PRESSURE REDUCING VALVE DETAILS AND NOTES

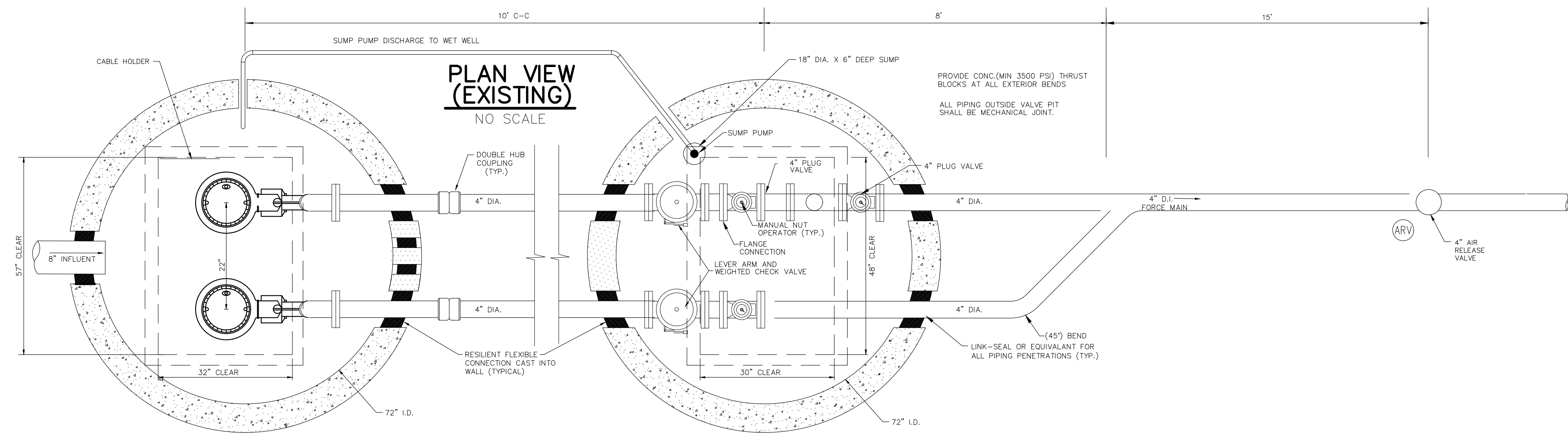
SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

FARMINGTON HILLS OFFICE: 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

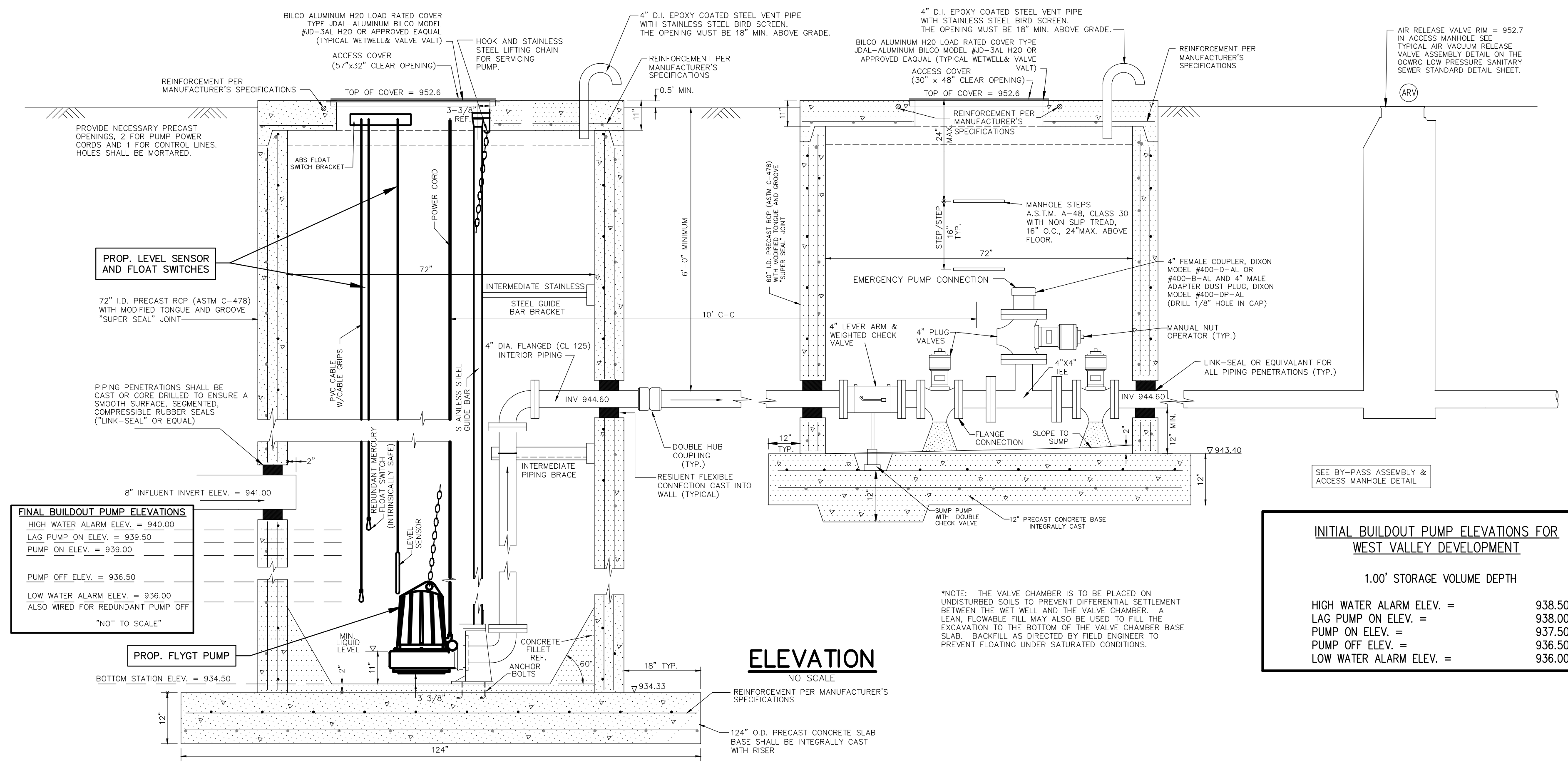
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NOTES

- PUMPS:**
- PUMPS SHALL BE FLYGT MODEL NP 3085 SH3-ADAPTIVE 256 SUBMERSIBLE WASTEWATER PUMP WITH A 4" DISCHARGE TO DELIVER 116 GAL/MIN AGAINST AN OPERATING HEAD OF 52 FT WITH 3.44 HP - 3415 RPM MOTOR (230V, 3PH, VFD) OR APPROVED EQUAL.
 - PUMPS SHALL BE CAPABLE OF PROVIDING SPHERES AT LEAST 3" IN DIAMETER.
- ELECTRICAL/CONTROL PANEL:**
- CONTROL PANEL SHALL BE PROVIDED BY PUMP MANUFACTURER.
 - RELAYS FOR LEAK DETECTION DEVICES IN EACH PUMP SHALL BE PROVIDED AND DELIVERED TO OWNER.
 - CONTROL CIRCUIT TO BE CONNECTED THROUGH HEAT SENSING SWITCHES IN THE PUMP AND SHALL DISCONNECT THE CONTROL CIRCUIT IN CASE OF A HIGH TEMPERATURE CONDITION IN THE PUMP MOTOR.
 - ALL SELECTOR SWITCHES AND LIGHTS SHALL BE OIL TIGHT, INDUSTRIAL RATED WITH 10 AMP CONTACTS.
 - CONTROL OF THE PUMPS SHALL BE BY MULTITRODE DUPLEX PUMP CONTROLLER, MODEL #MSU-3MP, WITH ENERGY MONITORING & MOTOR PROTECTION, MULTITRODE LEVEL PROBE WITH INTRINSICALLY SAFE BARRIER, AND REDUNDANT INTRINSICALLY SAFE MERCURY FLOAT SWITCHES FOR HIGH AND LOW WATER LEVELS.
 - PUMPS SHALL ALTERNATE AFTER EVERY CYCLE.
 - LOW WATER ALARM SHALL BE WIRED AS A REDUNDANT PUMP OFF SWITCH.
 - HOUR METERS SHALL BE PROVIDED FOR EACH PUMP.
 - THE ELECTRICAL CONTROL PANEL SHALL CONTAIN GAS-TIGHT SEALS.
 - ELECTRIC POWER (110V) SHALL BE PROVIDED FOR MAINTENANCE AND SHALL BE GROUND FAULT PROTECTED.
 - CONTROL PANEL SHALL BE LOCATED ABOVE GROUND.
 - GAS TIGHT SEALS SHALL BE PROVIDED IN CONDUITS FROM WET WELLS AND LOCATED WITHIN 18" OF CONTROL PANEL.
 - VOLTAGE AND AMPERAGE FROM CONTROL PANEL SHALL BE COMPATIBLE WITH MOTORS AND OTHER ELECTRICAL EQUIPMENT.
 - A DISCONNECTION OF THE ELECTRIC POWER TO PUMP MUST BE PROVIDED TO ALLOW COMPLETE REMOVAL OF PUMPS WITHOUT DISTURBING THE GAS TIGHT SEAL BETWEEN THE WET WELL AND THE CONTROL PANEL.
 - UNI-STRUT RACK SHALL BE PROVIDED FOR CONTROL PANEL MOUNT, MOUNT CONTROL PANELS ON EACH SIDE TO MINIMIZE RACK FOOT PRINT.
 - SCADA EQUIPMENT TO BE PROVIDED PER WHITE LAKE TOWNSHIP SPECIFICATIONS.
 - PUMP STATION CONTROL PANEL SHALL CONFORM TO WHITE LAKE TOWNSHIP SPECIFICATIONS AND SHALL INCLUDE VARIABLE FREQUENCY DRIVES (VFD'S) FOR PHASE CONVERSION.
- PUMP STATION/VALVE PIT:**
- COVERS A PUMP STATION - ITT FLYGT HEAVY DUTY ANGLE FRAME COVER WITH 32"x57" CLEAR OPENING WITH A SAFE-HATCH ACCESS COVER FOR FALL PROTECTION. THE COVER SHALL BE PROVIDED WITH A PADLOCK STYLE LOCKING DEVICE TO PREVENT UNAUTHORIZED ACCESS. B. VALVE PIT - ITT FLYGT HEAVY DUTY ANGLE FRAME COVER WITH 30"x48" CLEAR OPENING WITH A SAFE-HATCH ACCESS COVER FOR FALL PROTECTION. THE COVER SHALL BE PROVIDED WITH A PADLOCK STYLE LOCKING DEVICE TO PREVENT UNAUTHORIZED ACCESS. CHECK VALVES - APCO SERIES 100 RUBBER FLAPPER SWING CHECK VALVE WITH CAST IRON BODY AND COVER, MODEL 104 (4") SUPPLIED WITH BACKFLOW DEVICE AND FLOW CONTROL DEVICE.
 - PLUG VALVES - 4" DEZURIK (OR APPROVED EQUAL) - HAND ACTIVATED.
 - ALL INTERIOR PIPING SHALL BE 4" DIA. FLANGED (CL125). ALL SUPPORT BRACKETS, GUIDE RAILS, LIFTING CHAINS, LIFTING EYES, HOOKS, CABLE SUPPORT BRACKETS, AND MOUNTING HARDWARE WITHIN THE WET WELL SHALL BE STAINLESS STEEL.
 - ALL ELECTRICAL EQUIPMENT AND WIRING WITHIN THE WET WELL SHALL BE INSTALLED IN ACCORDANCE WITH THE N.E.C. REQUIREMENTS FOR CLASS 1, DIVISION 1, GROUP D HAZARDOUS LOCATIONS.
 - THE PUMP STATION AND APPURTENANCES ARE LOCATED TO PROVIDE 24-HOUR ACCESS. CONTRACTOR AND PUMP MANUFACTURER MUST COORDINATE THE LOCATION OF FLOATS AND SUBMERSIBLE TO ENSURE THERE WILL NOT BE DISTURBANCE FROM PUMP SUCTION AND INFLUENT SEWER TURBULENCE.
 - LINK-SEAL OR EQUIVALENT FOR ALL PIPING PENETRATIONS
- ALARM SYSTEM:**
- THE ALARM SYSTEM SHALL CONTAIN A POWER BACK-UP IN THE CASE OF A POWER FAILURE, AND SHALL ALERT A 24-HOUR LOCATION OF POWER FAILURE.
 - THE ALARM SYSTEM SHALL ALERT A 24-HOUR LOCATION OF SEAL FAILURE.
- AUXILIARY POWER:**
- ONE 40KW CUMMINGS DIESEL GENERATOR SET MODEL C40 D6 OR APPROVED EQUAL AND A CUMMINGS AUTOMATIC TRANSFER SWITCH OTEC OPEN TRANSITION WITH A 225 AMP RATING WITHIN A NEMA 3R ENCLOSURE.



FINAL BUILDOUT PUMP ELEVATIONS

HIGH WATER ALARM ELEV. =	940.00
LAG PUMP ON ELEV. =	939.50
PUMP ON ELEV. =	939.00
PUMP OFF ELEV. =	936.50
LOW WATER ALARM ELEV. =	936.00

"NOT TO SCALE"

INITIAL BUILDOUT PUMP ELEVATIONS FOR WEST VALLEY DEVELOPMENT

1.00' STORAGE VOLUME DEPTH

HIGH WATER ALARM ELEV. =	938.50
LAG PUMP ON ELEV. =	938.00
PUMP ON ELEV. =	937.50
PUMP OFF ELEV. =	936.50
LOW WATER ALARM ELEV. =	936.00

THE PUMP STATION IS PUBLIC AND SHALL BE MAINTAINED IN ACCORDANCE WITH OAKLAND COUNTY WATER RESOURCE COMMISSIONER REQUIREMENTS

CP/DP/NP-3085

NOTES:

- CONSTRUCTION AND DIMS SHOWN ARE SUGGESTED REQUIREMENTS ONLY. ALL DETAILS, INCLUDING SIZES OF FIT, TIE LOCATION AND ARRANGEMENT OF VALVES AND PIPING, ETC. ARE TO BE SPECIFIED BY THE CHANGING ENGINEER AND ARE SUBJECT TO THEIR APPROVAL.
- REFER TO GENERIC DUPLEX LEFT STATION LAYOUT FOR ELEVATION VIEW.
- LOCATE ANCHOR BOLTS USING INSIDE EDGE OF CLEAR OPENING AND PUMP CENTERLINE AS REFERENCE POINT. BOLT LOCATIONS MUST BE HELD TO MAINTAIN EXACT POSITION OF PUMP TO CLEAR TO MAINTAIN FLOW-WAY WAVE.
- 4" FLYGT FLOW-WAY WAVE.

ALL DIMENSIONS ARE IN INCHES

CODE	TYPE	SIMPLEX				DUPLEX			
		A	B	C	D	E	F	G	H
NP	SH	12	12	12	12	12	12	12	12
CP	HT	12	12	12	12	12	12	12	12
DP/DP/NP	HT	12	12	12	12	12	12	12	12
DEZURIK	HT	12	12	12	12	12	12	12	12

Pump Station Basis of Design

Item	Value	Units
Parcel 12-36-176-002	50	units
Maximum Estimated REU for future build out - Assume 60 REUs	135.0	people
West Valley Development	69	units
Multi Family Unit Factor	111.78	people
Total Ultimate Population =	246.78	people
Average Flow:	246.78 people x 100 gal/cap/day	24,678 GPD
	17.14 GPM	
	0.0382 CFS	
Peak Factor:	(18*SQRT(P/1000))/(4+SQRT(P/1000))	4.23
	(28,400 > Pop > 500)	
	(Pop < 500 people, 10 State Standard)	
	(Per 10 States Standards; Population < 500)	
Peak Flow:	44,712 GPD	
	31 GPM	
	0.0692 CFS	
Minimum Flow:	0.2 * Avg Flow =	2,236 GPD
	1.6 GPM	
	0.0035 CFS	
Wet Well:	2.5' Storage Volume & 6' I.D. =	70.69 CF
	(Pump On to Pump Off)	528.77 GAL
	Peak Flow Will Be Discharged at approximately	69 GPM = 0.1527 CFS

(Ultimate Design)

Initial Design for Pump Station

Population:

Multi Family Unit Factor	2.7 people/unit x	69 units	=	41.4 units
	2.7 people/unit x	111.78 people	=	111.78 people

Average Flow:

	111.78 people x	100 gal/cap/day	=	11,178 GPD
	7.76 GPM		=	0.0173 CFS

Peak Factor:

	(18*SQRT(P/1000))/(4+SQRT(P/1000))	=	4.23
	(28,400 > Pop > 500)		
	(Pop < 500 people, 10 State Standard)		
	(Per 10 States Standards; Population < 500)		

Peak Flow:

	44,712 GPD	
	31 GPM	
	0.0692 CFS	

Minimum Flow:

	0.2 * Avg Flow =	2,236 GPD
		1.6 GPM
		0.0035 CFS

Wet Well:

	2.5' Storage Volume & 6' I.D. =	70.69 CF
	(Pump On to Pump Off)	528.77 GAL
	Peak Flow Will Be Discharged at approximately	69 GPM = 0.1527 CFS

(Ultimate Design)

Head Loss Calculation (4" Forcemain)

Component	Length	4" Equiv. Length	6" Equiv. Length
1 Ordinary Entrance	6	-	-
2 Long Sweep Elbow	7	-	-
3 3" x 4" Reducer	2	-	-
4 Pipe (Vertical)	9	-	-
5 Long Sweep Elbow	7	-	-
6 Pipe (Horizontal)	12	-	-
7 Swing Check Valve	25	-	-
8 Plug Valve (Gate)	3	-	-
9 Standard Tee	7	-	-
10 Pipe (Horizontal)	8	-	-
11 4" x 4" Wye	5	-	-
4" Equiv. Len. =	91	LF	

Forcemain Component For Headloss

12 4" Gate Valve	3	-
13 4" x 4" Tee	7	-
14 4" Gate Valve	3	-
15 4" - 45 deg bend (3 ea)	15	-
16 4" - 22.5 degree bend (4 ea)	12	-
17 4" - 11.25 deg bend (2 ea)	4	-
18 Pipe (Horizontal)	830	-
4" Equiv. Len. =	874	LF

FM High Point = 976.5 ft
HW (Pump On) = 939.50 ft
LW (LW Alarm) = 936.50 ft

4" Forcemain System Curves:

Q (gpm)	HL/1000' C = 120		TDH HW	HL/1000' C = 120		TDH LW
	Q (cfs)	4"		Q (cfs)	4"	
0	0.00	0.00	37.00	0.00	40.00	
50	0.11	2.43	37.65	0.67	40.65	
75	0.17	5.15	38.35	1.37	41.35	
100	0.22	8.77	40.45	5.15	44.97	
125	0.28	13.25	45.45	8.77	48.46	
150	0.33	18.56	54.91	18.56	57.91	
175	0.39	24.69	60.83	24.69	63.83	

Pump Operating Data:

NPSH allow:	34.48 ft
NPSH actual:	17.10 ft
Pump Flows:	116 gpm
	0.26 cfs

Ultimate Design

Area of 4" Pipe:	0.0873 sq ft
FM Velocity:	2.96 ft/s

Initial Design - Fill Time for Build out of West Valley

West Valley Number of Units =	69 Units	
Multi Family Unit Assignment Factor =	0.8	
OCWR Equivalent Units =	41.4 Units	
Population Density =	2.7 People / Unit	
Population =	111.78 People	
Average Flow:	111.78 People * 100 Gal/Person/Day =	11,178 GPD
		7.8 GPM
		69.12 min > 30 min
Fill Time =		
** Since Fill Time Exceeds 30 min, set the "Pump On" Elevation to El. 936.0 (Lag Pump El. 936.5) to accommodate flows from West Valley. **		

Wet Well Fill Times for West Valley Flows:

1.0' Storage Volume & 6' I.D. =	28.27 cf
(Pump On to Pump Off)	211.51 gal
Fill Time =	27.25 min < 30 min, ok

WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
1	REV. PER ROOF PERMITS DEPARTMENT	10-22-19
2	REV. SAN AND STORM PER OWNER	04-10-20
3	REV. SAN. ST. & PAV. PER OWNER	5-18-20
4	REVISE PER TWP.	02-18-21
5	REVISE PER TWP.	03-17-21
7	REV PER OWNER, RCOO AND OCWR	11-21-23
8	REVISED WATERMAIN FOR OWNER	04-25-23
9	REVISED PER TOWNSHIP	04-25-23
10	REVISED PER TWP.	7-27-23
11	REVISED PER TWP.	09-21-23
12	REVISED PER ELEC	01-31-24
13	REVISE PER TWP.	03-13-24

UTILITY WARNING

UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

811 Know what's below. Call before you dig.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

SANITARY SEWER PUMP STATION DETAILS

DESIGNED BY: G.N. JOB NUMBER: 17-031
 DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE: 17031-PS.dwg


SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050
 FARMINGTON HILLS OFFICE: 3800 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3331


SHEET 14

NP 3085 SH 3~ Adaptive 256

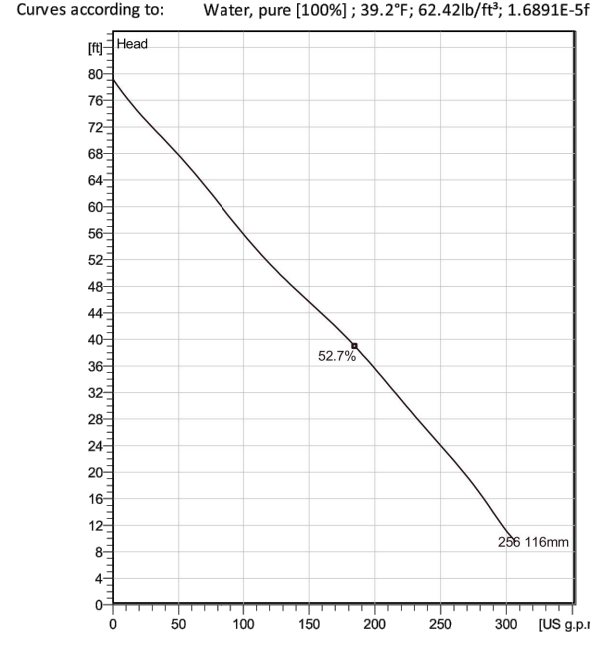
Patented self-cleaning semi-open channel impeller. Ideal for pumping in waste water applications. Proven to be resistant to clogging. For even better clogging resistance. Modular based design with high adaptation grade.



Technical specification



Curves according to: Water, pure [100%]; 39.2°F; 62.42lb/ft³; 1.6891E-5ft/s



Configuration

Motor number N085.070.15-09-2AL-W-4hp	Installation type P - Semi permanent, Wet
Impeller diameter 116 mm	Discharge diameter 3 1/8 inch

Pump information

Impeller diameter 116 mm	Impeller Hard-iron™
Discharge diameter 3 1/8 inch	Stator housing material Grey cast iron
Inlet diameter 80 mm	
Maximum operating speed 3435 rpm	
Number of blades 2	


Materials

Impeller: Hard-iron™
Stator housing material: Grey cast iron

Project Block	Created by	Created on	Last update
		6/5/2019	

NP 3085 SH 3~ Adaptive 256

Technical specification



Motor - General

Motor number N085.070.15-09-2AL-W-4hp	Phases 3~	Rated speed 3435 rpm	Rated power 4 hp
Approval FM	Number of poles 2	Rated current 10 A	Stator variant 12
Frequency 60 Hz	Rated voltage 230 V	Insulation class H	Type of Duty S1

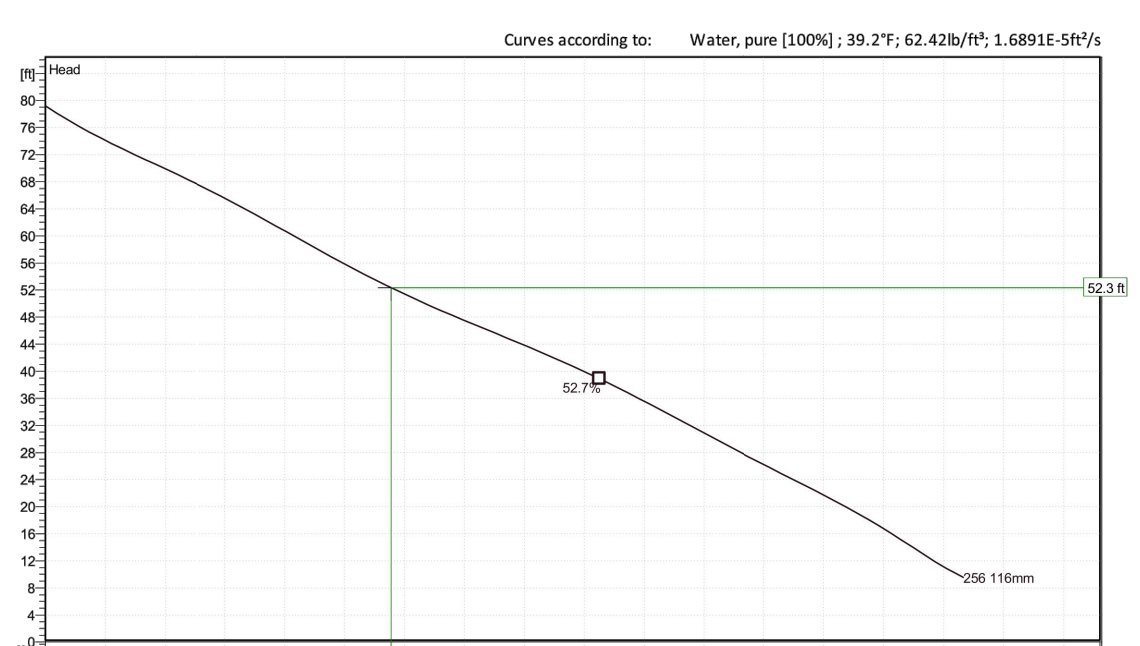
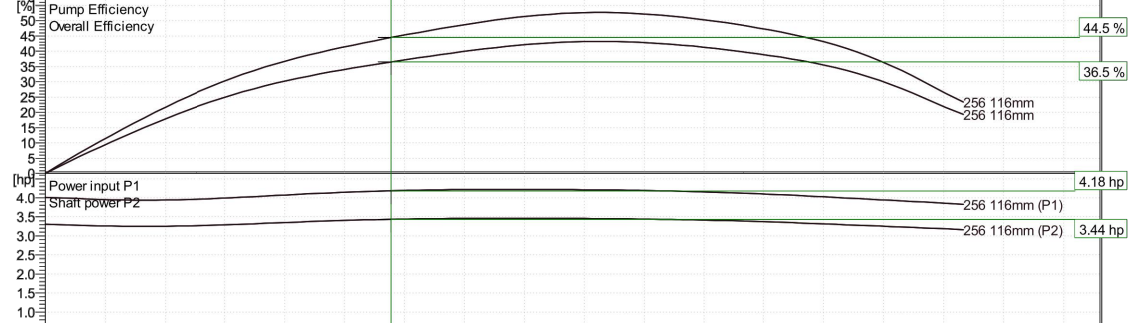
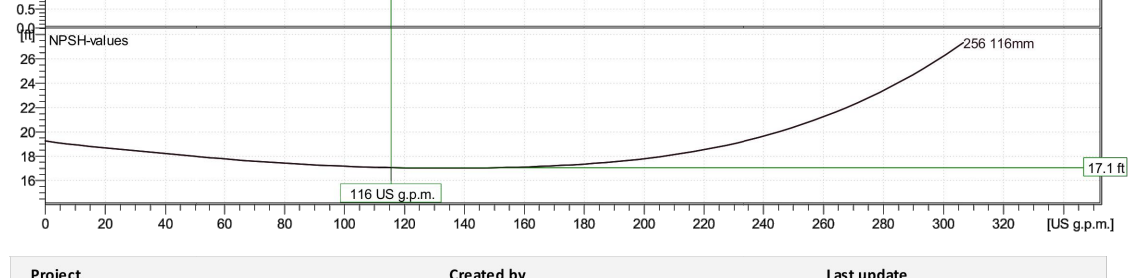
Motor - Technical

Power factor - 1/1 Load 0.91	Motor efficiency - 1/1 Load 80.8 %	Total moment of inertia 0.152 lb·ft²	Starts per hour max. 30
Power factor - 3/4 Load 0.88	Motor efficiency - 3/4 Load 82.7 %	Starting current, direct starting 60 A	
Power factor - 1/2 Load 0.81	Motor efficiency - 1/2 Load 82.5 %	Starting current, star-delta 20 A	

Performance curve

Duty point

Flow: 116 US g.p.m. Head: 52.3 ft

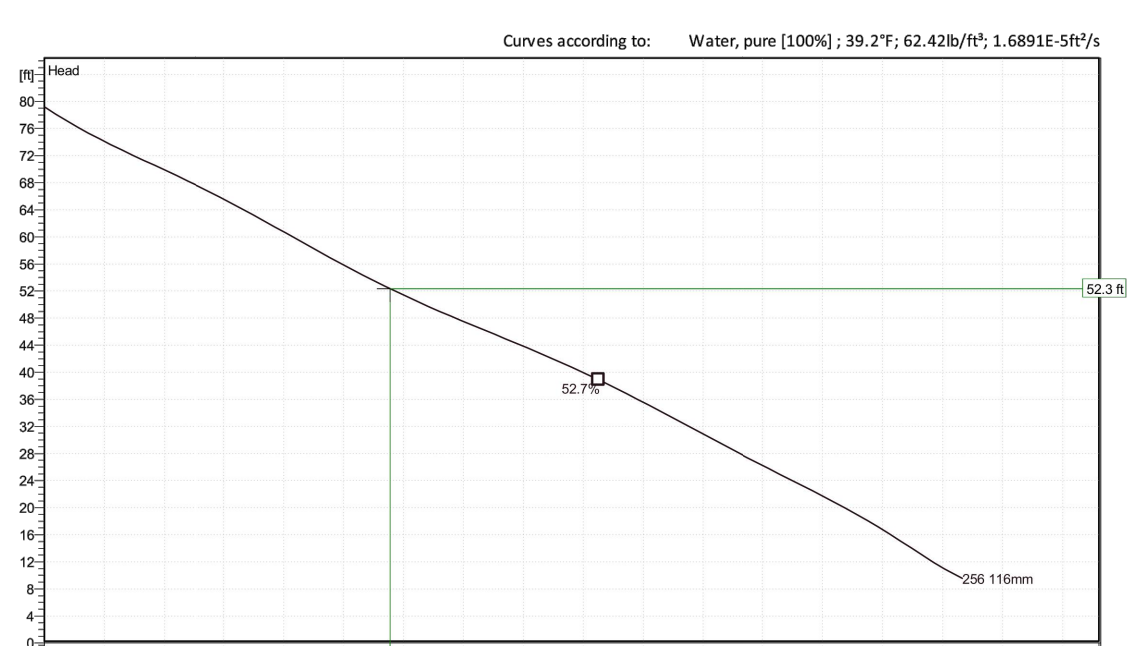
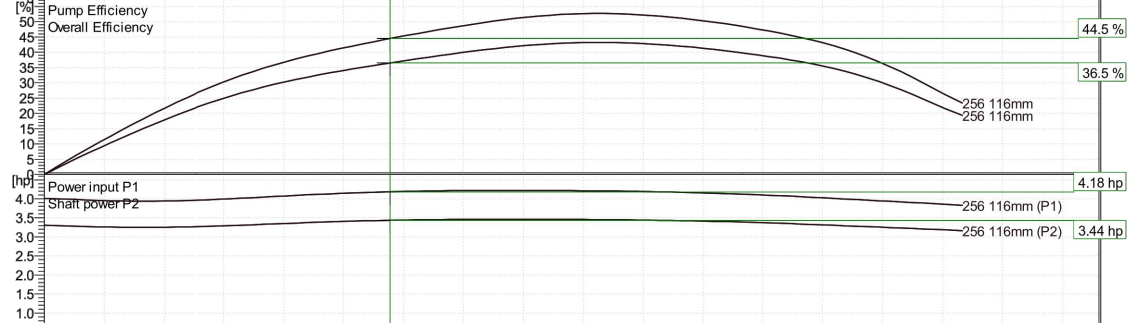
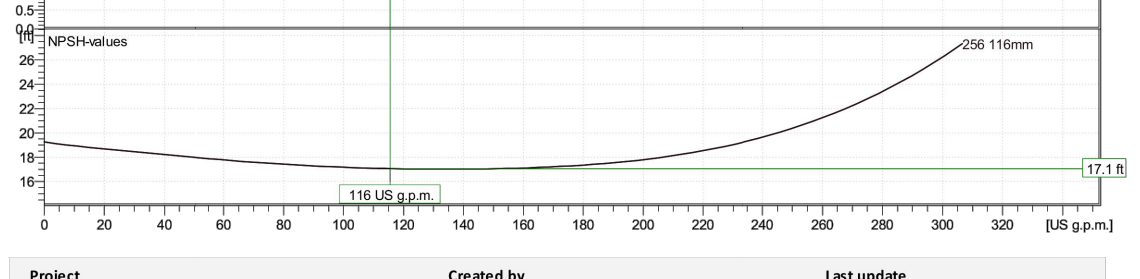
Project Block	Created by	Created on	Last update
		6/5/2019	

NP 3085 SH 3~ Adaptive 256

Performance curve

Duty point

Flow: 116 US g.p.m. Head: 52.3 ft

Operating characteristics

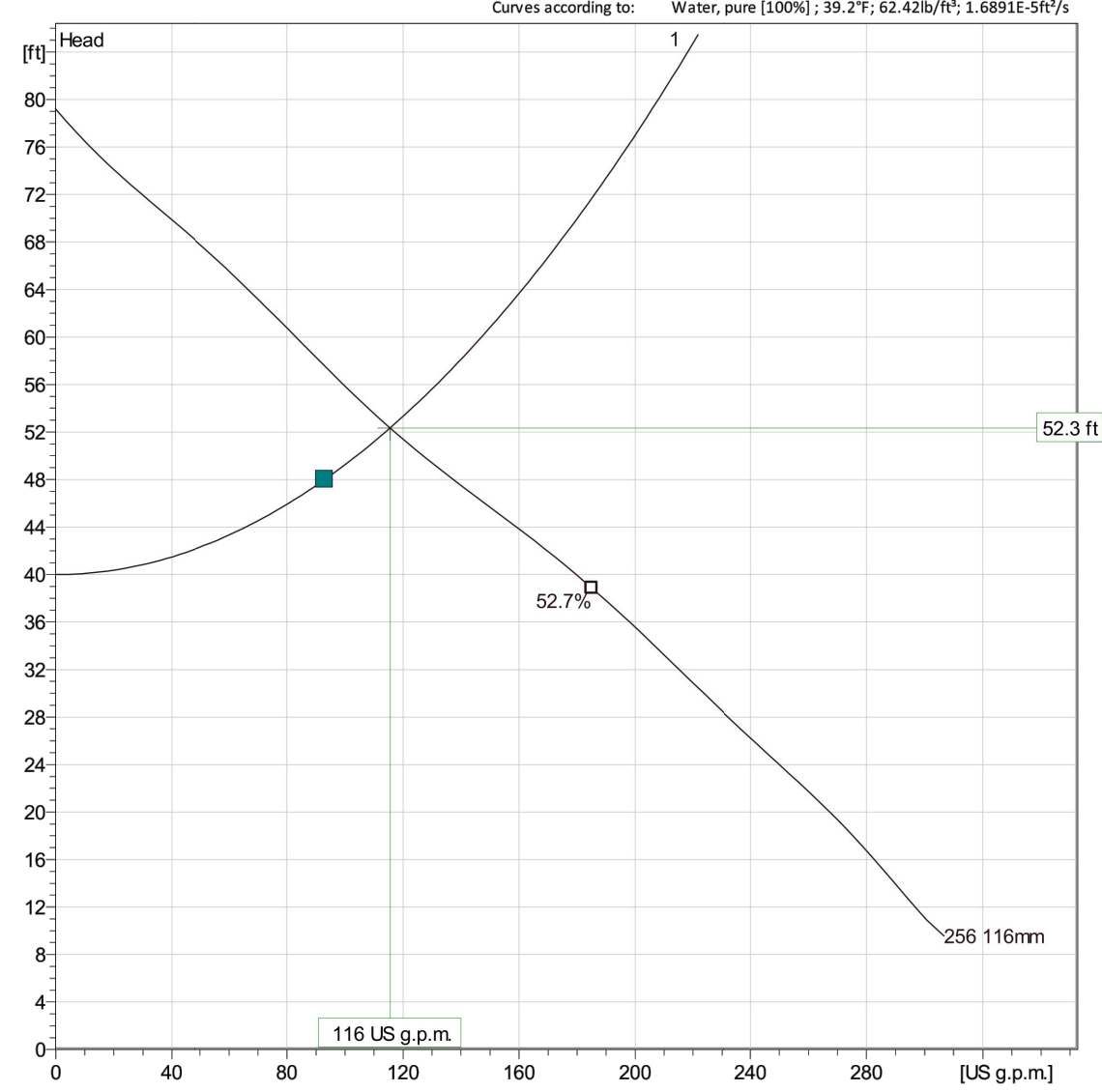
Pumps running / System	Flow	Head	Shaft power	Flow	Head	Shaft power	Pump eff.	Specific energy	NPSHreq
1	116 US g.p.m.	52.3 ft	3.44 hp	116 US g.p.m.	52.3 ft	3.44 hp	44.5 %	450 kWh/US MG	17.1 ft

Project Block	Created by	Created on	Last update
		6/5/2019	

NP 3085 SH 3~ Adaptive 256

Duty Analysis

Curves according to: Water, pure [100%]; 39.2°F; 62.42lb/ft³; 1.6891E-5ft/s



Operating characteristics

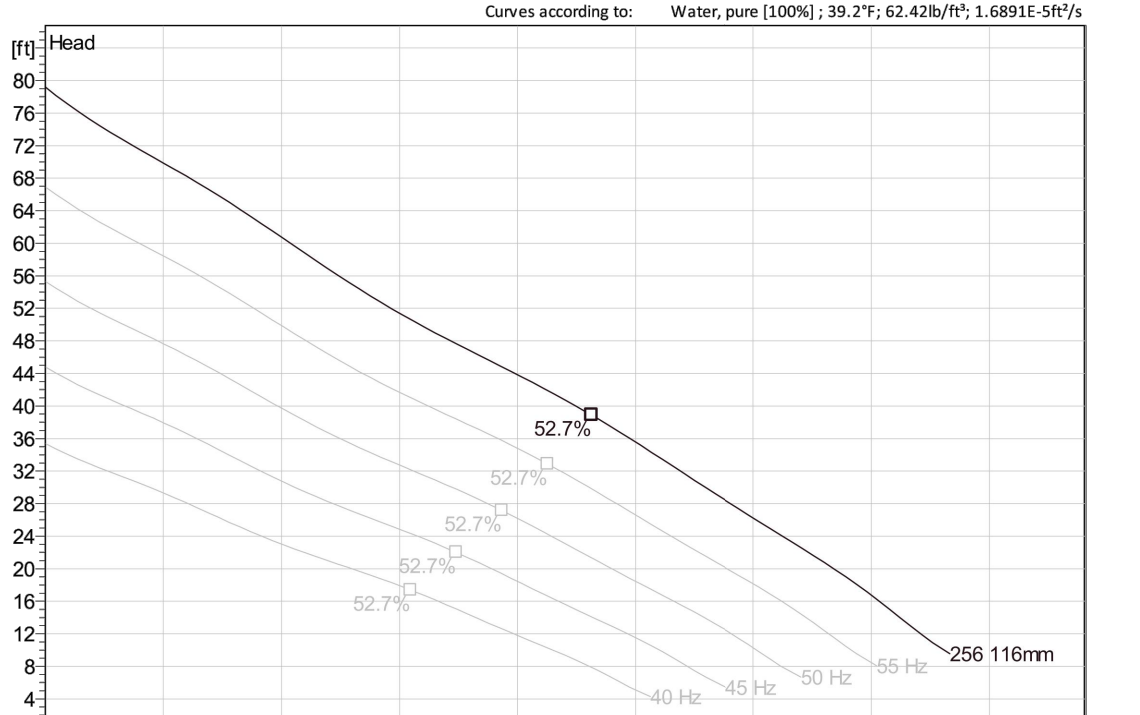
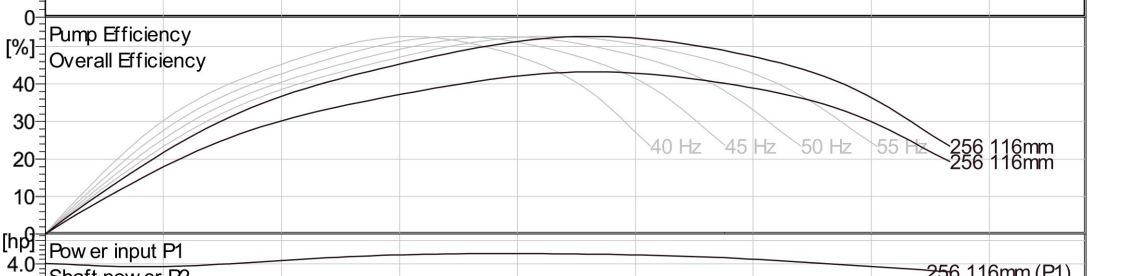

Pumps running / System	Flow	Head	Shaft power	Flow	Head	Shaft power	Pump eff.	Specific energy	NPSHreq
1	116 US g.p.m.	52.3 ft	3.44 hp	116 US g.p.m.	52.3 ft	3.44 hp	44.5 %	450 kWh/US MG	17.1 ft

Project Block	Created by	Created on	Last update
		6/5/2019	

NP 3085 SH 3~ Adaptive 256

VFD Curve

Curves according to: Water, pure [100%]; 39.2°F; 62.42lb/ft³; 1.6891E-5ft/s

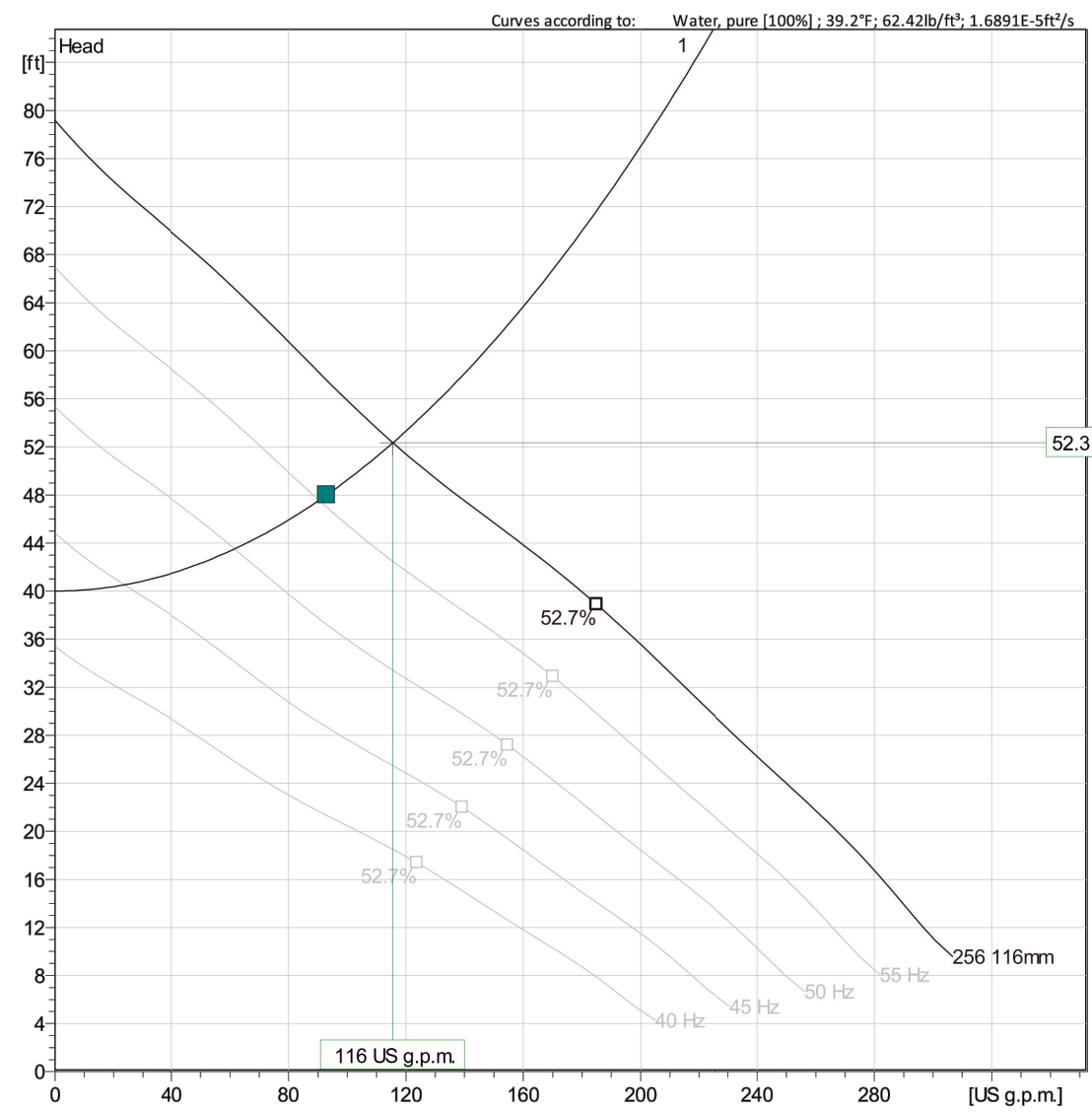




Project Block	Created by	Created on	Last update
		6/5/2019	

NP 3085 SH 3~ Adaptive 256

VFD Analysis

Curves according to: Water, pure [100%]; 39.2°F; 62.42lb/ft³; 1.6891E-5ft/s




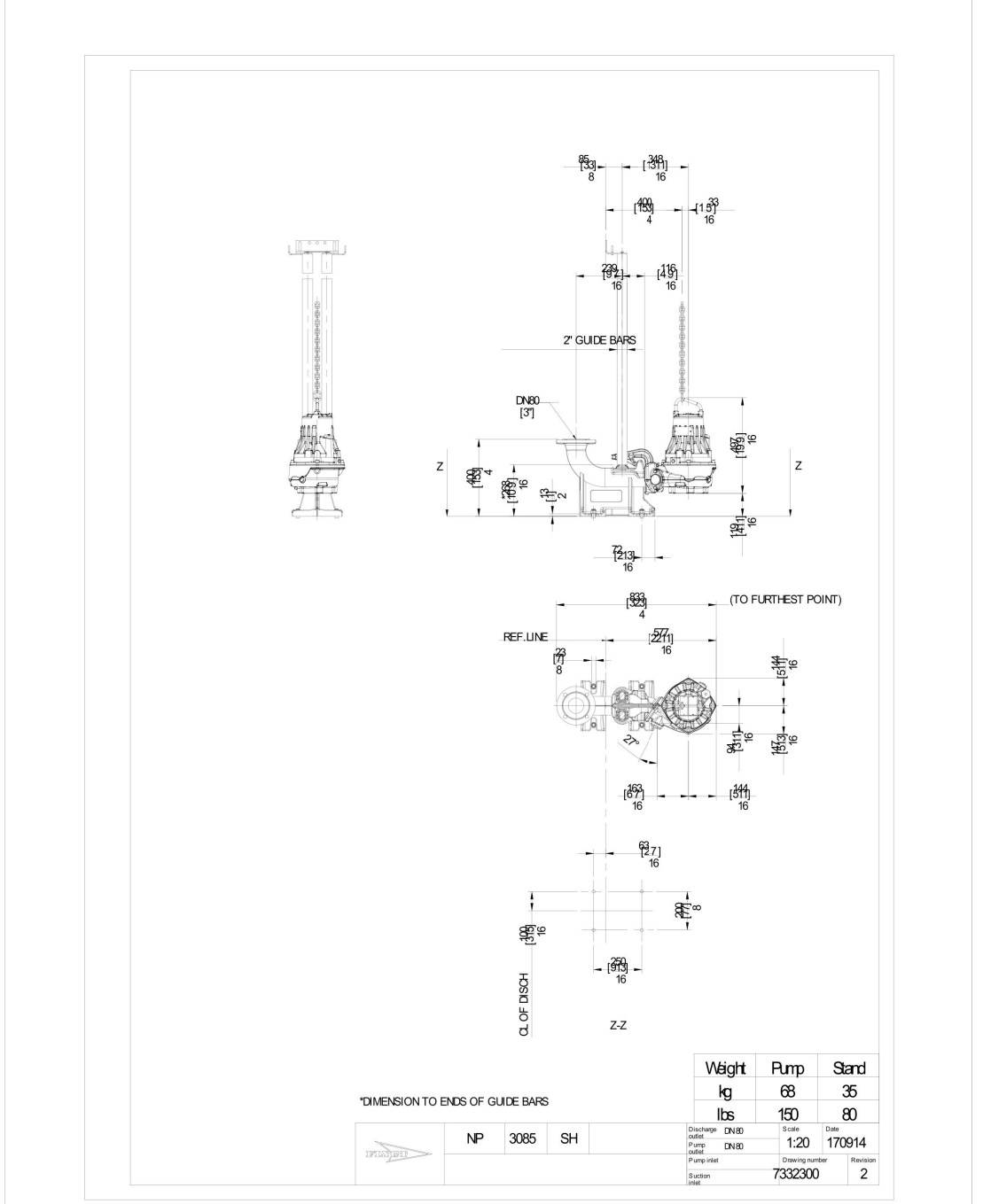
Operating Characteristics

Pumps running / System	Frequency	Flow	Head	Shaft power	Flow	Head	Shaft power	Hyd. eff.	Specific energy	NPSHreq
1	60 Hz	116 US g.p.m.	52.3 ft	3.44 hp	116 US g.p.m.	52.3 ft	3.44 hp	44.5 %	450 kWh/US MG	17.1 ft
1	50 Hz	90.4 US g.p.m.	47.8 ft	2.64 hp	90.4 US g.p.m.	47.8 ft	2.64 hp	41.1 %	438 kWh/US MG	15.8 ft
1	40 Hz	61.0 US g.p.m.	40.8 ft	1.96 hp	61.0 US g.p.m.	40.8 ft	1.96 hp	38.9 %	418 kWh/US MG	13.2 ft
1	40 Hz	237 US g.p.m.	40.8 ft	1.36 hp	237 US g.p.m.	40.8 ft	1.36 hp	17.5 %	911 kWh/US MG	11.7 ft

Project Block	Created by	Created on	Last update
		6/5/2019	

NP 3085 SH 3~ Adaptive 256

Dimensional drawing

Project Block	Created by	Created on	Last update
		6/5/2019	

West Valley - Pump Station Buoyancy Calculations

RESISTING LOADS

PUMP STATION WEIGHT

COVER	$\gamma_c = 150 \text{ lb/ft}^3$		
O.D.	86 in.	OPENING	1824 in ²
t	11 in.		
$V_{cover} = V_{top} - V_{opening}$			43832.85 in ³
			25.37 ft ³
$W_{cover} = \gamma_c \cdot V_{cover}$			3,805 lb

MANHOLE

O.D.	86 in.	HEIGHT	17.35 ft
I.D.	72 in.		
$A_{OD} = 40.34 \text{ ft}^2$	$V_{MH} = (A_{OD} - A_{ID}) \cdot \text{HEIGHT}$		209.36 ft ³
$A_{ID} = 28.27 \text{ ft}^2$	$V_{MH} = 209.36 \text{ ft}^3$		
$W_{MH} = \gamma_c \cdot V_{MH}$			31,404 lb

BASE

O.D.	122 in.		
t	12 in.	$A_{BASE} = 81.18 \text{ ft}^2$	
$V_{base} = A_{BASE} \cdot t$			81.18 ft ³
$W_{BASE} = \gamma_c \cdot V_{base}$			12,177 lb

SOIL (Above Base)

$\gamma_s = 120 \text{ lb/ft}^3$			
O.D. BASE	124 in.	$A_{OD, base} = 83.86 \text{ ft}^2$	
O.D. MH	86 in.	$A_{OD, MH} = 40.34 \text{ ft}^2$	
DEPTH	17.35 ft.		
$V_s = (A_{OD, base} - A_{OD, MH}) \cdot \text{DEPTH}$			755.29 ft ³
$W_s = \gamma_s \cdot V_s$			90,635 lb

TOTAL RESISTING LOADS

$W_R = W_{cover} + W_{MH} + W_{BASE} + W_s = 138,021 \text{ lb}$

UPLIFT LOADS

$\gamma_w = 62.4 \text{ lb/ft}^3$			
GW ELEV	952.60	O.D. BASE	122 in.
BOT OF BASE ELEV	933.33	$A_{BASE} = 81.18 \text{ ft}^2$	
DEPTH OF WATER	19.27 ft.		
UPLIFT PRESURE	$P_{UPLIFT} = \gamma_w \cdot \text{DEPTH} = 1202.45 \text{ lb/ft}^2$		
$U = A_{BASE} \cdot P_{UPLIFT} = 97,614 \text{ lb}$			

SAFETY FACTOR

$S.F. = W_R / U = 138021 \text{ lb} / 97614 \text{ lb} = 1.41 \text{ ok}$

West Valley - Valve Vault Buoyancy Calculations

RESISTING LOADS

VALVE VAULT WEIGHT

COVER	$\gamma_c = 150 \text{ lb/ft}^3$		
O.D.	72 in.	OPENING	1440 in ²
t	11 in.		
$V_{cover} = V_{top} - V_{opening}$			28946.54 in ³
			16.75 ft ³
$W_{cover} = \gamma_c \cdot V_{cover}$			2,513 lb

MANHOLE

O.D.	72 in.	HEIGHT	8.28 ft.
I.D.	60 in.		
$A_{OD} = 28.27 \text{ ft}^2$	$V_{MH} = (A_{OD} - A_{ID}) \cdot \text{HEIGHT}$		71.56 ft ³
$A_{ID} = 19.63 \text{ ft}^2$	$V_{MH} = 71.56 \text{ ft}^3$		
$W_{MH} = \gamma_c \cdot V_{MH}$			10,734 lb

BASE

O.D.	96 in.		
t	12 in.	$A_{BASE} = 50.27 \text{ ft}^2$	
$V_{base} = A_{BASE} \cdot t$			50.27 ft ³
$W_{BASE} = \gamma_c \cdot V_{base}$			7,540 lb

SOIL (Above Base)

$\gamma_s = 120 \text{ lb/ft}^3$			
O.D. BASE	96 in.	$A_{OD, base} = 50.27 \text{ ft}^2$	
O.D. MH	72 in.	$A_{OD, MH} = 28.27 \text{ ft}^2$	
DEPTH	9.20 ft.		
$V_s = (A_{OD, base} - A_{OD, MH}) \cdot \text{DEPTH}$			202.32 ft ³
$W_s = \gamma_s \cdot V_s$			24,278 lb

TOTAL RESISTING LOADS

$W_R = W_{cover} + W_{MH} + W_{BASE} + W_s = 45,065 \text{ lb}$

UPLIFT LOADS

$\gamma_w = 62.4 \text{ lb/ft}^3$			
GW ELEV	952.60	O.D. BASE	96 in.
BOT OF BASE ELEV	942.40	$A_{BASE} = 50.27 \text{ ft}^2$	
DEPTH OF WATER	10.20 ft.		
UPLIFT PRESURE	$P_{UPLIFT} = \gamma_w \cdot \text{DEPTH} = 636.48 \text{ lb/ft}^2$		
$U = A_{BASE} \cdot P_{UPLIFT} = 31,993 \text{ lb}$			

SAFETY FACTOR

$S.F. = W_R / U = 45065 \text{ lb} / 31993 \text{ lb} = 1.41 \text{ ok}$

WEST VALLEY

MULTI-FAMILY RESIDENTIAL COMMUNITY

SECTION 36, TOWN 3 NORTH, RANGE 8 EAST

WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
1.	REV. PER RCOC PERMITS DEPARTMENT	10-22-19
2.	REV. SAN AND STORM PER OWNER	04-10-20
3.	REV. SAN. ST. & PAV. PER OWNER	5-18-20
4.	REVISE PER TWP.	02-18-21
5.	REVISE PER TWP.	03-17-21
7.	REV PER OWNER, RCOC AND OCORC	11-21-22
8.	REVISED WATERMAIN FOR OWNER	04-05-23
9.	REVISED PER TOWNSHIP	04-25-23
10.	REVISE PER TWP.	7-27-23
11.	REVISED PER TWP.	09-21-23
12.	REVISED PER EGLE	01-31-24
13.	REVISE PER TWP.	02-13-24

UTILITY WARNING

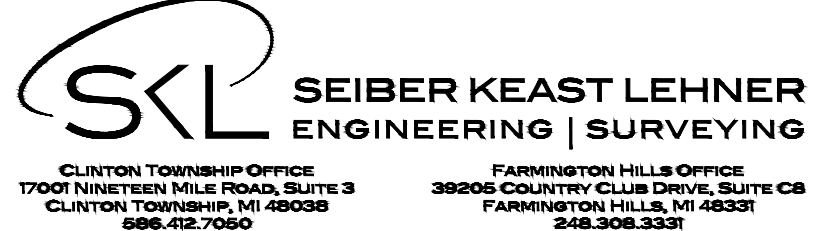
UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

811 Know what's below. Call before you dig.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

DESIGNED BY: G.N. JOB NUMBER: 17-031
 DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE: 17031-PS.dwg

SANITARY SEWER PUMP STATION CALCULATION CHARTS

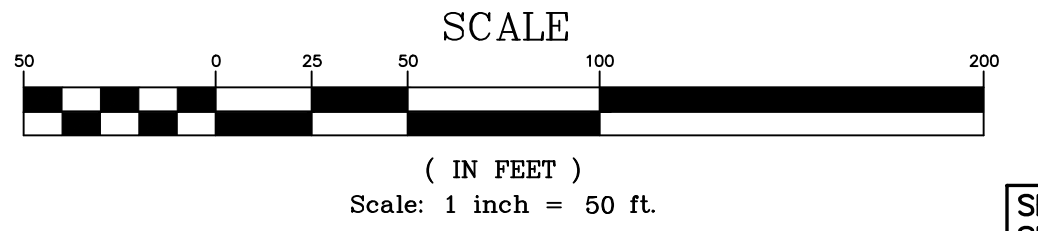
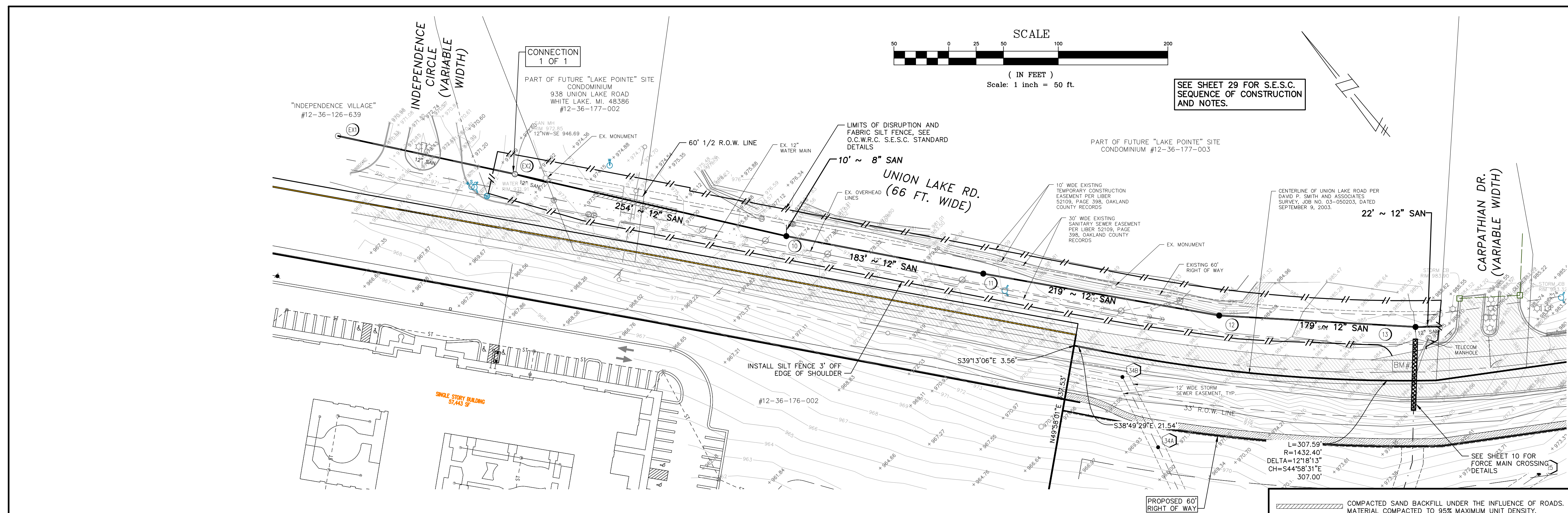


SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700N NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48839 586.42.7050

FARMINGTON HILLS OFFICE: 3800S COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.508.3331

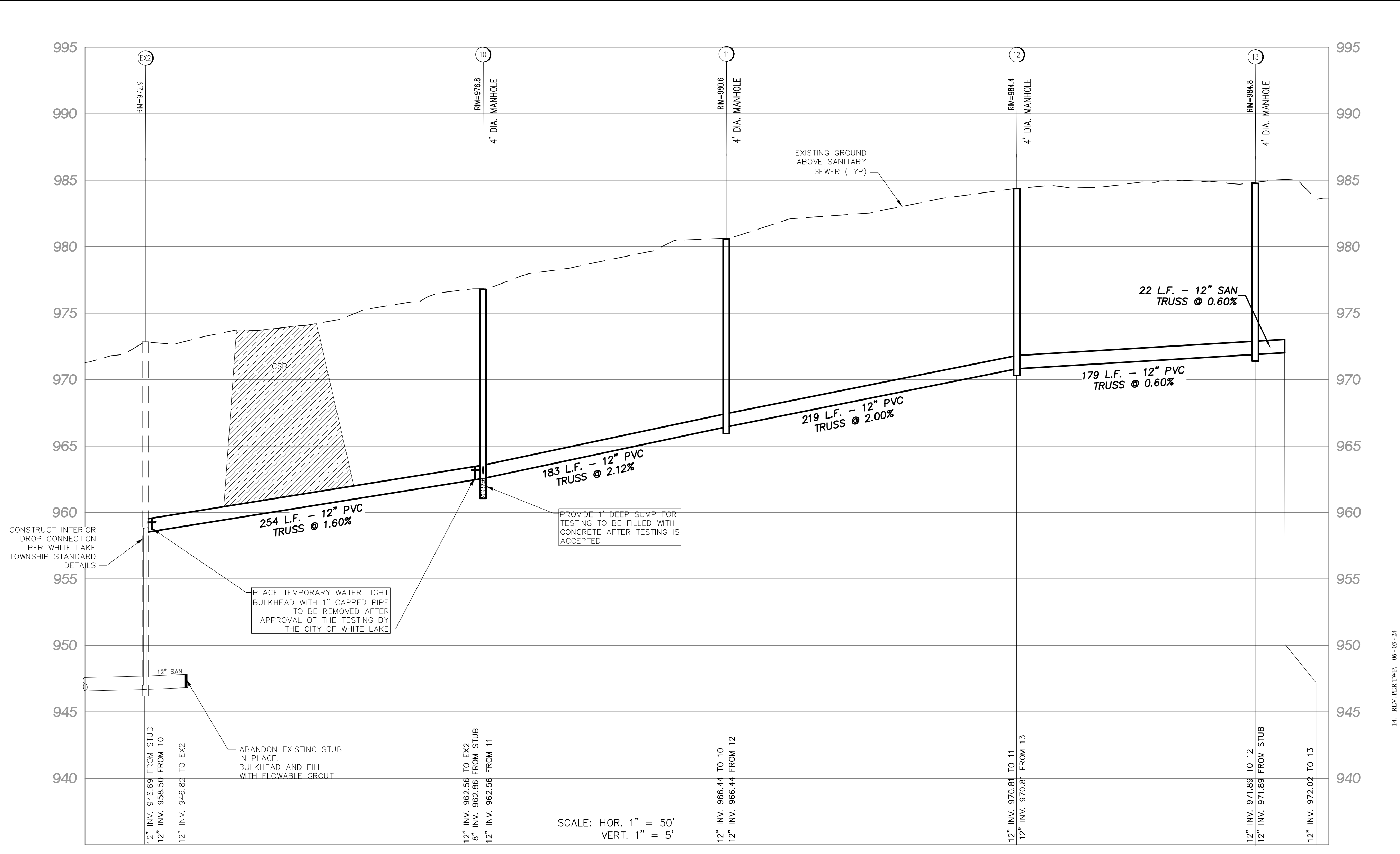
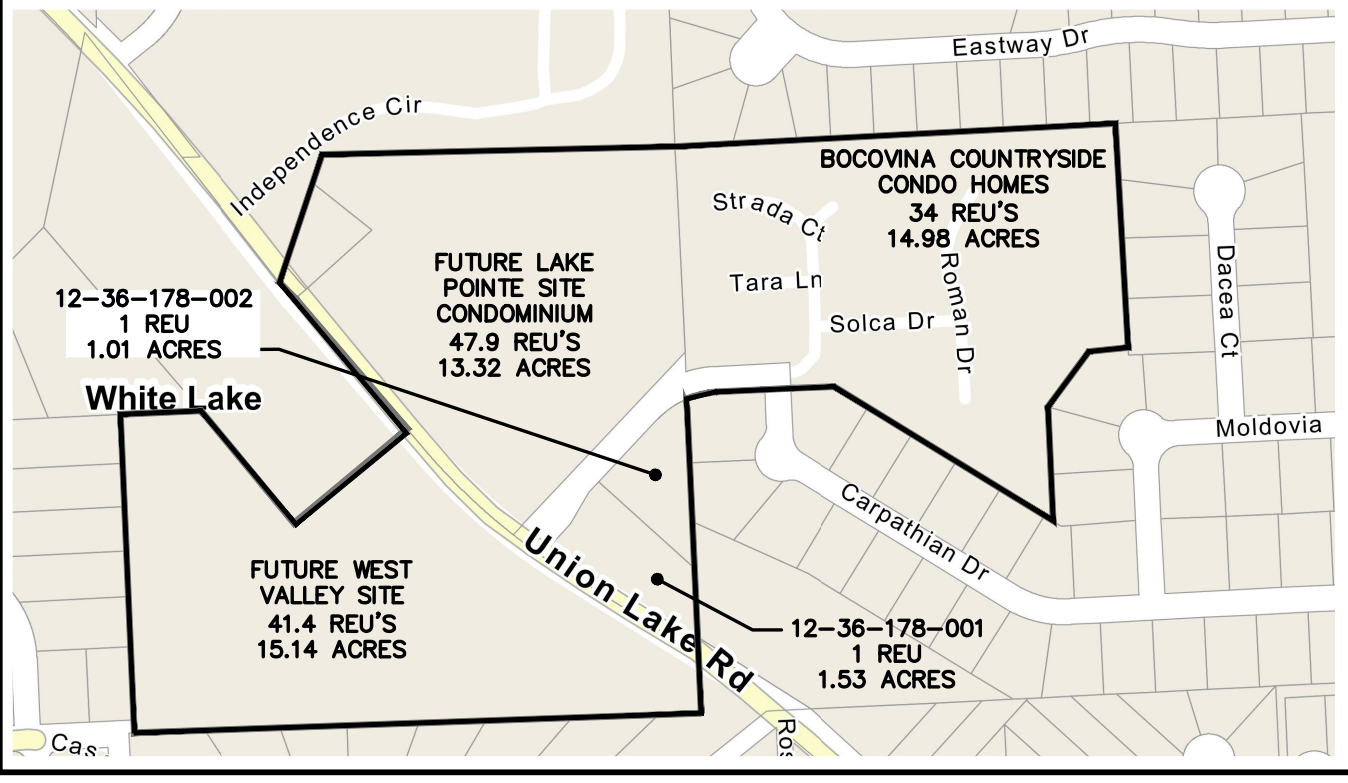
SHEET 15



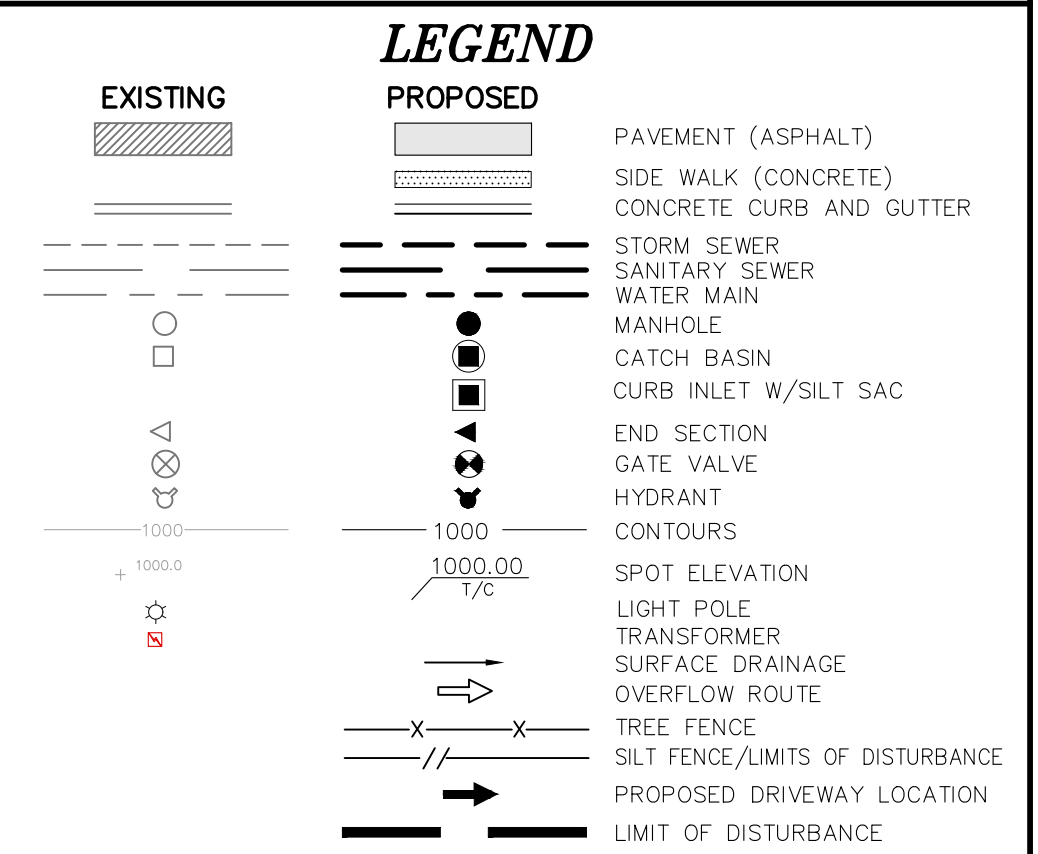
SEE SHEET 29 FOR S.E.S.C. SEQUENCE OF CONSTRUCTION AND NOTES.

SANITARY SEWER BASIS OF DESIGN			
CONNECTION TO PROPOSED MANHOLE / 12-INCH PVC TRUSS ON THE EAST SIDE OF UNION LAKE ROAD NORTH OF CARPATHIAN DRIVE			
INITIAL DESIGN - UNION LAKE ROAD SANITARY SEWER			
NUMBER OF UNITS	Area (Ac)	Number of Units	Unit Factor
West Valley	15.14	69	41.4
			TOTAL 41.4
POPULATION			
		2.7 people/unit x	41.4 units
		111.78 people	
POPULATION DENSITY			
		111.78 people	
		15.14 Acres	
		7.38 ppl / ac	
AVERAGE FLOW			
		111.78 people x	100 gal/cap/day
		11,178 gal/day	
		0.0173 cfs	
PEAK FACTOR			
		(18+SQRT(P/1000))/(4+SQRT(P/1000))	
		4.23	
PEAK FLOW			
		PEAK FACTOR X AVERAGE FLOW	
		0.0732 cfs	
		Population < 500 People, therefore use	
		10 State Standards	
ULTIMATE DESIGN - 12" UNION LAKE ROAD SEWER			
CALCULATE NUMBER OF UNITS			
West Valley	41.4	REUs	8.69 Acres
Lake Pointe Condominiums	47.9	REUs	13.32 Acres
Bocovina Country Side Condo Homes	34	REUs	14.98 Acres
Carpathian Drive (12-36-178-002 & 12-36-178-001)	2	REUs	2.54 Acres
TOTAL NUMBER OF ULTIMATE UNITS	125.3	units	39.53 Acres
POPULATION			
		2.7 people/unit x	125.3 units
		338.31 people	
POPULATION DENSITY			
		338.31 people	
		39,530 Acres	
		8.56 ppl / ac	
AVERAGE FLOW			
		338.31 people x	100 gal/cap/day
		33,831 gal/day	
		0.0523 cfs	
PEAK FACTOR			
		(18+SQRT(P/1000))/(4+SQRT(P/1000))	
		4.1	
PEAK FLOW			
		PEAK FACTOR X AVERAGE FLOW	
		0.2123 cfs	
		Population < 500 People, therefore use	
		10 State Standards	
		CAPACITY OF A 12" PIPE @ 0.22% IS 1.63 cfs	
		THEFORE PIPE CAPACITY IS SUFFICIENT.	

UNION LAKE ROAD SANITARY SEWER EXTENSION
ULTIMATE SANITARY SEWER SERVICE AREA



- NOTES:
- SANITARY SEWER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH WHITE LAKE TOWNSHIP SANITARY SEWER STANDARD DETAILS.
 - ALL DISTURBED AREAS SHALL BE RESTORED TO EXISTING GRADES AFTER UTILITY CONSTRUCTION AND SHALL BE STABILIZED WITH TOPSOIL, SEED AND MULCH WITHIN 5 WORKING DAYS.



WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

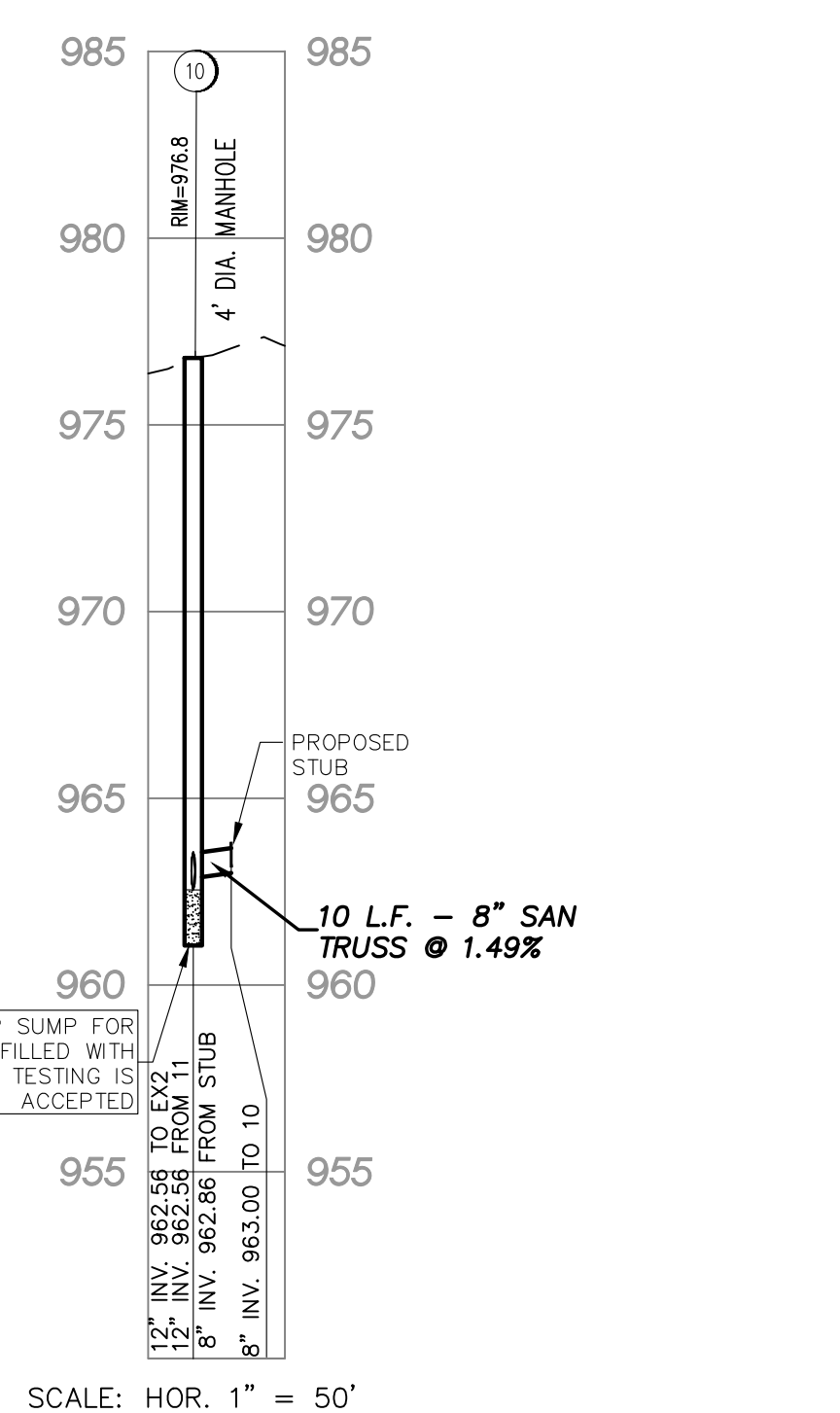
REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED. 811 Know what's below. Call before you dig. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.
1.	REV. PER R.O.C. PERMITS DEPARTMENT	10-22-19	
2.	REV. SAN AND STORM PER OWNER	04-10-20	
3.	REV. SAN, ST. & PAV. PER OWNER	5-18-20	
4.	REVISE PER TWP.	02-18-21	
5.	REVISE PER TWP.	03-17-21	
7.	REV PER OWNER, R.O.C. AND O.C.M.C.	11-21-23	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP	04-25-23	
10.	REVISE PER TWP.	7-27-23	
11.	REVISED PER TWP.	09-21-23	
12.	REVISED PER EOLE	01-31-24	
13.	REVISE PER TWP.	03-18-24	
14.	REV. PER TWP.	06-03-24	

DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE: 17031UL-SAN-OFF SITE.dwg

OFF-SITE SANITARY DESIGN

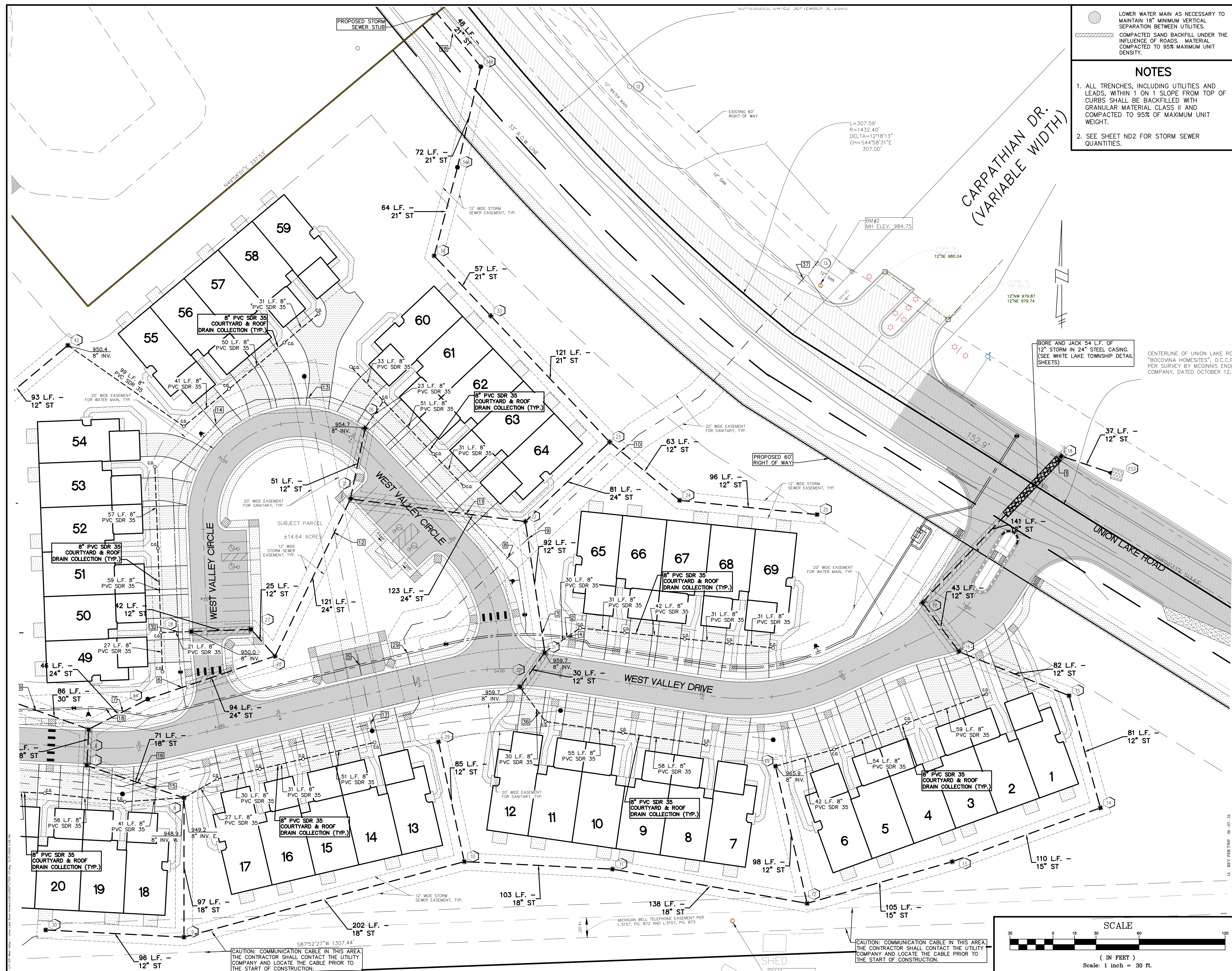
CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7060
FARMINGTON HILLS OFFICE: 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 16



SCALE: HOR. 1" = 50'
VERT. 1" = 5'

SCALE: HOR. 1" = 50'
VERT. 1" = 5'



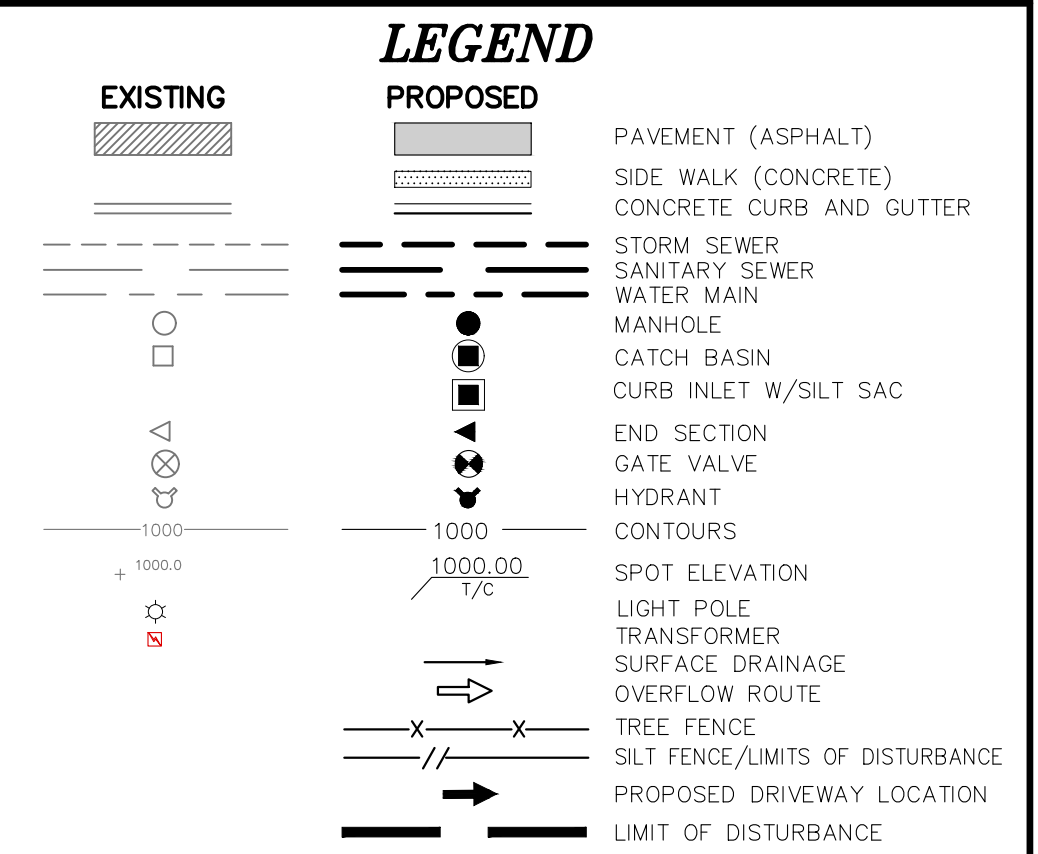
LOWER WATER MAIN AS NECESSARY TO MAINTAIN 18" MINIMUM VERTICAL SEPARATION BETWEEN UTILITIES.
 COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT DENSITY.

NOTES

- ALL TRENCHES, INCLUDING UTILITIES AND LEADS, WITHIN 1' ON 1' SLOPE FROM TOP OF CURBS SHALL BE BACKFILLED WITH GRANULAR MATERIAL CLASS II AND COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT.
- SEE SHEET ND2 FOR STORM SEWER QUANTITIES.

STORM SEWER STRUCTURE SCHEDULE

NO.	TYPE	SIZE (DIA)	SUMP DEPTH (feet)	FRAME AND COVER
1	MANHOLE	6	0	EJW 1040 Frame Type B Cover
2	CATCH BASIN	6	2	EJW 7065 Frame Type M1 Cover
3	CATCH BASIN	5	2	EJW 7065 Frame Type M1 Cover
4	MANHOLE	5	0	EJW 1040 Frame Type B Cover
5	CATCH BASIN	5	2	EJW 7045 Frame Type M1 Cover
6	CATCH BASIN	5	2	EJW 7065 Frame Type M1 Cover
6A	MANHOLE	4	0	EJW 1040 Frame Type B Cover
7	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
8	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
9	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
10	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
11	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
12	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
13	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
14	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
15	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
16	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
17	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
18	CATCH BASIN	4	2	EJW 7045 Frame Type M1 Cover
19	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
20	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
21	CATCH BASIN	4	2	EJW 7045 Frame Type M1 Cover
22	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
23	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
24	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
25	INLET	2	0	EJW 1040 Frame Type N Cover
26	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
27	CATCH BASIN	4	2	EJW 7045 Frame Type M1 Cover
28	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
29	INLET	2	0	EJW 1040 Frame Type N Cover
30	INLET	2	0	EJW 1040 Frame Type N Cover
31	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
32	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
33	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
34	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
34A	MANHOLE	4	2	EJW 1040 Frame Type B Cover
34B	MANHOLE	4	0	EJW 1040 Frame Type B Cover
35	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
36	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
37	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
38	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
39	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
40	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
41	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
42	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
43	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
44	CATCH BASIN	4	2	EJW 7065 Frame Type M1 Cover
45	MANHOLE	4	0	EJW 1040 Frame Type B Cover
46	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
47	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
48	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
49	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
50	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
51	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
52	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
53	INLET	2	0	EJW 1040 Frame Type N Cover
54	INLET	2	0	EJW 1040 Frame Type N Cover
A	CATCH BASIN	4	2	EJW 6508 (MDOT Type E Cover)
B	CATCH BASIN	4	2	EJW 6508 (MDOT Type E Cover)
C	MANHOLE	4	0	EJW 1040 Frame Type B Cover
D	CATCH BASIN	4	2	EJW 6508 (MDOT Type E Cover)
E	MANHOLE	4	0	EJW 1040 Frame Type B Cover
F	CATCH BASIN	4	2	EJW 1040 Frame Type N Cover
SP	36" DIA. DETENTION BASIN STANDPIPE			SEE DETAIL ON SHEET 23
ST	STORMWATER TREATMENT MANHOLE			SEE DETAIL ON SHEET 22
OMH	5' DIAMETER OVERFLOW MANHOLE			SEE DETAIL ON SHEET 23



WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
 SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
 WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

NO.	ITEM	DATE
1	REV. PER ROAD PERMITS DEPARTMENT	10-22-19
2	REV. SAN AND STORM PER OWNER	04-10-20
3	REV. SAN. ST. & PAV. PER OWNER	5-18-20
4	REVISE PER TWP.	02-18-21
5	REVISE PER TWP.	03-17-21
6	REV. PER OWNER, ROAD AND OCMRC	11-21-23
7	REVISED WATERMAIN FOR OWNER	04-05-23
8	REVISED PER TOWNSHIP	04-25-23
9	REVISED PER TWP.	7-27-23
10	REVISED PER TWP.	09-21-23
11	REVISED PER EOLE	01-31-24
12	REVISE PER TWP.	03-19-24

UTILITY WARNING
 UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

811 Know what's below. Call before you dig.

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DESIGNED BY: G.N. JOB NUMBER: 17-031
 DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE: 17031-ST.dwg

STORM SEWER PLAN

SCALE
 0 15 30 60 90 120
 (IN FEET)
 Scale: 1 inch = 30 ft.

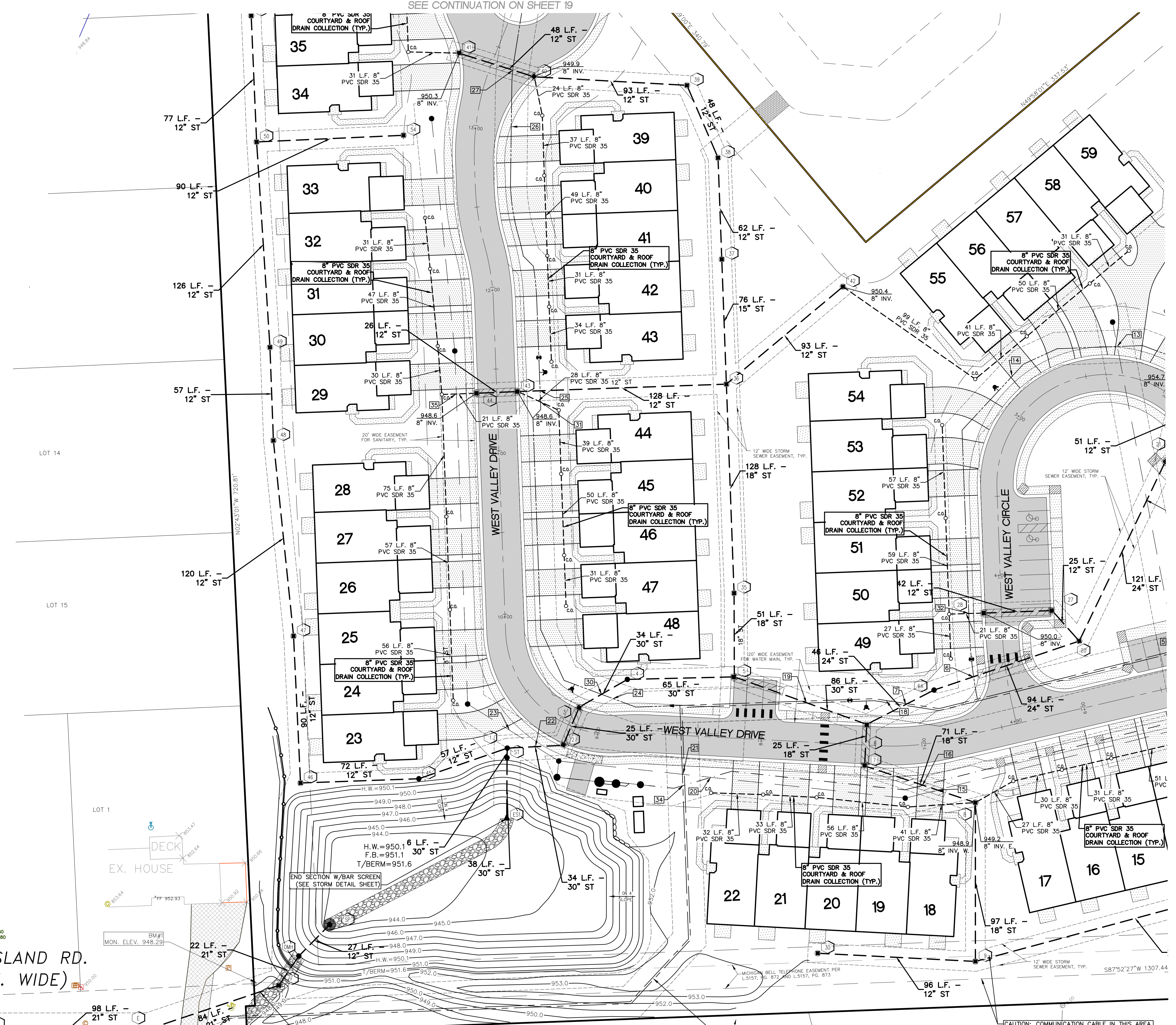
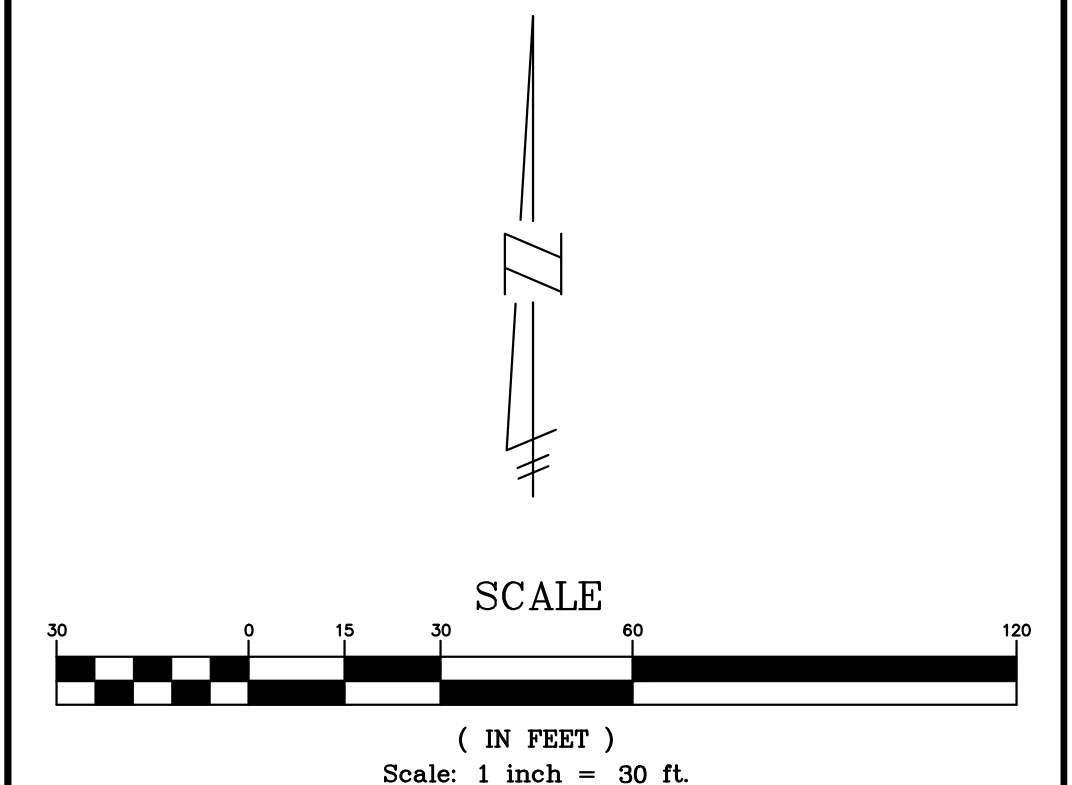
SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3331

SHEET 17

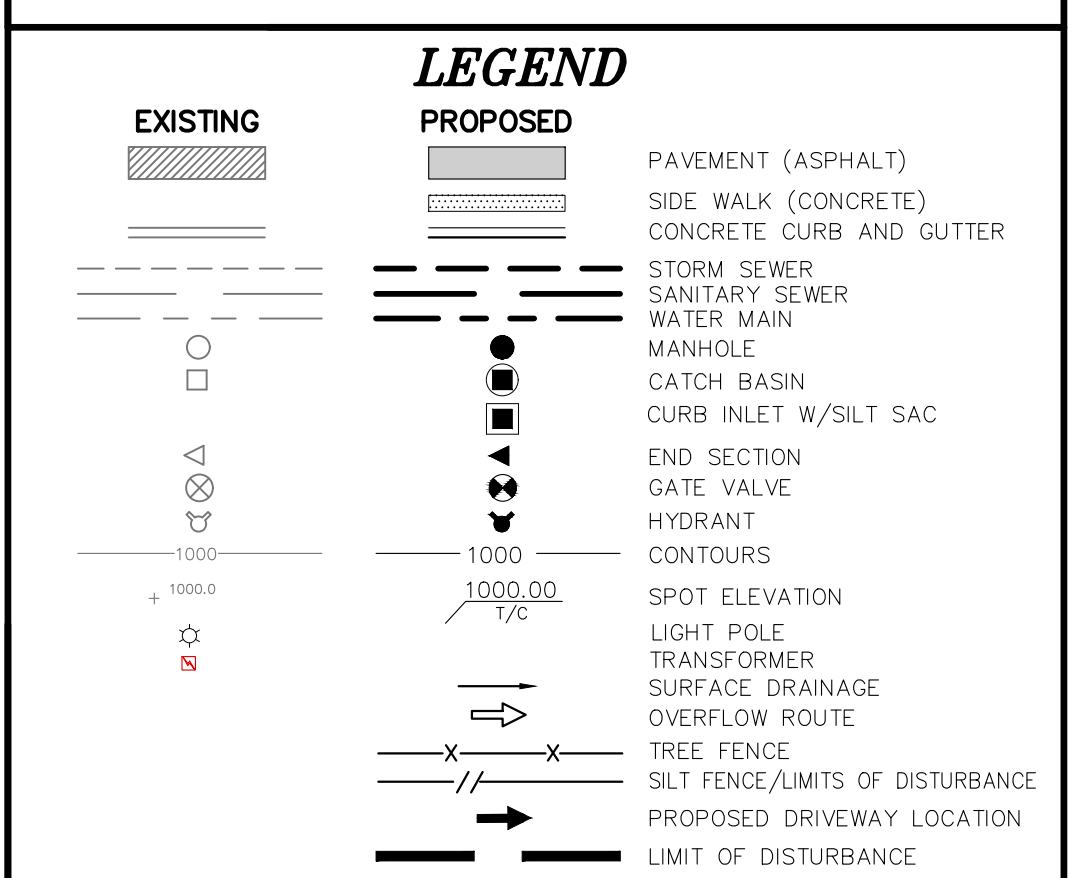
SEE CONTINUATION ON SHEET 19



LOWER WATER MAIN AS NECESSARY TO MAINTAIN 18" MINIMUM VERTICAL SEPARATION BETWEEN UTILITIES.

COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT DENSITY.

- NOTES**
1. ALL TRENCHES, INCLUDING UTILITIES AND LEADS, WITHIN 1 ON 1 SLOPE FROM TOP OF CURBS SHALL BE BACKFILLED WITH GRANULAR MATERIAL CLASS II AND COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT.
 2. SEE SHEET ND1 FOR STORM SEWER QUANTITIES.



**WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN**

REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	
1.	REV. PER ROOF PERMITS DEPARTMENT	10-22-19	UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED. Know what's below. Call before you dig. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.
2.	REV. SAN AND STORM PER OWNER	04-10-20	
3.	REV. SAN. ST. & PAV. PER OWNER	5-18-20	
4.	REVISED PER TWP.	02-18-21	
5.	REVISED PER TWP.	03-17-21	
7.	REV PER OWNER, R.O.C. AND O.C.M.C.	11-21-23	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP	04-25-23	
10.	REVISED PER TWP.	7-27-23	
11.	REVISED PER TWP.	09-21-23	
12.	REVISED PER EOLE	01-31-24	
13.	REVISED PER TWP.	03-18-25	

DESIGNED BY: G.N. JOB NUMBER: 17-031
 CHECKED BY: J.E. DRAWING FILE: 17031-ST.dwg

STORM SEWER PLAN

SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 18

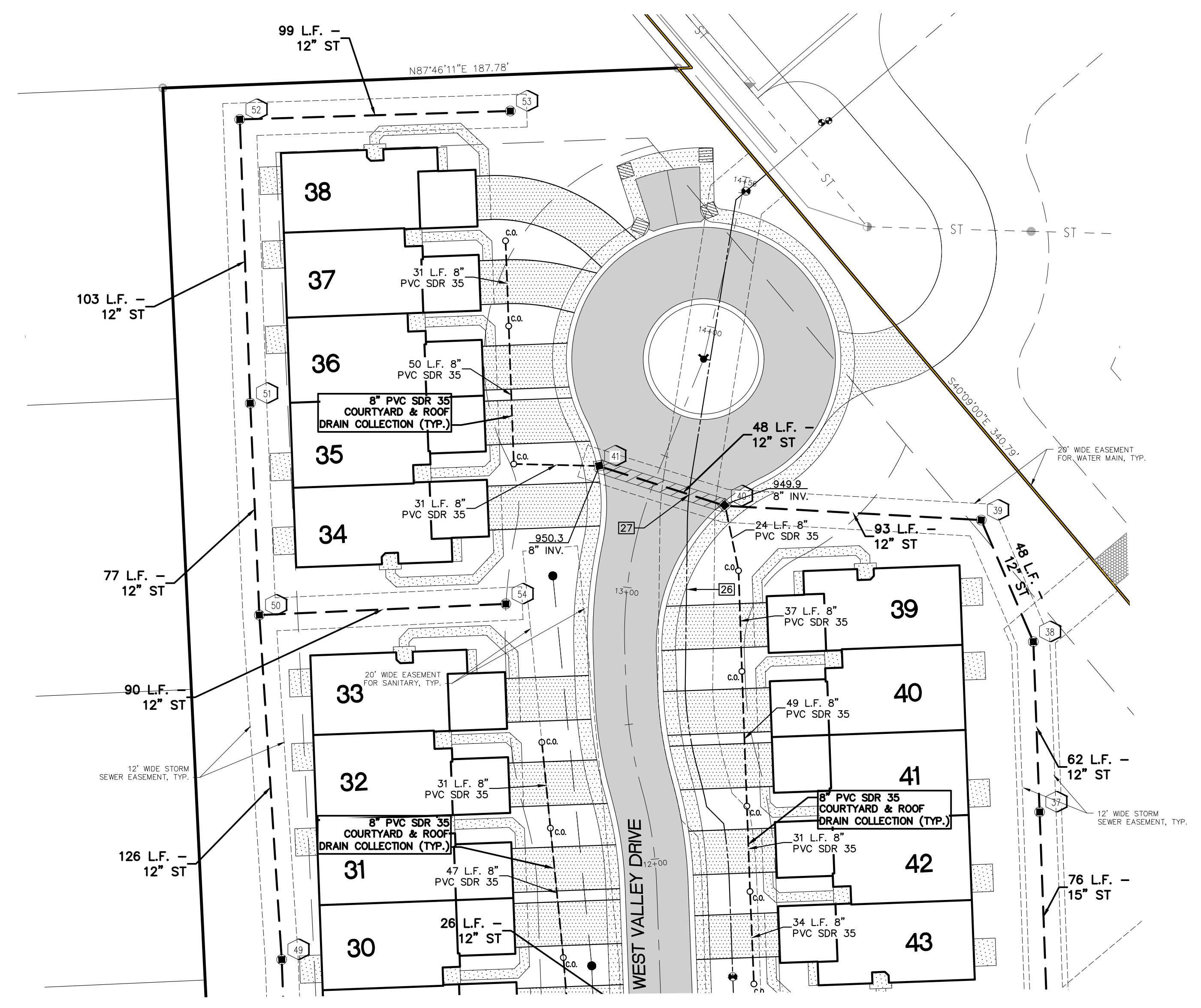
SEE SHEET 23 & 24 FOR OFF-SITE GRADING AND STORM SEWER DESIGN

**CEDAR ISLAND RD.
(60 FT. WIDE)**

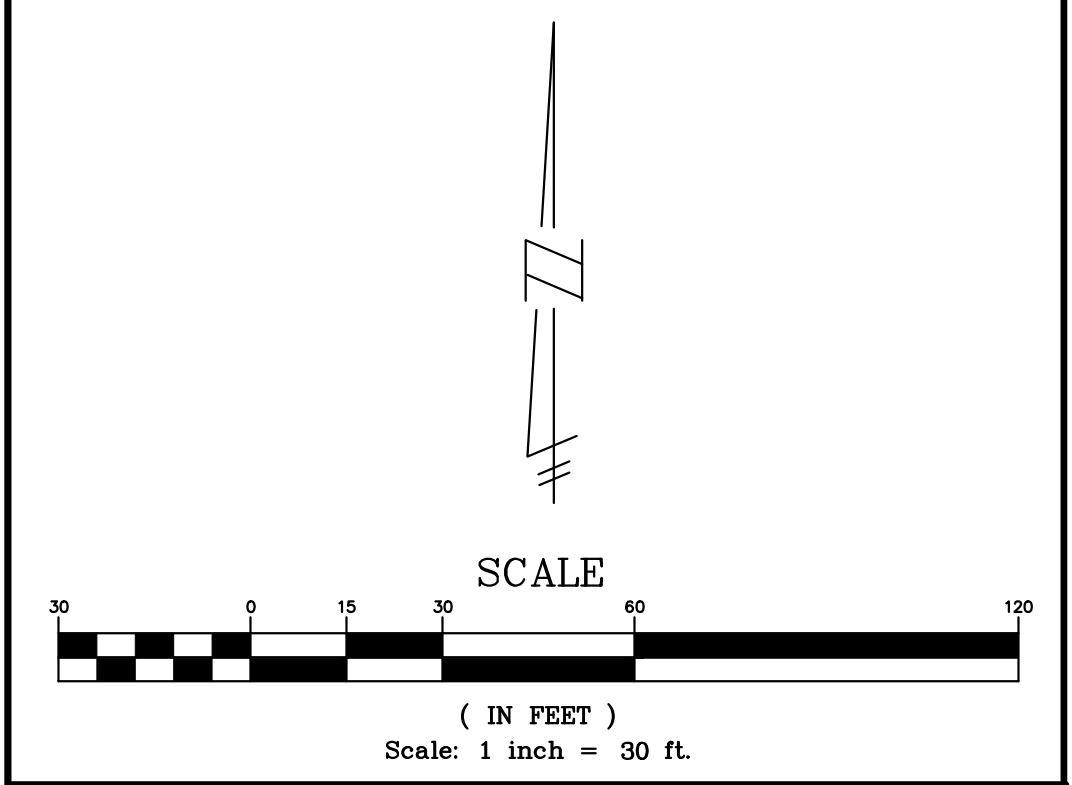
CAUTION: STORM SEWER CROSSING EXISTING COMMUNICATION CABLE. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY AND LOCATE THE CABLE PRIOR TO THE START OF CONSTRUCTION.

CAUTION: WATER MAIN CROSSING EXISTING COMMUNICATION CABLE. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY AND LOCATE THE CABLE PRIOR TO THE START OF CONSTRUCTION.

CAUTION: COMMUNICATION CABLE IN THIS AREA. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANY AND LOCATE THE CABLE PRIOR TO THE START OF CONSTRUCTION.



SEE CONTINUATION ON SHEET 18



LOWER WATER MAIN AS NECESSARY TO MAINTAIN 18" MINIMUM VERTICAL SEPARATION BETWEEN UTILITIES.

COMPACTED SAND BACKFILL UNDER THE INFLUENCE OF ROADS. MATERIAL COMPACTED TO 95% MAXIMUM UNIT DENSITY.

- NOTES**
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 2. SEE SHEET ND1 FOR STORM SEWER QUANTITIES.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT (ASPHALT)
		SIDE WALK (CONCRETE)
		CONCRETE CURB AND GUTTER
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		MANHOLE
		CATCH BASIN
		CURB INLET W/SILT SAC
		END SECTION
		GATE VALVE
		HYDRANT
		CONTOURS
		SPOT ELEVATION
		LIGHT POLE
		TRANSFORMER
		SURFACE DRAINAGE
		OVERFLOW ROUTE
		TREE FENCE
		SILT FENCE/LIMITS OF DISTURBANCE
		PROPOSED DRIVEWAY LOCATION
		LIMIT OF DISTURBANCE

WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
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3.	REV. SAN, ST. & PAV. PER OWNER	5-18-20	
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7.	REV PER OWNER, ROOC AND OCMRC	11-21-23	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP	04-25-23	
10.	REVISE PER TWP.	7-27-23	
11.	REVISED PER TWP.	09-21-23	
12.	REVISED PER EOLE	01-31-24	
13.	REVISE PER TWP	03-13-25	

DESIGNED BY: G.N. JOB NUMBER: 17-031
 DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE: 17031-ST.dwg

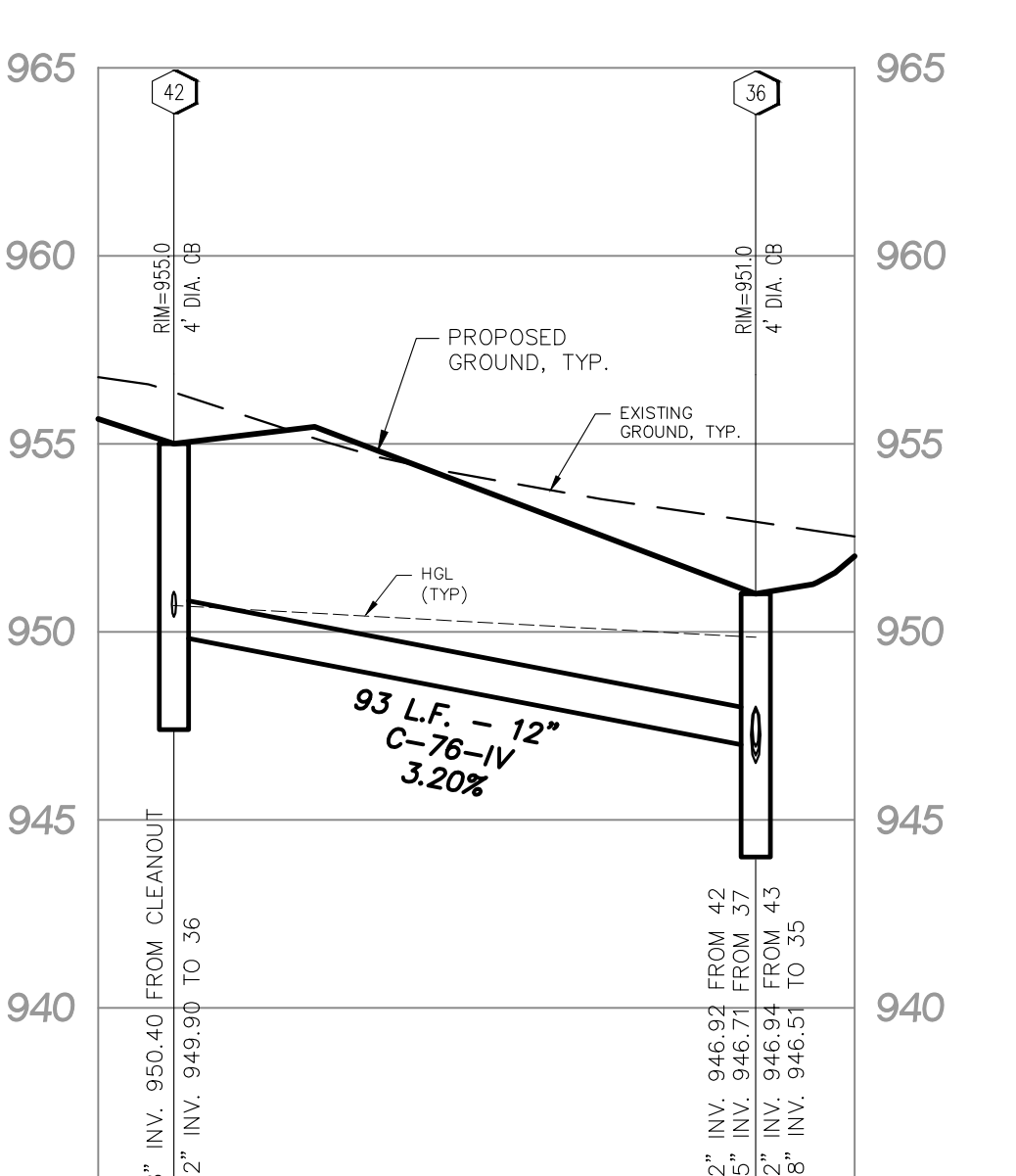
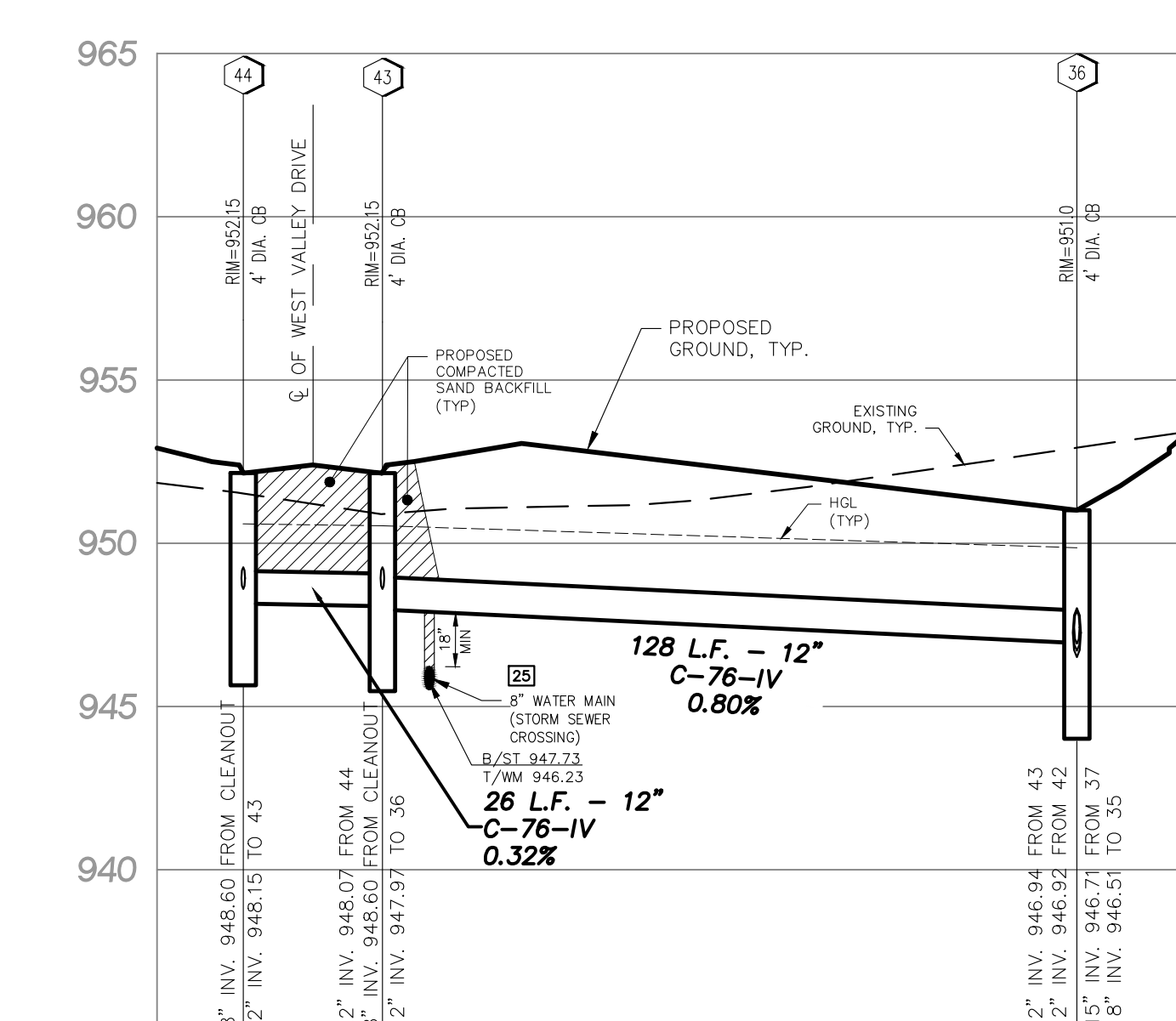
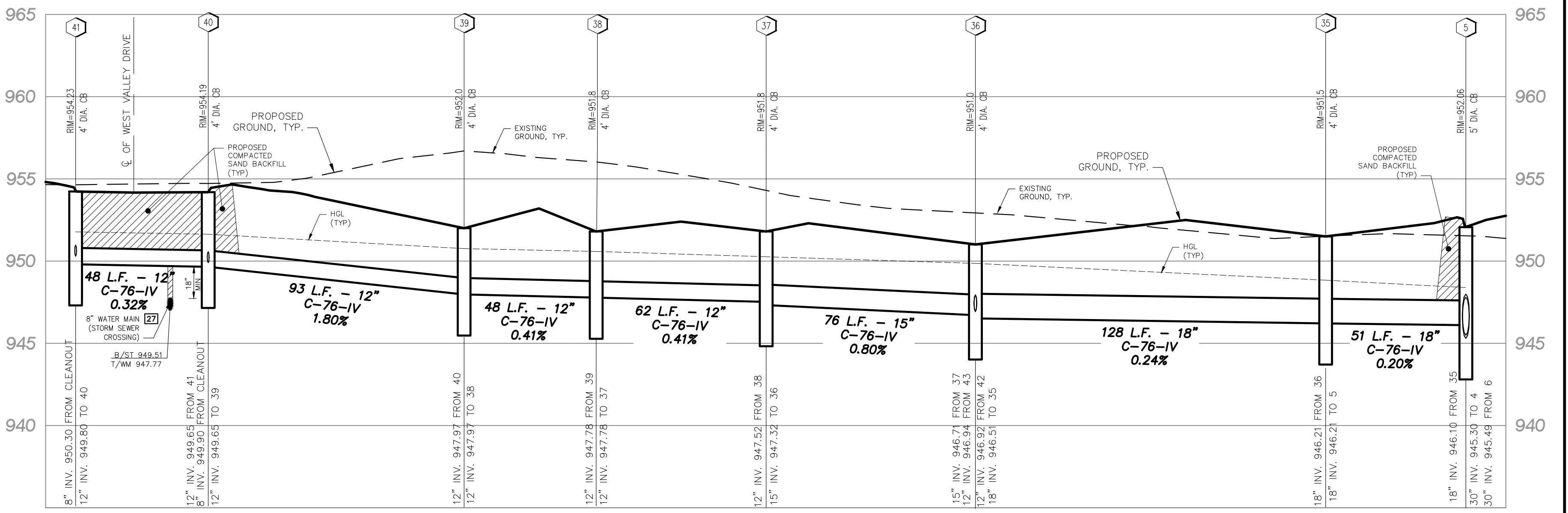
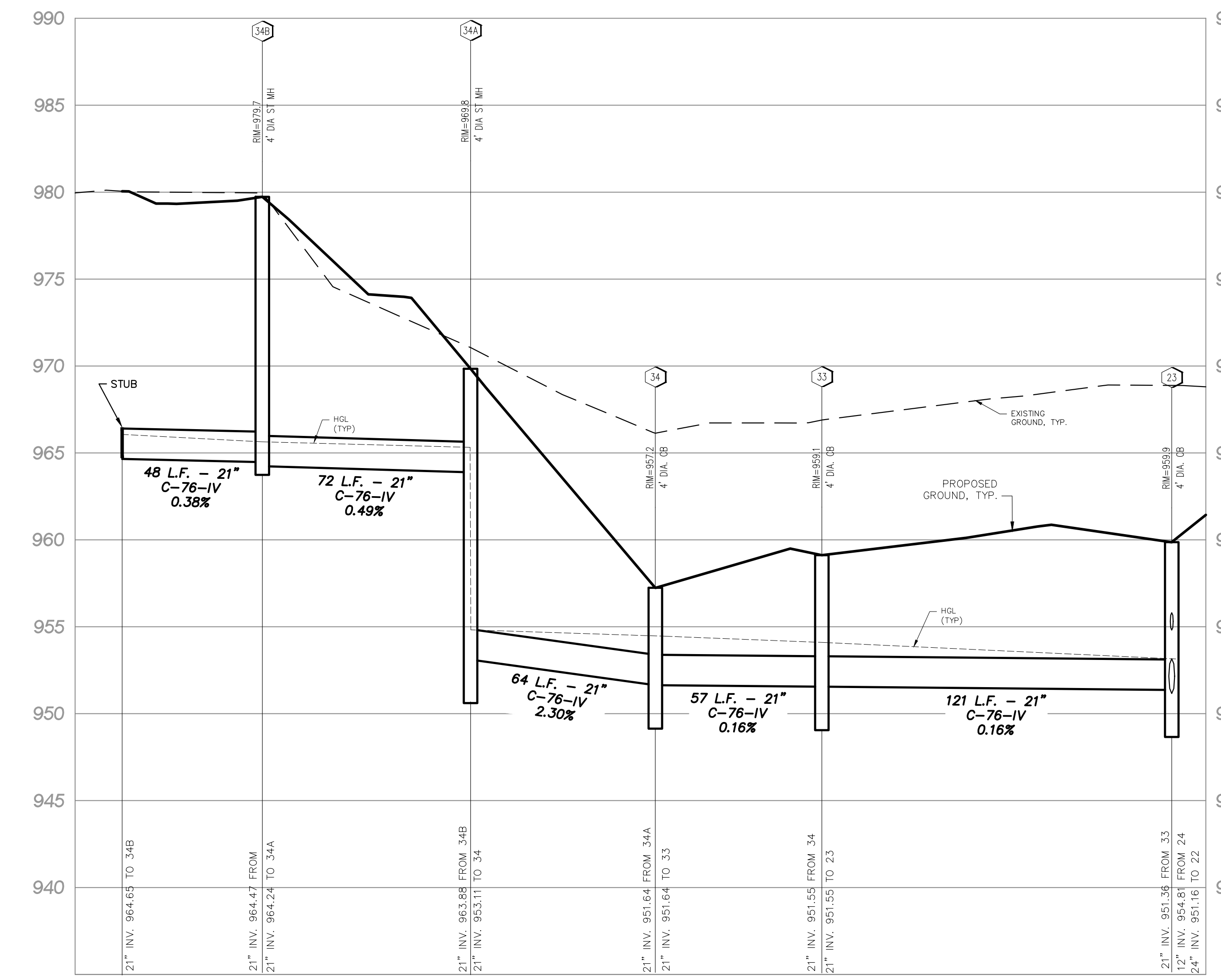
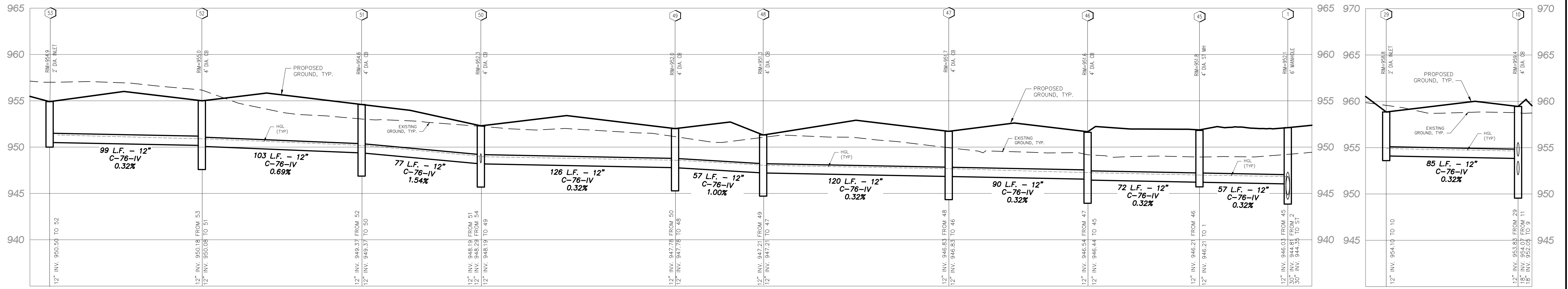
STORM SEWER PLAN

SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 588.422.7050

FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 19



STORM SEWER PROFILES
 HOR. SCALE: 1"=30'
 VERT. SCALE: 1"=5'

WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

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13	REVISE PER TWP.	03-13-25

UTILITY WARNING
 UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

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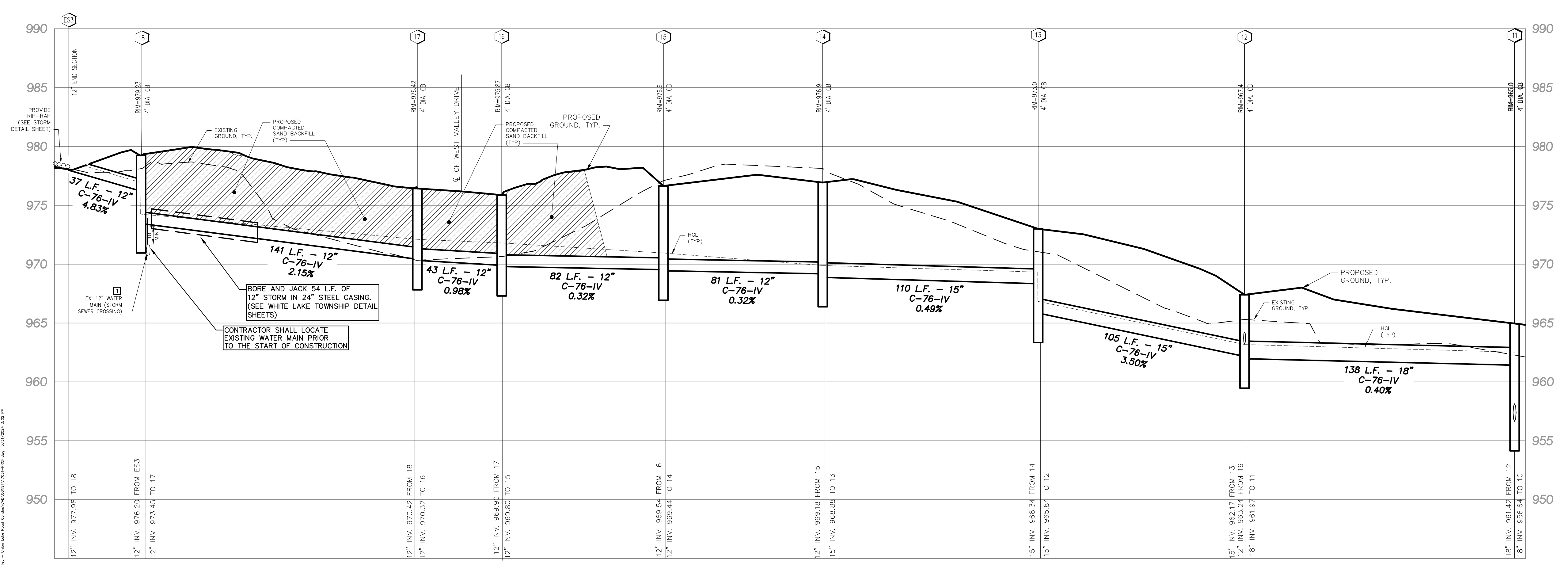
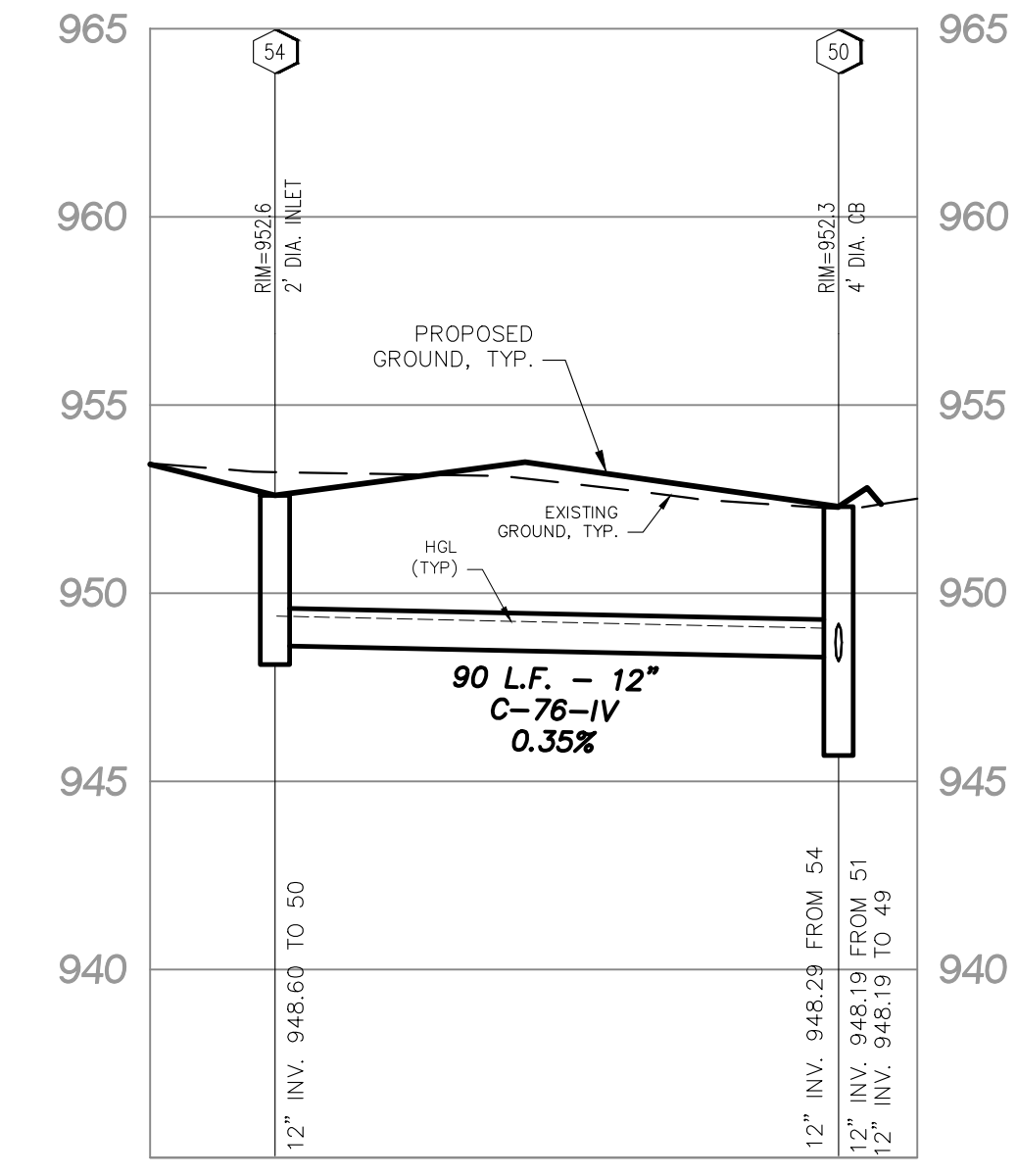
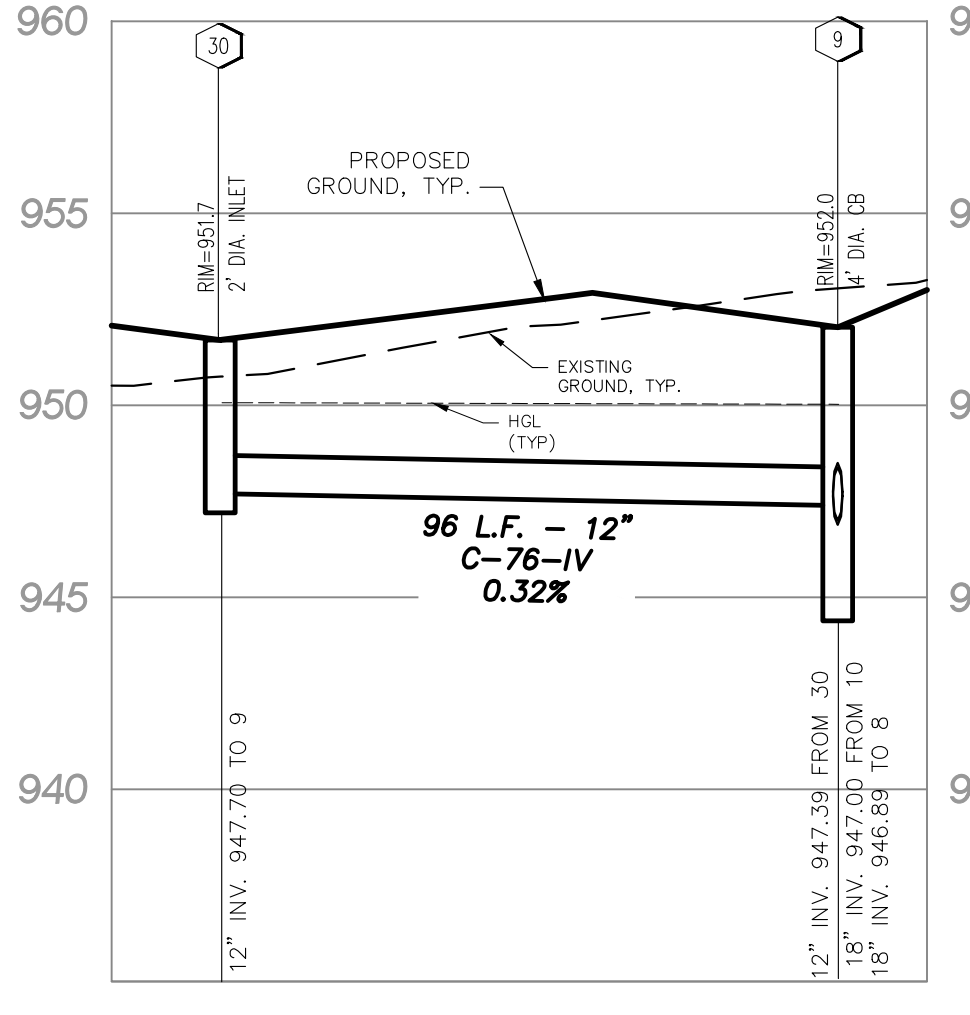
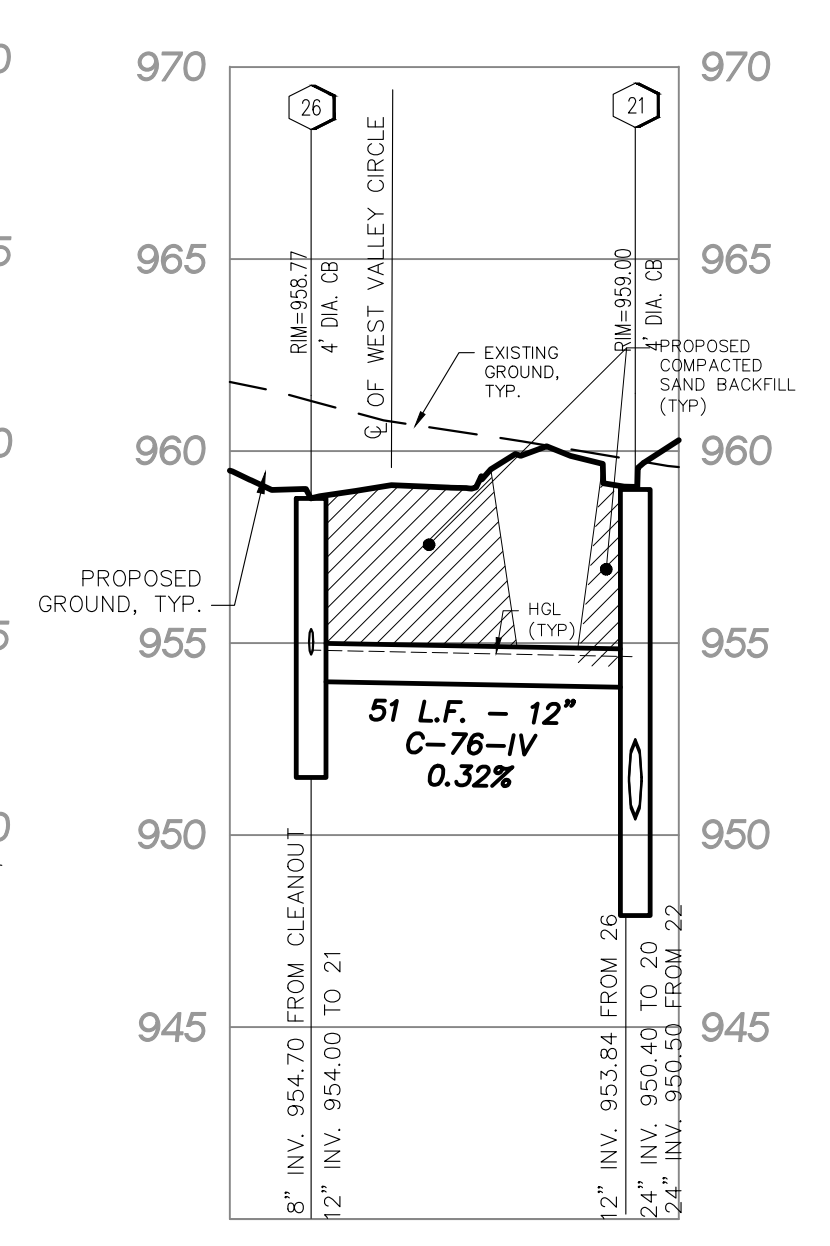
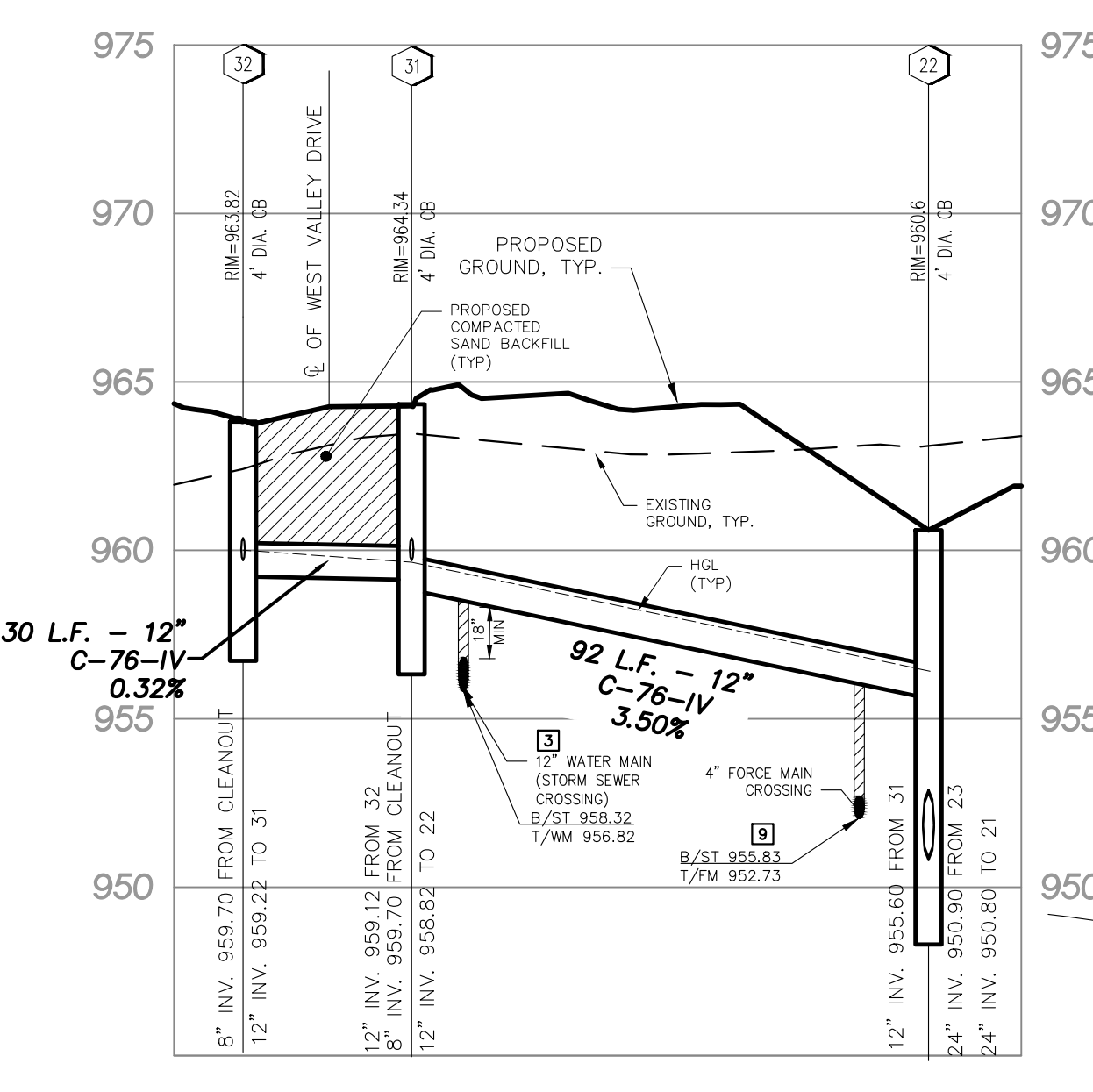
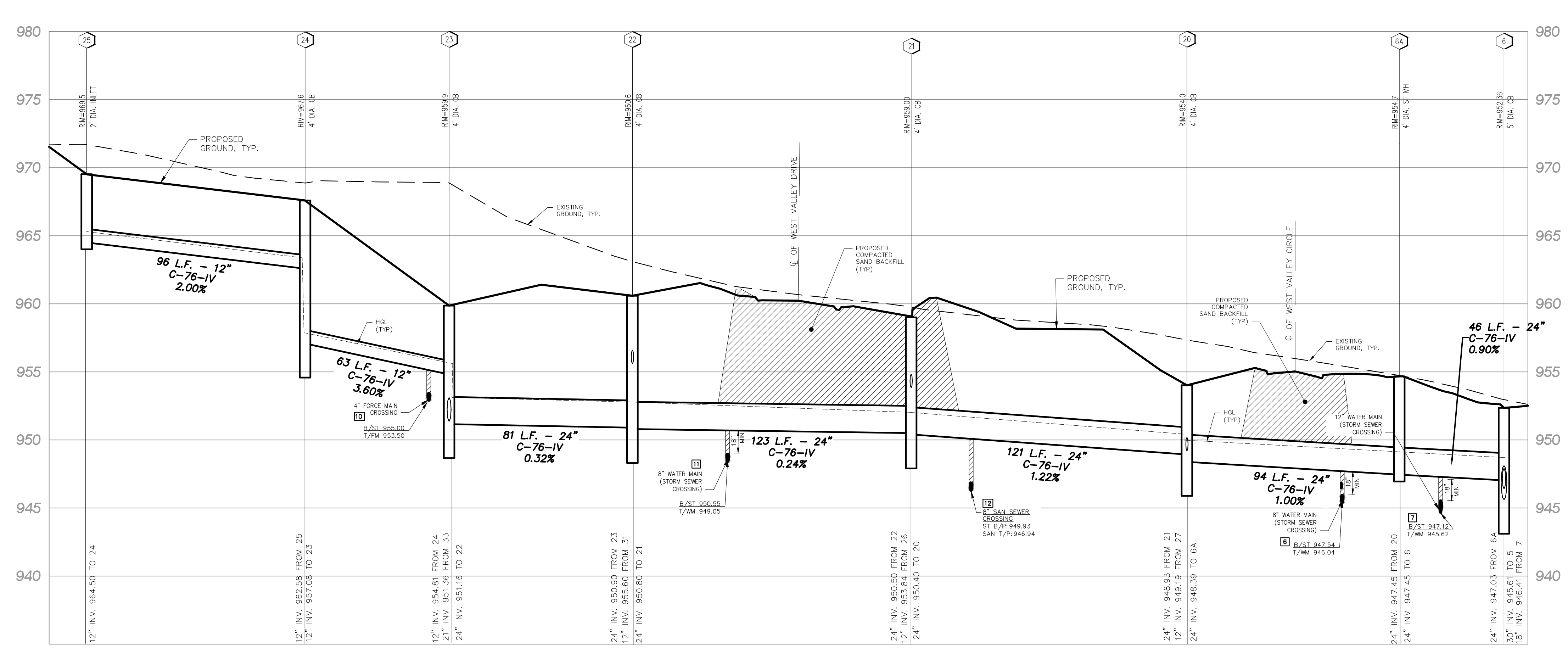
DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
 CHECKED BY: J.E. DRAWING FILE: 17031-PROF.dwg

STORM SEWER PROFILES

SKL SEIBER KEAST LEHNER
 ENGINEERING | SURVEYING


CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050
 FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET
20



STORM SEWER PROFILES
 HOR. SCALE: 1"=30'
 VERT. SCALE: 1"=5'

WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
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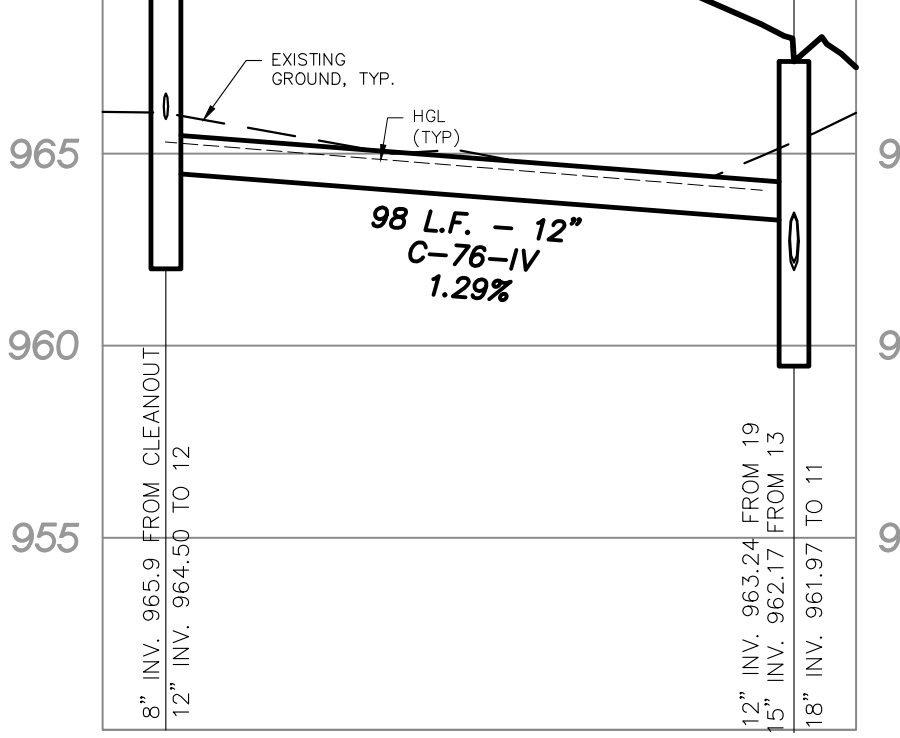
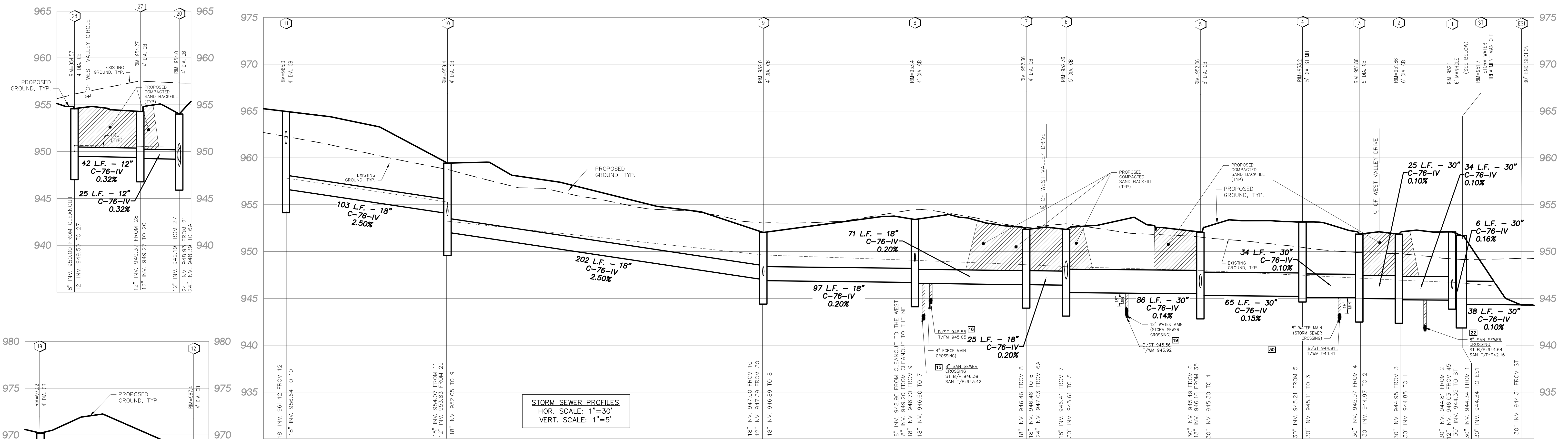
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STORM SEWER PROFILES

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 FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE 88 FARMINGTON HILLS MI 48331 248.308.3321

SHEET 21



Project: West Valley Multi-Family White Lake, MI
Location: White Lake, MI
Prepared For: Seiber Keast Engineering

Reference: United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

Structure Name	A (acres)	A (miles ²)	Runoff Coefficient	Percent Imp. (%)	L (min)	L (hr)
WQU	12.07	0.01886	0.53	38.33	15.0	0.250

3. Using computed CN, read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55; compute I_p, interpolating when appropriate.

Structure Name	L (hr)	I _p
WQU	0.174	0.174

4. Compute the time of concentration (t_c) in hours and the drainage area in square miles. A minimum t_c of 0.167 hours (10 minutes) should be used.

Structure Name	t _c (hr)	A (miles ²)
WQU	0.250	0.01886

5. Read the unit peak discharge (q_u) from Exhibit 4-II in Chapter 4 of TR-55 for appropriate L_c for type II rainfall distribution.

Structure Name	L _c (hr)	I _p	q _u (csm/in)
WQU	0.250	0.174	690

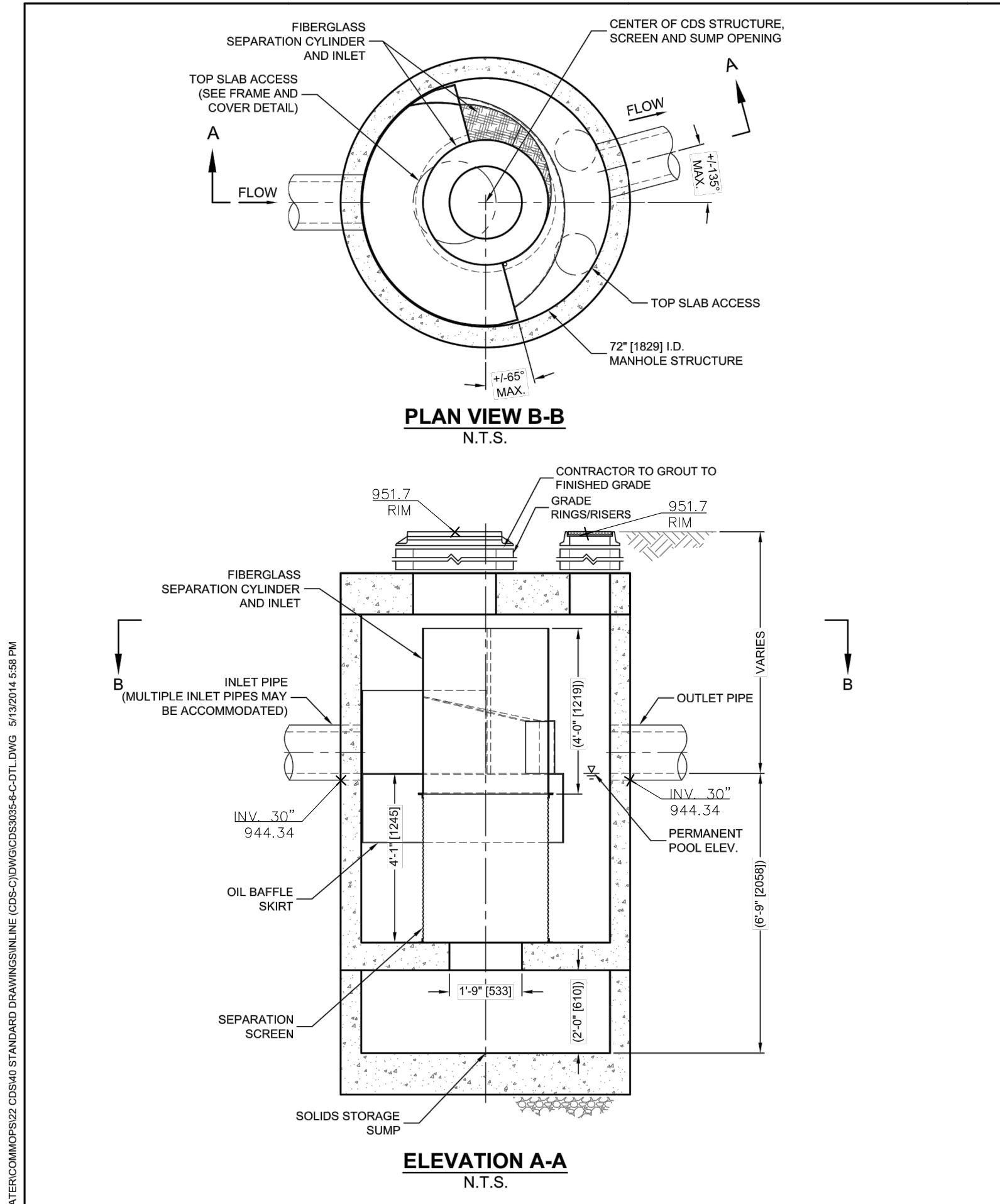
6. Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQF) from the following equation:

$$WQF = (q_u)(A)(I_p)(Q)$$

Structure Name	q _u (csm/in)	A (miles ²)	I _p	Q (in)	WQF (cfs)
WQU	690	0.01886	0.174	0.395	5.14

where: WQF = water quality flow (cfs)
 q_u = unit peak discharge (csm/in)
 A = drainage area (mi²)
 Q = runoff depth (watershed inches)

Structure Name	Q (in)	CN
WQU	0.395	91.83



CDS3035-6-C DESIGN NOTES

CDS3035-6-C RATED TREATMENT CAPACITY IS 3.0 CFS (107.6 L/s), OR PER LOCAL REGULATIONS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY IS 20.0 CFS (696 L/s). IF THE SITE CONDITIONS EXCEED 20.0 CFS (696 L/s), AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

THE STANDARD CDS3035-6-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION

- GRATED INLET ONLY (NO INLET PIPE)
- GRATED INLET WITH INLET PIPE OR PIPES
- CURB INLET ONLY (NO INLET PIPE)
- CURB INLET WITH INLET PIPE OR PIPES
- SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
- SEDIMENT WEIR FOR NJDEP/NJACT CONFORMING UNITS

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	WATER QUALITY FLOW RATE (CFS OR L/S)	PEAK FLOW RATE (CFS OR L/S)	RETURN TIME OF PEAK FLOW (MINS)	SCREEN APERTURE (2400 OR 4700)
	*	*	*	*

PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

NOTES/SPECIAL REQUIREMENTS:
 * PER ENGINEER OF RECORD

GENERAL NOTES

- CONTRACTOR TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- DIMENSIONS MARKED WITH () ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.conteches.com
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- STRUCTURE SHALL MEET ASHOTO H202 AND CASTINGS SHALL MEET H202 (ASHOTO M 300) LOAD RATINGS, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
- PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES

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

CONTECH ENGINEERED SOLUTIONS LLC
 www.conteches.com
 9025 Centre Pointe Dr., Suite 400, West Chester, OH 45399
 800-338-1122 513-645-7000 513-645-7983 FAX

CDS3035-6-C INLINE CDS STANDARD DETAIL

Estimated Net Annual Solids Load Reduction
Based on the Rational Rainfall Method

West Valley Multi-Family Residential Community
White Lake, MI
Water Quality Unit

AREA (acres): 12.07
WEIGHTED C: 0.53
Tc (minutes): 15

CDS MODEL: 3035
PARTICLE SIZE (µm): 75

Rainfall Intensity (in/hr)	Percent Rainfall	Cumulative Rainfall Volume	Total Flowrate	Removal Efficiency (%)	Incremental Removal (%)
0.02	13.13%	13.1%	0.13	99.48	13.06
0.04	11.36%	24.5%	0.26	98.34	11.17
0.06	10.08%	34.6%	0.38	97.21	9.80
0.08	7.49%	42.1%	0.61	96.07	7.20
0.10	7.01%	49.1%	0.64	94.94	6.66
0.12	5.37%	54.4%	0.77	93.81	5.04
0.14	4.73%	59.2%	0.90	92.67	4.38
0.16	4.13%	63.3%	1.02	91.54	3.76
0.18	3.53%	66.8%	1.15	90.40	3.19
0.20	2.99%	69.8%	1.28	89.27	2.67
0.25	5.50%	75.3%	1.60	86.43	4.75
0.30	4.47%	79.8%	1.92	83.60	3.74
0.35	3.85%	83.6%	2.24	80.76	3.11
0.40	2.16%	85.8%	2.56	77.9	1.7
0.45	2.09%	87.9%	2.88	75.1	1.6
0.50	1.31%	89.2%	3.20	72.3	0.9
0.75	5.07%	94.3%	4.80	53.0	2.7
1.00	2.58%	96.9%	6.40	39.8	1.0
1.50	2.50%	99.4%	9.60	23.5	0.7
2.00	0.51%	99.9%	12.79	19.9	0.1
2.54	0.15%	100.0%	16.25	15.7	0.0

Removal Efficiency Adjustment = 8.5%
 Predicted % Annual Rainfall Treated = 89.5%
 Predicted Net Annual Load Removal Efficiency = 88.8%

WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

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UTILITY WARNING
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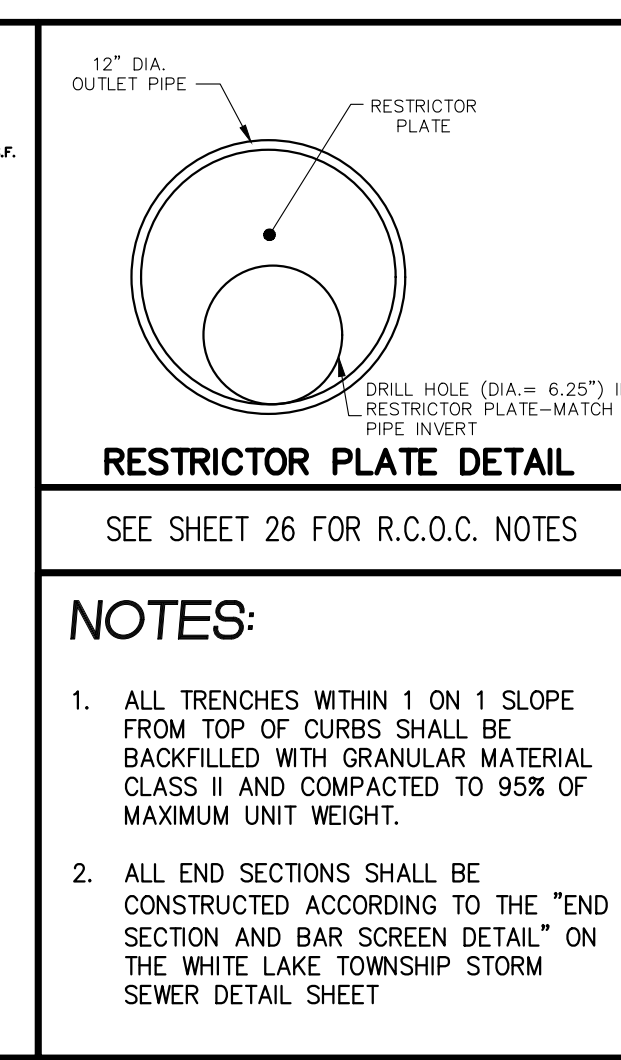
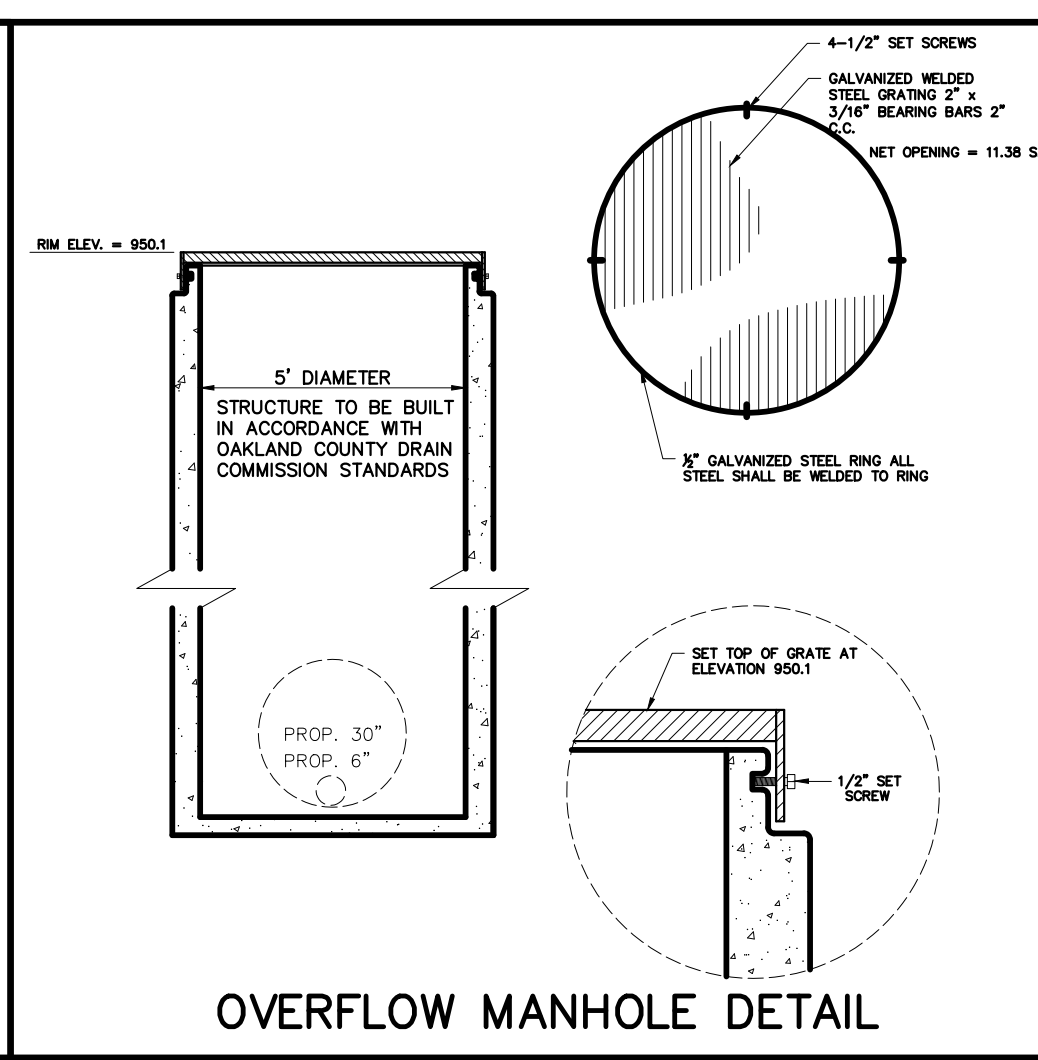
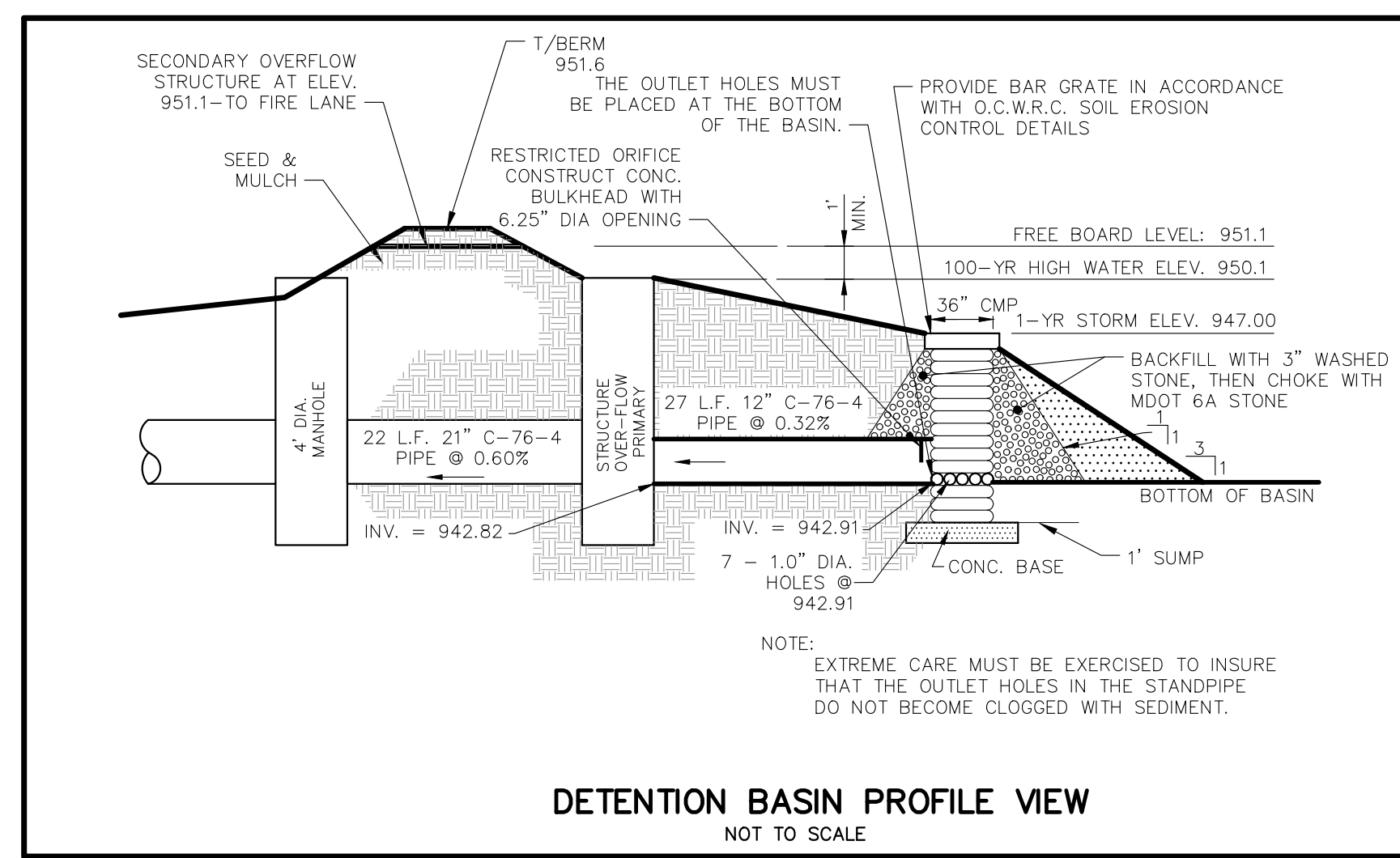
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DESIGNED BY: G.N. JOB NUMBER: 17-031
 DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE:17031-PROF.dwg

STORM SEWER PROFILES

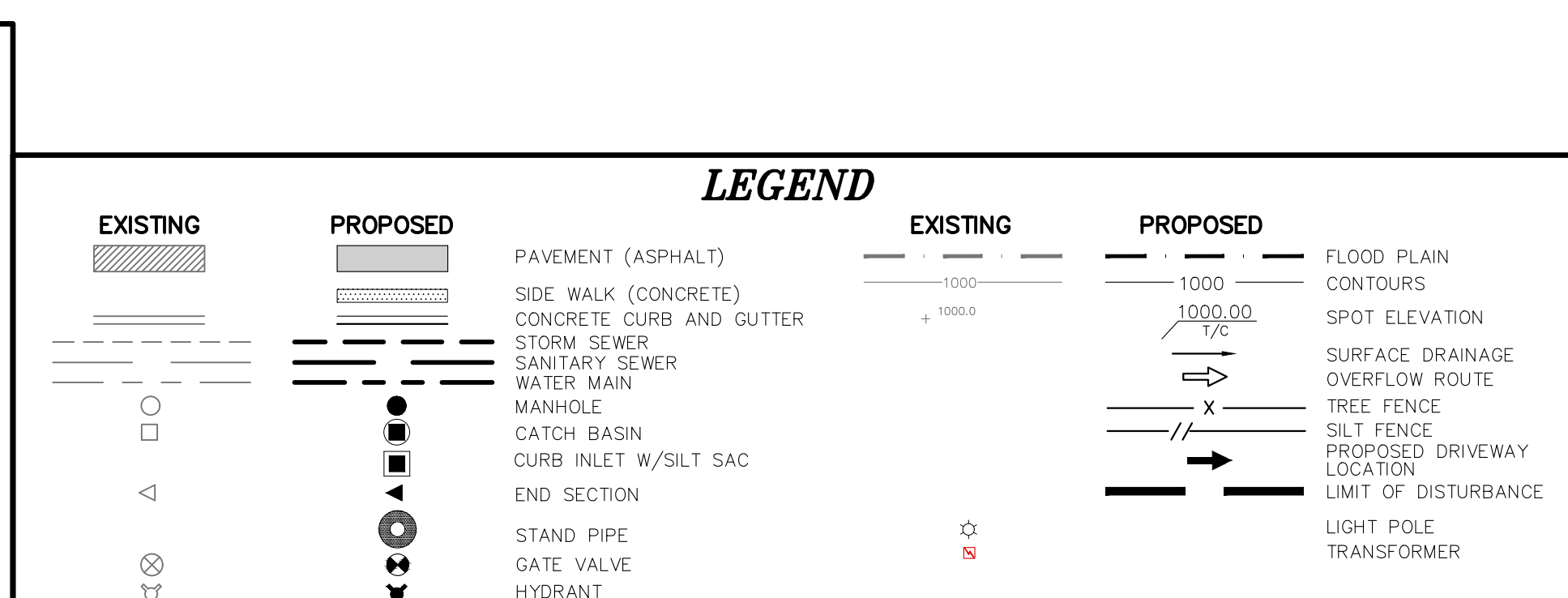
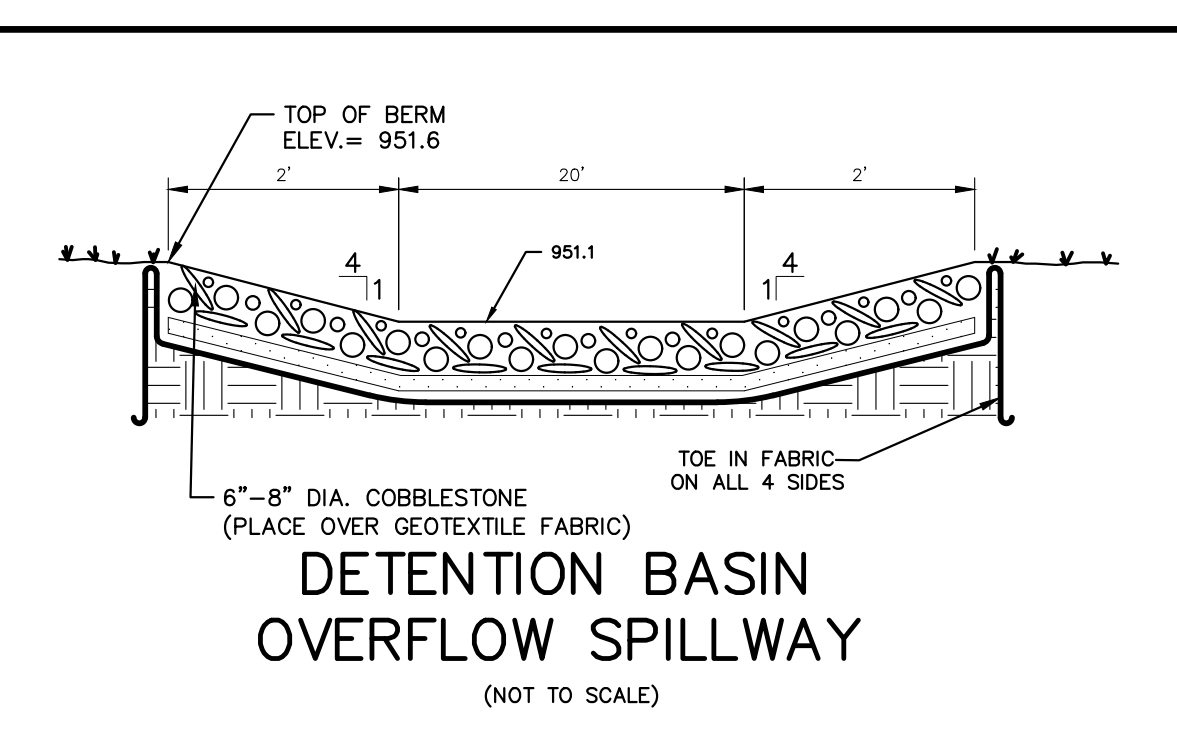
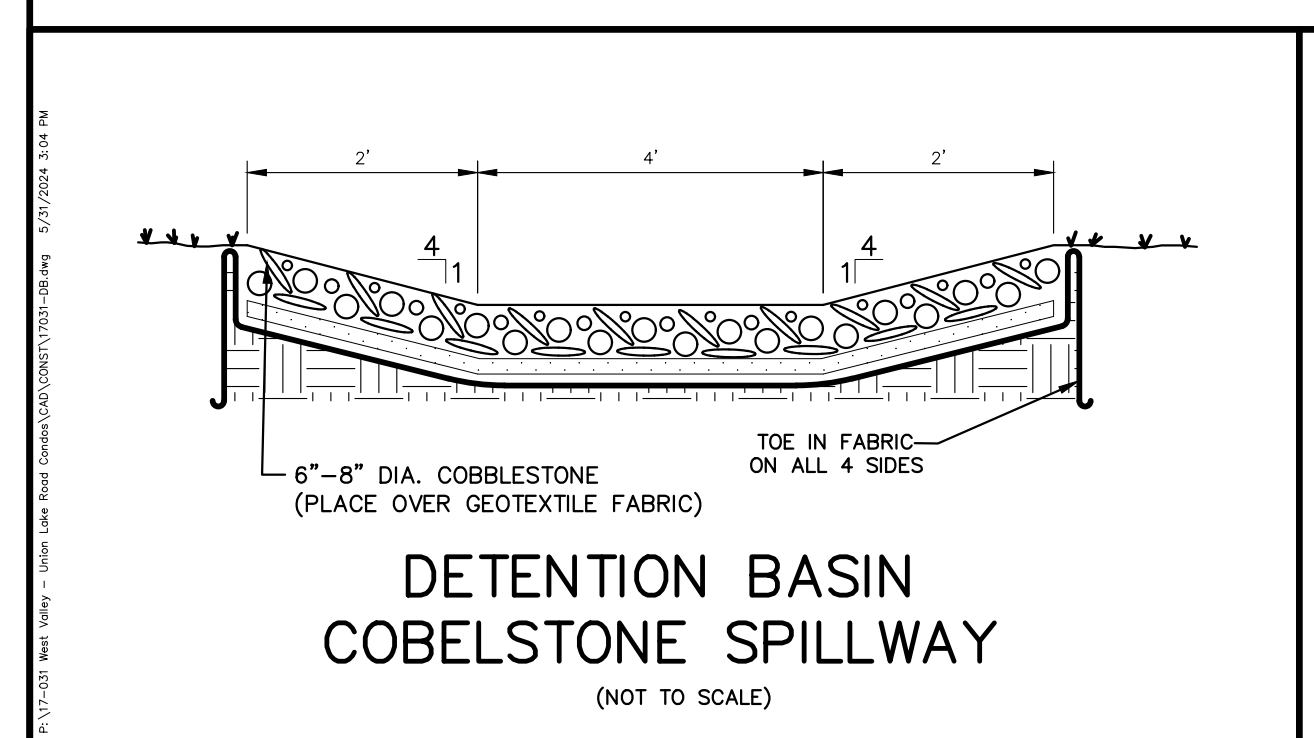
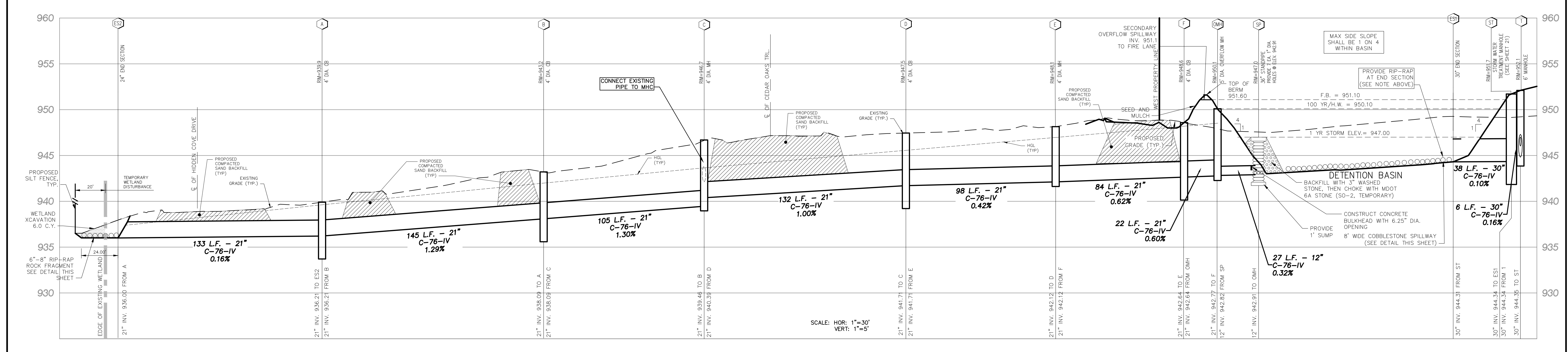
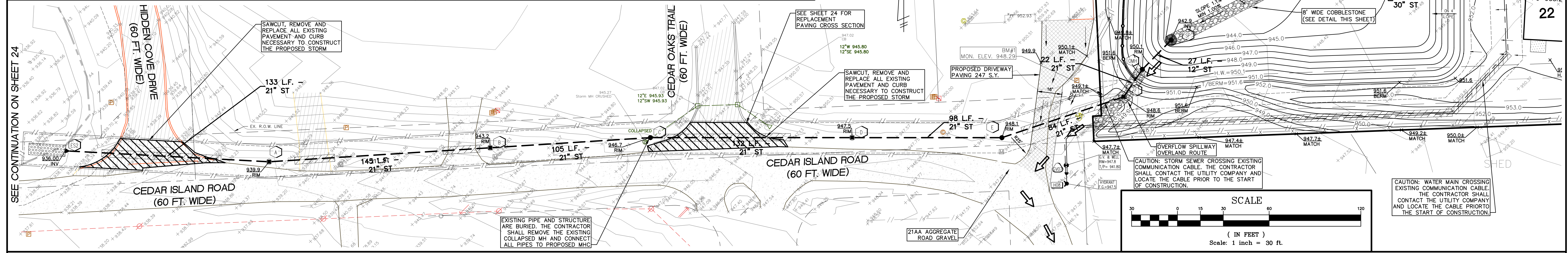
SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING
 CLINTON TOWNSHIP OFFICE: 1700 NINETYSEVEN ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050
 FARMINGTON HILLS OFFICE: 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 22



NOTES:

1. ALL TRENCHES WITHIN 1 ON 1 SLOPE FROM TOP OF CURBS SHALL BE BACKFILLED WITH GRANULAR MATERIAL CLASS II AND COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT.
2. ALL END SECTIONS SHALL BE CONSTRUCTED ACCORDING TO THE "END SECTION AND BAR SCREEN DETAIL" ON THE WHITE LAKE TOWNSHIP STORM SEWER DETAIL SHEET



NO.	REVISION	DATE
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12.	REVISED PER TWP.	01-31-24
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DESIGNED BY: A.A. CHECKED BY: J.E. DATE: 05-01-19 JOB NUMBER: 17-031

WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

DETENTION BASIN PLAN

SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

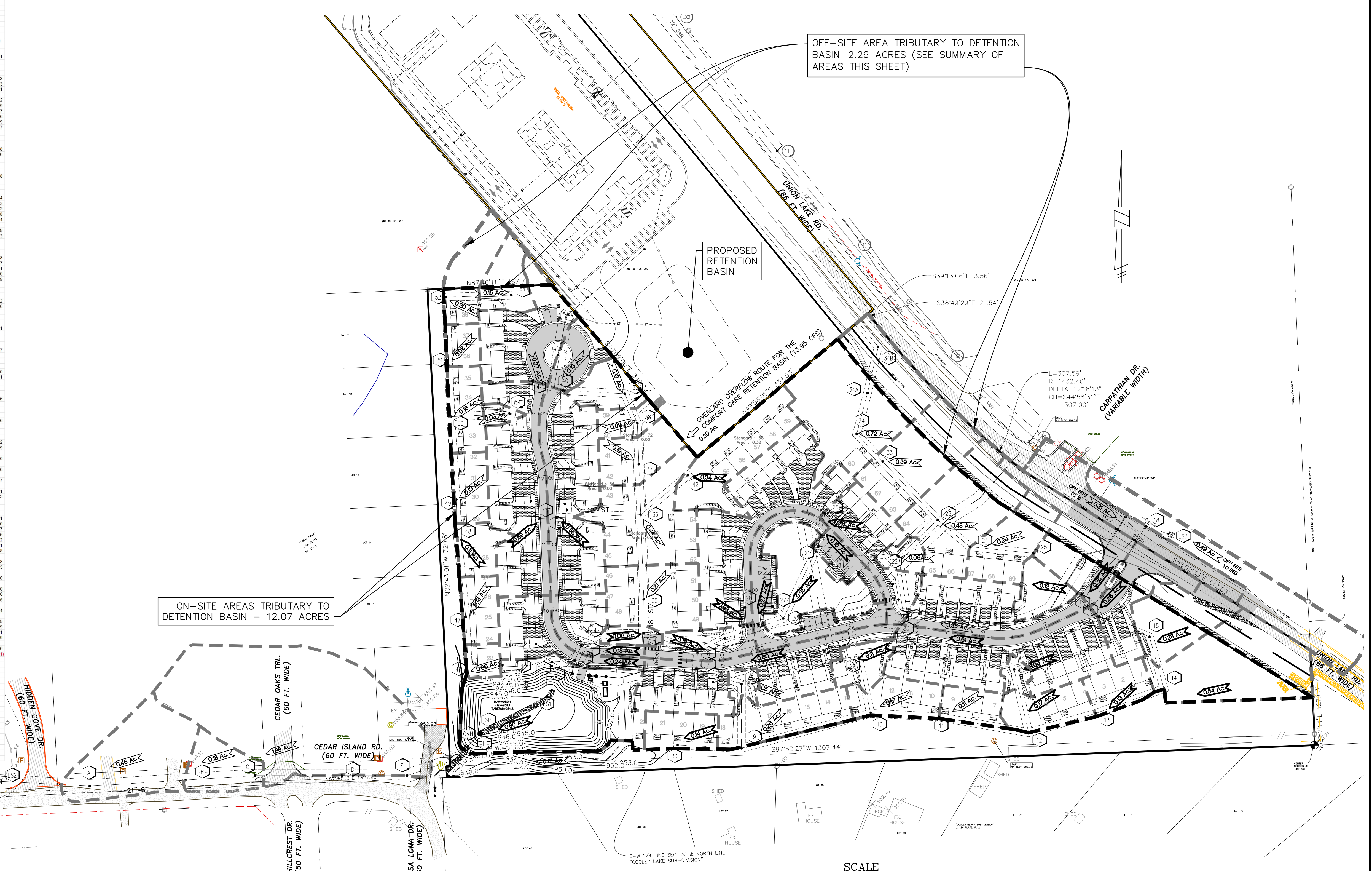
CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 800.412.7050

FARRINGTON HILLS OFFICE: 39028 COUNTRY CLUB DRIVE, SUITE C8 FARRINGTON HILLS, MI 48331 248.348.3331

SHEET 23

STORM SEWER CALCULATIONS

Table with columns: MH-MH, A(s) acres, C, A(s)xC unit, A(s)xC cumal, T min, I in/hr, Q cfs, Dia in, Hyd. Gr. %, Vel ft/sec, Length ft, Tr time min, Inv. upst, Inv. dnst, Gmd. upst, HGL upst, Pipe slope-%, RIM -HGL, Rim -inv, T/Pipe -RIM, T/Pipe -RIM. Includes summary of areas and on-site storm sewer 'C' factor calculations.

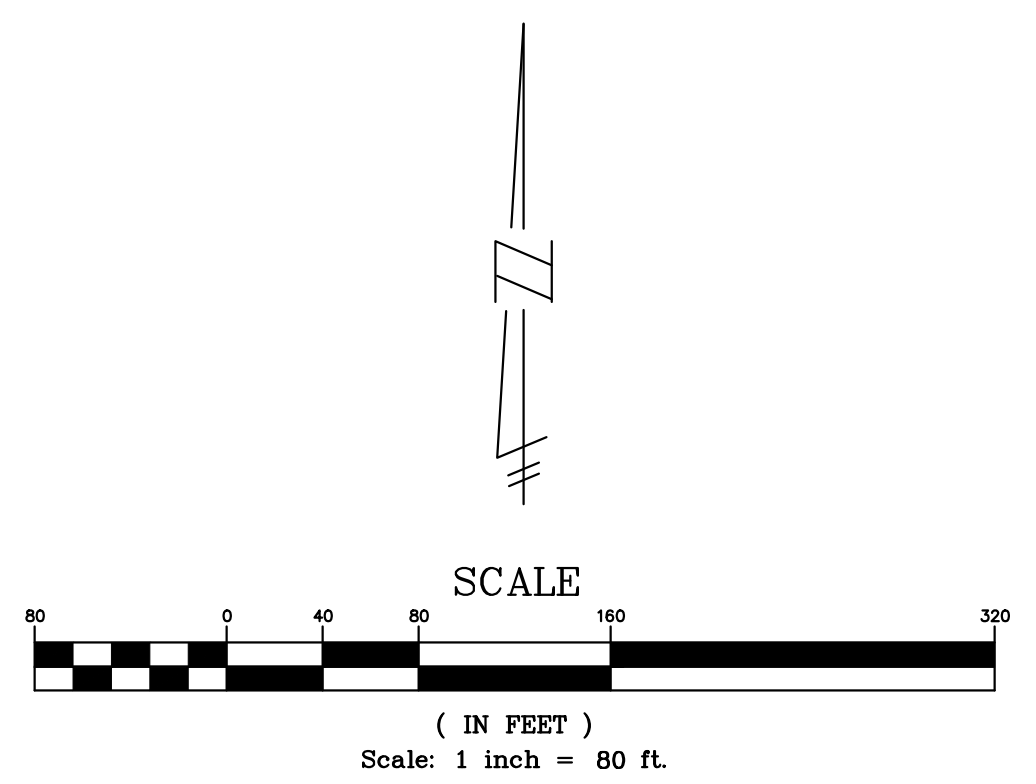


On Site Storm Sewer "C" Factor Calculations table. Columns: DETERMINE "C" FACTOR, Area, C, Area *C. Rows include PAVING AREA, BUILDING AREA, LAWN AREA, and TOTAL AREA. Avg = A * C / TOTAL ACRES = 0.529.

OFF-SITE STORM SEWER CALCULATIONS

Table with columns: MH-MH, A(s) acres, C, A(s)xC unit, A(s)xC cumal, T min, I in/hr, Q cfs, Dia in, Hyd. Gr. %, Vel ft/sec, Length ft, Tr time min, Inv. upst, Inv. dnst, Gmd. upst, HGL upst, Pipe slope-%, RIM -HGL, Rim -inv, T/Pipe -RIM, T/Pipe -RIM. Includes initial Tc and flow from over flow manhole.

WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN. REVISIONS table, UTILITY WARNING, 811 Know what's below. Call before you dig. SHEET 25.



LEGEND

EXISTING	PROPOSED	DESCRIPTION
[Symbol]	[Symbol]	PAVEMENT (ASPHALT)
[Symbol]	[Symbol]	SIDE WALK (CONCRETE)
[Symbol]	[Symbol]	CONCRETE CURB AND GUTTER
[Symbol]	[Symbol]	STORM SEWER
[Symbol]	[Symbol]	SANITARY SEWER
[Symbol]	[Symbol]	WATER MAIN
[Symbol]	[Symbol]	MANHOLE
[Symbol]	[Symbol]	CATCH BASIN
[Symbol]	[Symbol]	CURB INLET W/SILT SAC
[Symbol]	[Symbol]	END SECTION
[Symbol]	[Symbol]	GATE VALVE
[Symbol]	[Symbol]	HYDRANT
[Symbol]	[Symbol]	CONTOURS
[Symbol]	[Symbol]	SPOT ELEVATION
[Symbol]	[Symbol]	LIGHT POLE
[Symbol]	[Symbol]	TRANSFORMER
[Symbol]	[Symbol]	SURFACE DRAINAGE
[Symbol]	[Symbol]	OVERFLOW ROUTE
[Symbol]	[Symbol]	TREE FENCE
[Symbol]	[Symbol]	SILT FENCE/LIMITS OF DISTURBANCE
[Symbol]	[Symbol]	PROPOSED DRIVEWAY LOCATION
[Symbol]	[Symbol]	LIMIT OF DISTURBANCE

WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS		UTILITY WARNING
NO.	ITEM	DATE
1.	REV. PER ROAD PERMITS DEPARTMENT	10-22-19
2.	REV. SAN AND STORM PER OWNER	04-10-20
3.	REV SAN, ST. & PAV. PER OWNER	5-18-20
4.	REVISE PER TWP.	02-18-21
5.	REVISE PER TWP.	03-17-21
7.	REV PER OWNER, ROCC AND OCWC	11-21-22
8.	REVISED WATERMAIN FOR OWNER	04-05-23
9.	REVISED PER TOWNSHIP	04-25-23
10.	REVISED PER TWP.	7-27-23
11.	REVISED PER TWP.	09-21-23
12.	REVISED PER EDC	01-31-24
13.	REVISE PER TWP	02-13-24

UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

811 Know what's below. Call before you dig.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

DATE: 08-23-19
DESIGNED BY: G.N. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE: 17031-WV AND LP.dwg

OVERALL STORM WATER MANAGEMENT SYSTEM
"WEST VALLEY & LAKE POINTE"

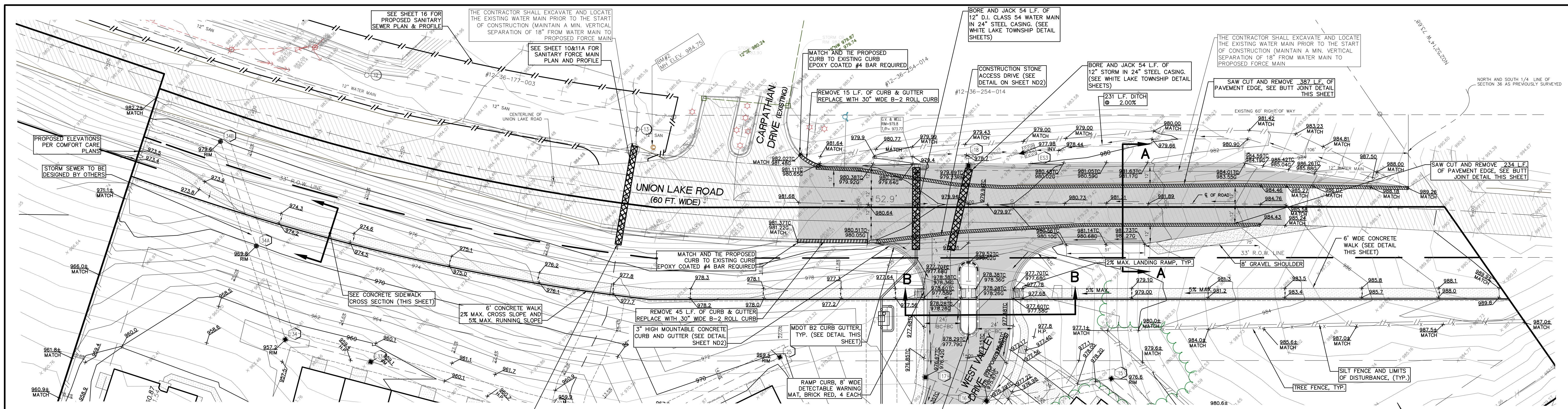
SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 688.452.7060

FARMINGTON HILLS OFFICE: 39206 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3331

SHEET 25A

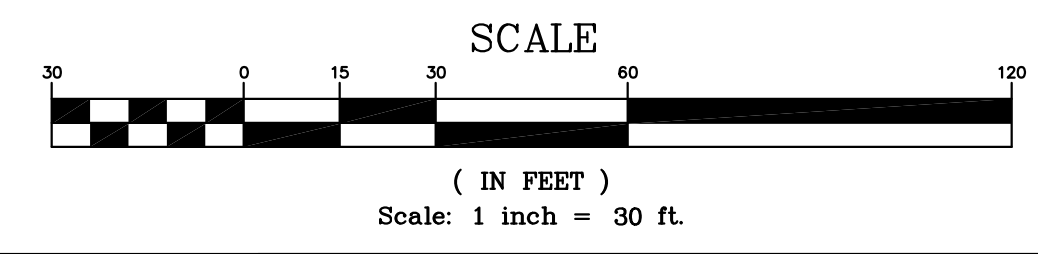
"CODLEY BEACH SUB-DIVISION" L: 24 PLATS, P: 2



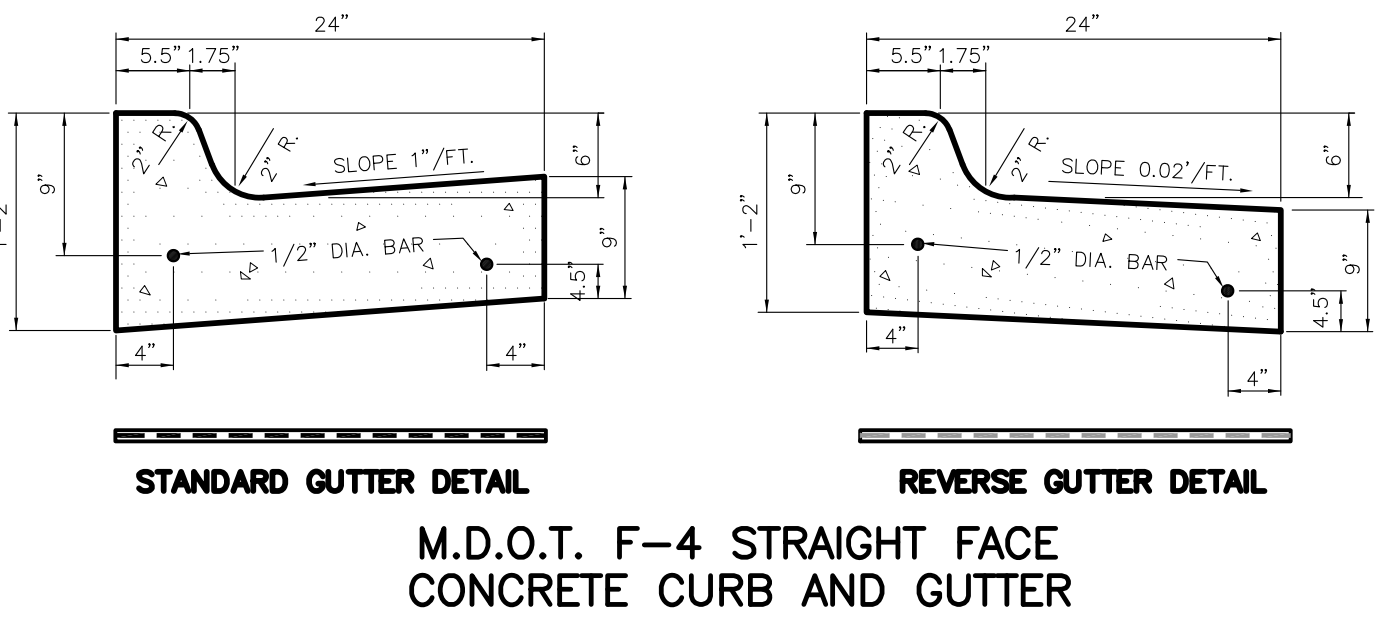
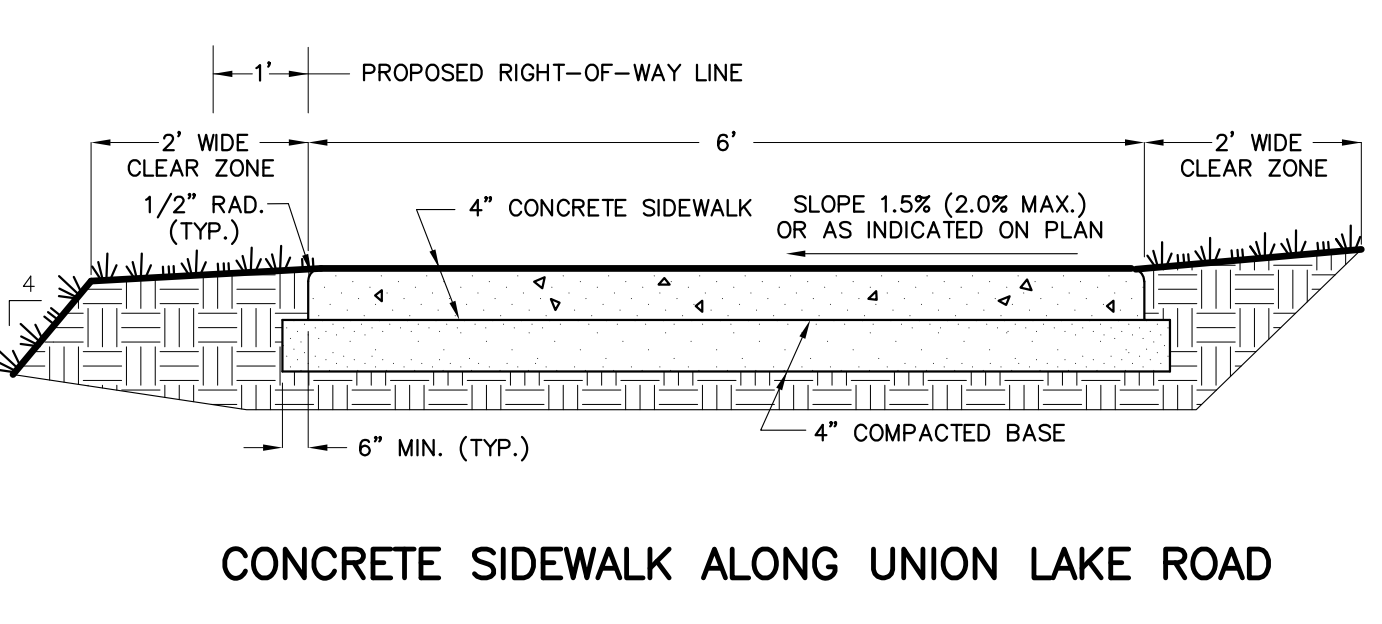
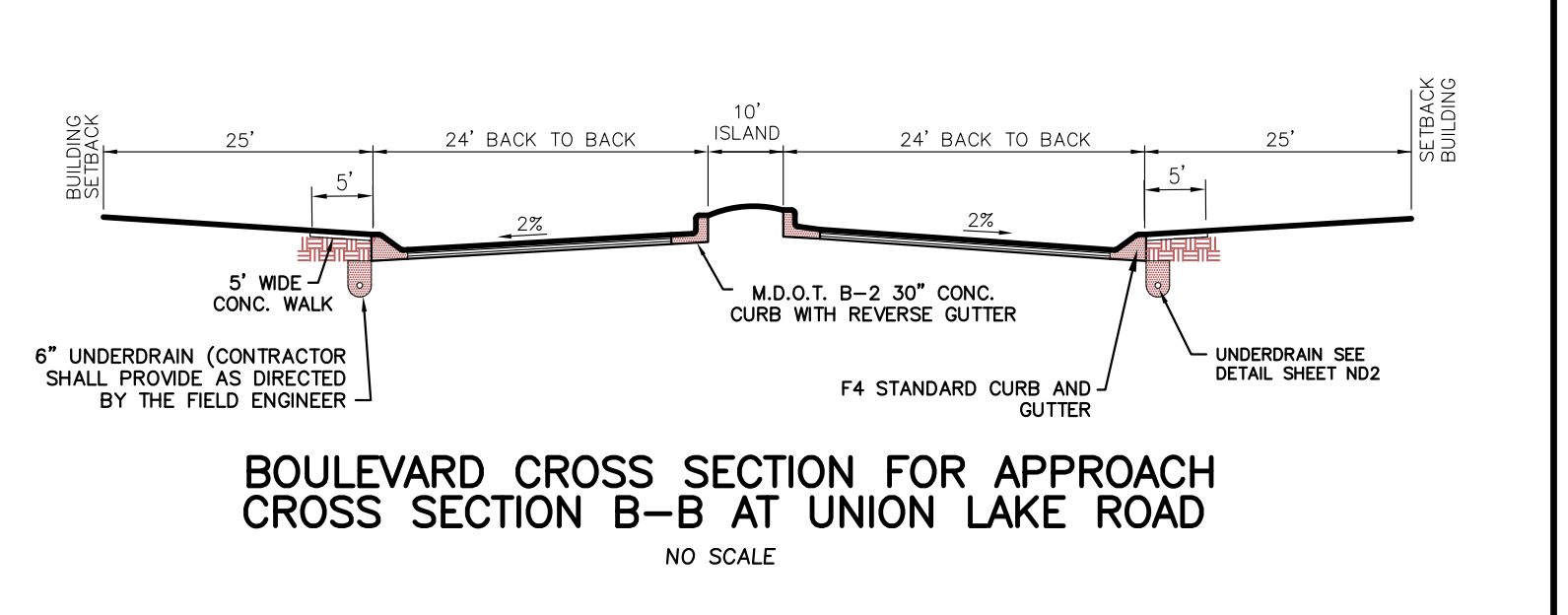
ALTERNATE BORE TYPE FOR THE 4" SANITARY FORCE MAIN
 DIRECTIONAL BORE: INSTALL 65 L.F. OF 4" I.D. H.D.P.E. SDR11 BY DIRECTION BORE. PROVIDE 4" D.I. TO 4" I.D. H.D.P.E. PIPE ADAPTORS WHERE REQUIRED IN ACCORDANCE WITH THE OCHRO DUCTILE IRON TO H.D.P.E. "MECHANICAL-JOINT ADAPTOR" DETAIL ON SHEET 9. BORE AND JACK: BORE AND JACK 65 L.F. OF 4" D.I. PIPE IN A 12" DIAMETER STEEL CASING.

NOTE: SIDEWALK RAMP CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT ADA STANDARDS AND SPECIFICATIONS. (SEE SHEET ND2 FOR RAMP DETAILS.)

NOTE: REMOVE OR RELOCATE FIXED OBJECTS PRIOR TO EXCAVATION.



- RCOC NOTES:**
1. A permit must be obtained from R.C.O.C. Permits Division prior to any work within the Union Lake Road R.O.W.
 2. Maintain access to existing residents at all times during construction.
 3. Restore all disturbed area, drives, lawns, etc. to a condition at least equal to existing.
 4. Overhead lines to be 18 feet above proposed top of pavement.
 5. Contractor shall verify all existing pavement grades along Union Lake Road to ensure 2.0% slope across all widenings and shoulders.
 6. All bore pit are to be situated at least 10 feet from edge of pavement.
 7. Call inspector or supervisor before beginning any work in the R.O.W.
 8. Maintain two-way traffic at all times.
 9. "Proper Signing" is required before any work in R.O.W. is started.
 10. Lane closures restricted to 9AM to 3PM Monday through Friday.
 11. Flag person is required for temporary one lane traffic.
 12. Trench backfill within the influence of the roadbed shall be MDOT Class II sand compacted to 95% maximum unit density.
 13. Suitable base to be determined by R.C.O.C. inspector in the field.
 14. Provide full depth sawcut and/or mill a butt with location/width as directed by R.C.O.C. inspector.
 15. Sidewalk ramps must meet ADA specifications.
 16. Additional ditching may be necessary to obtain positive drainage as directed by the R.C.O.C. during construction.
 17. Resurface all disturbed areas within Union Lake Road R.O.W. with minimum of 4" topsoil, seed and mulch.
 18. All erosion control devices must be removed and vegetation must be acceptably established prior to final release of the construction deposit by R.C.O.C.
 19. Maintain a minimum 3 foot flat area back of curb and a maximum 1 on 3 slope to existing.
 20. Gravel shoulders shall consist of 8 inches of M.D.O.T. 23A compacted aggregate.
 21. A separate permit is required for all underground utilities within the existing R.O.W.
 22. Provide and maintain positive drainage.
 23. Asphalt pavement to be 7" HMA over 10" aggregate base MDOT 21-AA RCOC modified = 100% crushed bond between courses



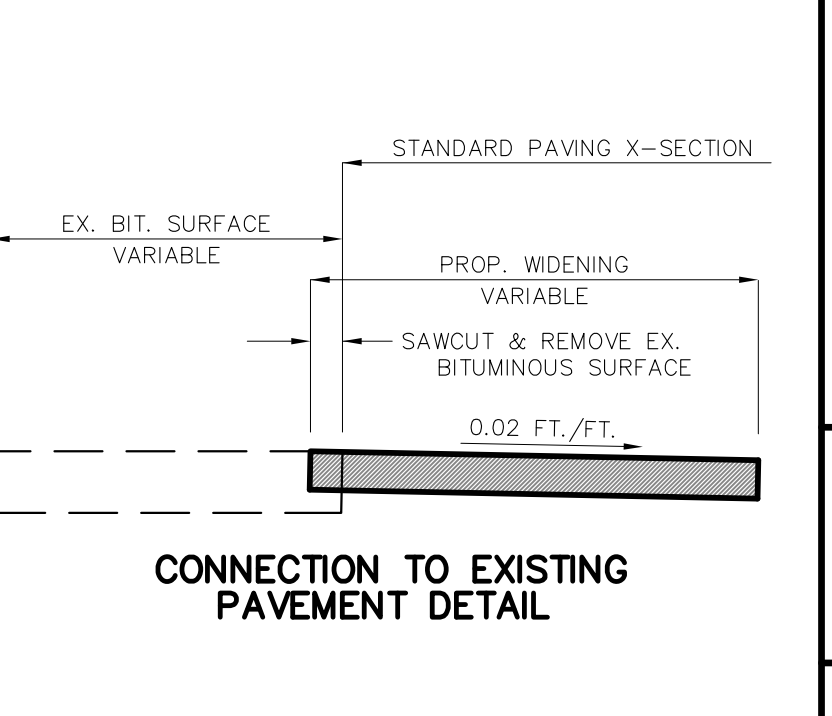
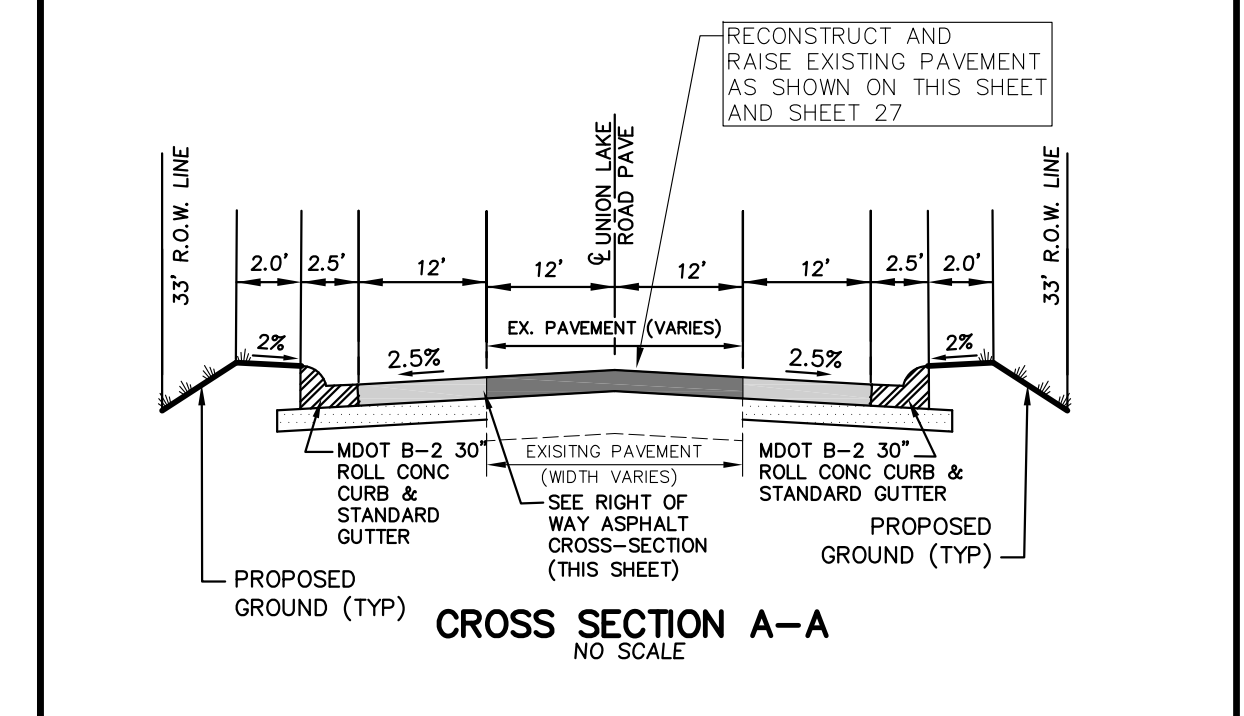
LEGEND

EXISTING	PROPOSED	DESCRIPTION
[Symbol]	[Symbol]	PAVEMENT (ASPHALT)
[Symbol]	[Symbol]	SIDE WALK (CONCRETE)
[Symbol]	[Symbol]	CONCRETE CURB AND GUTTER
[Symbol]	[Symbol]	STORM SEWER
[Symbol]	[Symbol]	SANITARY SEWER
[Symbol]	[Symbol]	WATER MAIN
[Symbol]	[Symbol]	MANHOLE
[Symbol]	[Symbol]	CATCH BASIN
[Symbol]	[Symbol]	CURB INLET W/SILT SAC
[Symbol]	[Symbol]	END SECTION
[Symbol]	[Symbol]	GATE VALVE
[Symbol]	[Symbol]	HYDRANT
[Symbol]	[Symbol]	CONTOURS
[Symbol]	[Symbol]	1000.00
[Symbol]	[Symbol]	SPOT ELEVATION
[Symbol]	[Symbol]	1000.00
[Symbol]	[Symbol]	TRANSFORMER
[Symbol]	[Symbol]	SURFACE DRAINAGE
[Symbol]	[Symbol]	OVERFLOW ROUTE
[Symbol]	[Symbol]	TREE FENCE
[Symbol]	[Symbol]	SILT FENCE/LIMITS OF DISTURBANCE
[Symbol]	[Symbol]	PROPOSED DRIVEWAY LOCATION
[Symbol]	[Symbol]	LIMIT OF DISTURBANCE

RAMP DETAILS

SECTION A-A
SECTION THROUGH CURB OPENING
SECTION THROUGH CURB OPENING
SECTION THROUGH CURB OPENING

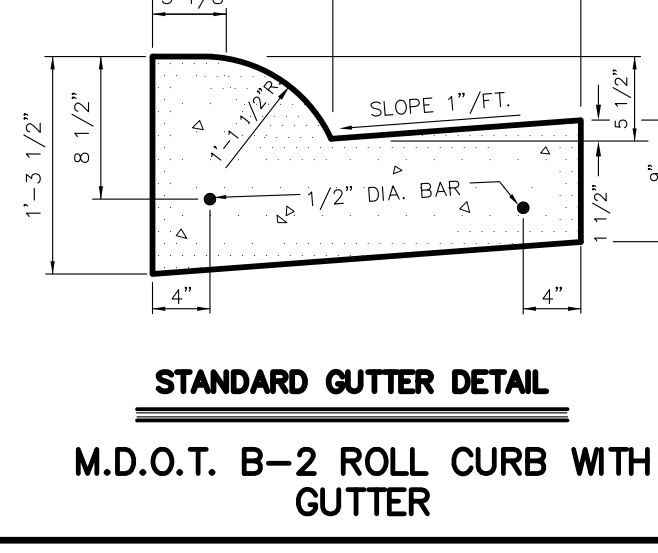
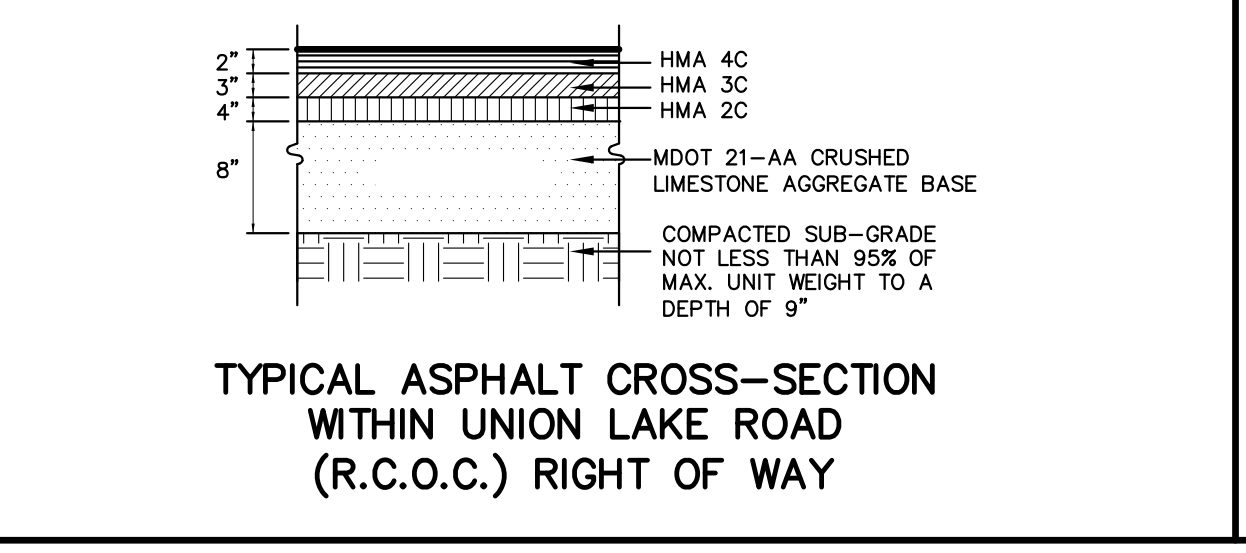
MICHIGAN DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAY DESIGN AND CONSTRUCTION
 DIVISION OF HIGHWAY DESIGN AND CONSTRUCTION
 DIVISION OF HIGHWAY DESIGN AND CONSTRUCTION



- R.C.O.C. NOTES**
1. SIDEWALKS AND RAMP CONSTRUCTION SHALL BE ACCORDANCE WITH ADA STANDARDS. (SEE SHEET ND1 FOR RAMP DETAILS)
 2. SEE SHEET ND1 & APPROACH PLAN FOR ALL CURB DETAILS.

NOTE:
 NO MORE THAN 1/4" VERTICAL OBSTACLE SHALL BE ALLOWED AT EACH TRANSITION BETWEEN THE PATHWAY AND THE DRIVE APPROACH

- SIGN LEGEND**
- | SYMBOL | DESCRIPTION |
|----------|---------------------------------------|
| [Symbol] | R1-1 30" "STOP" SIGN W/ STREET SIGN |
| [Symbol] | R1-2 30" "YIELD" SIGN W/ STREET SIGN |
| [Symbol] | R2-1(25) "25 MPH SPEED LIMIT" SIGN |
| [Symbol] | 12" D3-1 STREET NAME ATOP "STOP" SIGN |
| [Symbol] | 8" D3-1 STREET NAME ATOP "YIELD" SIGN |
| [Symbol] | R4-7 "KEEP RIGHT" SIGN |
| [Symbol] | V.A. BARRIER FREE SIGN |
| [Symbol] | W1-2 CROSS WALK WARNING SIGN |
| [Symbol] | R8-3 "NO PARKING" SIGN 12"x12" |



WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS

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7	REV PER OWNER, RCOC AND OCMRC	11-21-22
8	REVISED WATERMAIN FOR OWNER	04-05-23
9	REVISED PER TOWNSHIP	04-25-23
10	REVISE PER TWP.	7-27-23
11	REVISED PER TWP.	09-21-23
12	REVISED PER EGLE	01-31-24
13	REVISED PER TWP	02-13-24

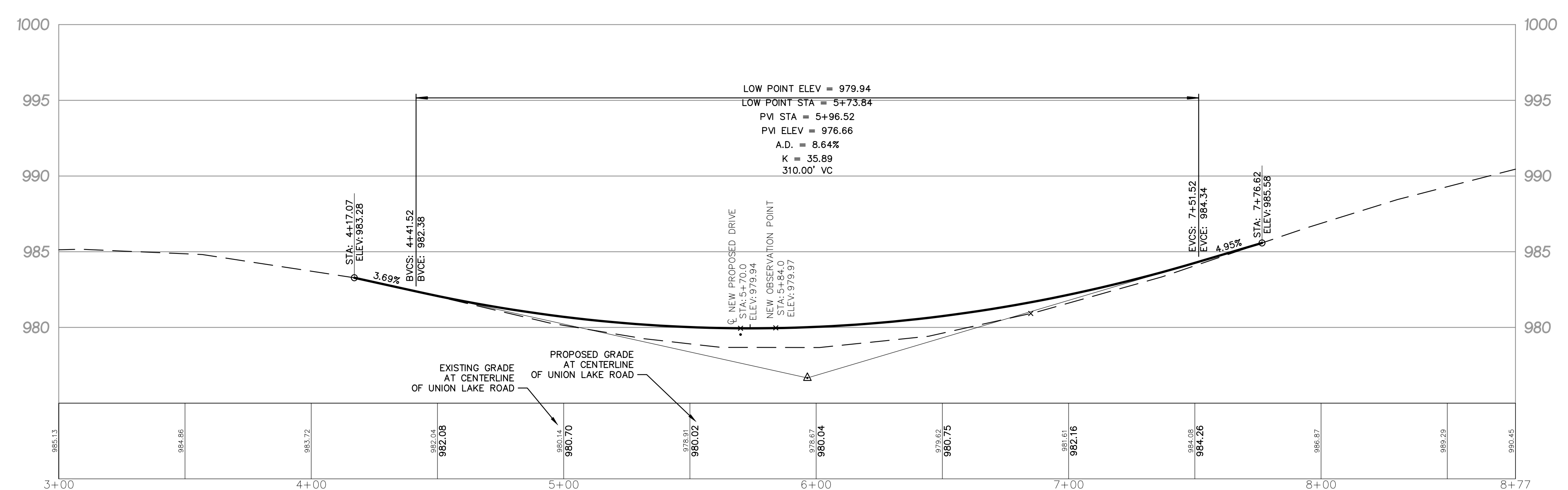
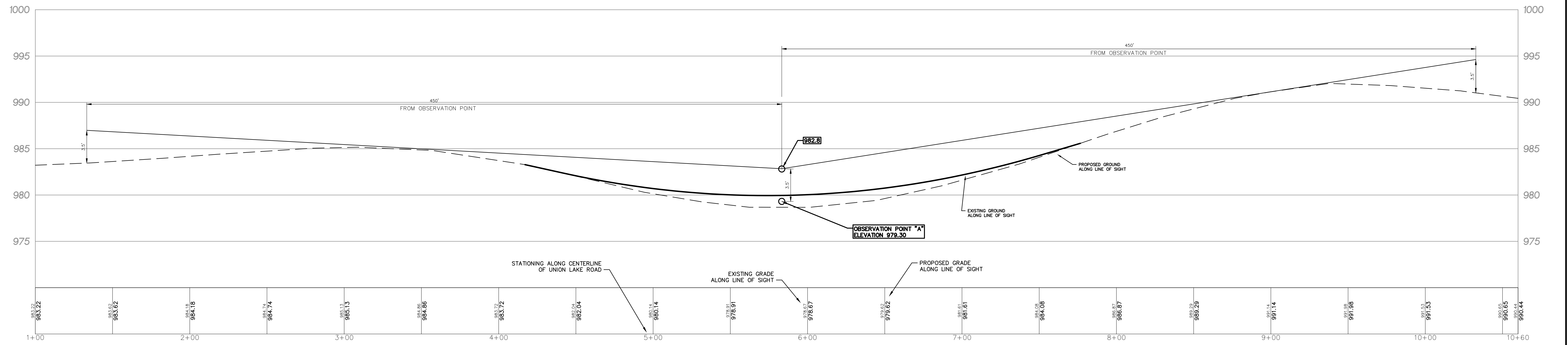
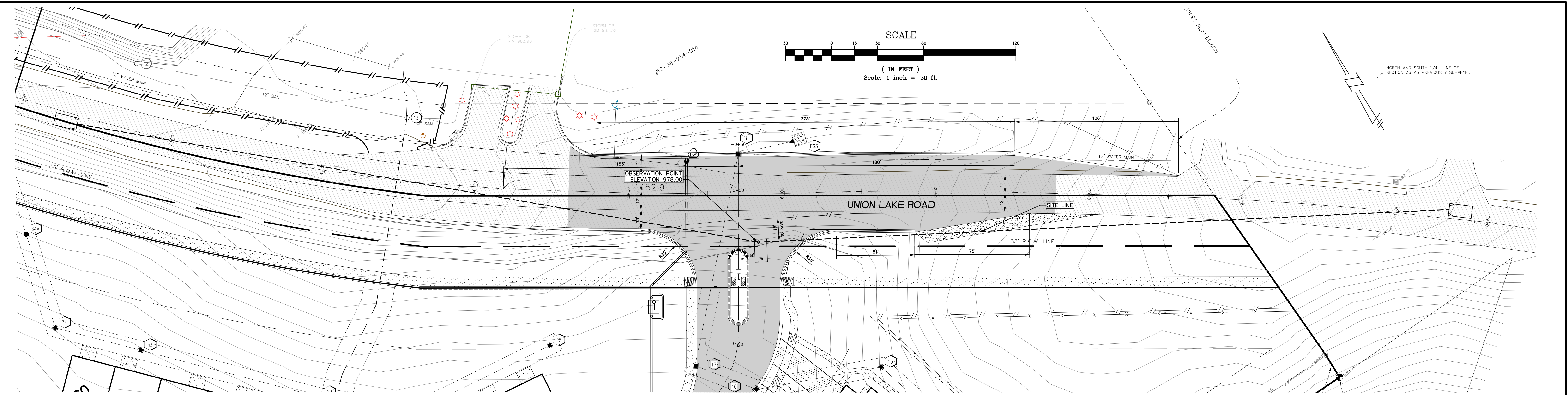
UTILITY WARNING
 UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

811 Know what's below. Call before you dig.

APPROACH PLAN

SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

SHEET 26



WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

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10.	REVISED PER TWP.	7-27-23
11.	REVISED PER TWP.	09-21-23
12.	REVISED PER EOLE	01-31-24
13.	REVISE PER TWP.	03-13-25
14.	REV. PER TWP.	06-03-24

DESIGNED BY: G.N. JOB NUMBER: 17-031
 DATE: 08-23-19 CHECKED BY: J.E. DRAWING FILE: 17031-AP.dwg

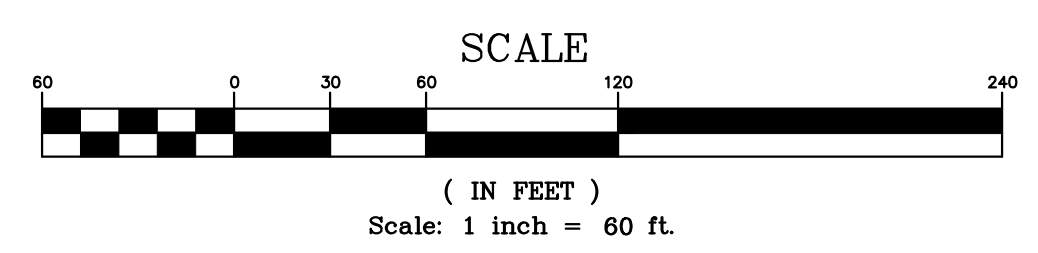
SIGHT DISTANCE PLAN AT UNION LAKE ROAD

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING

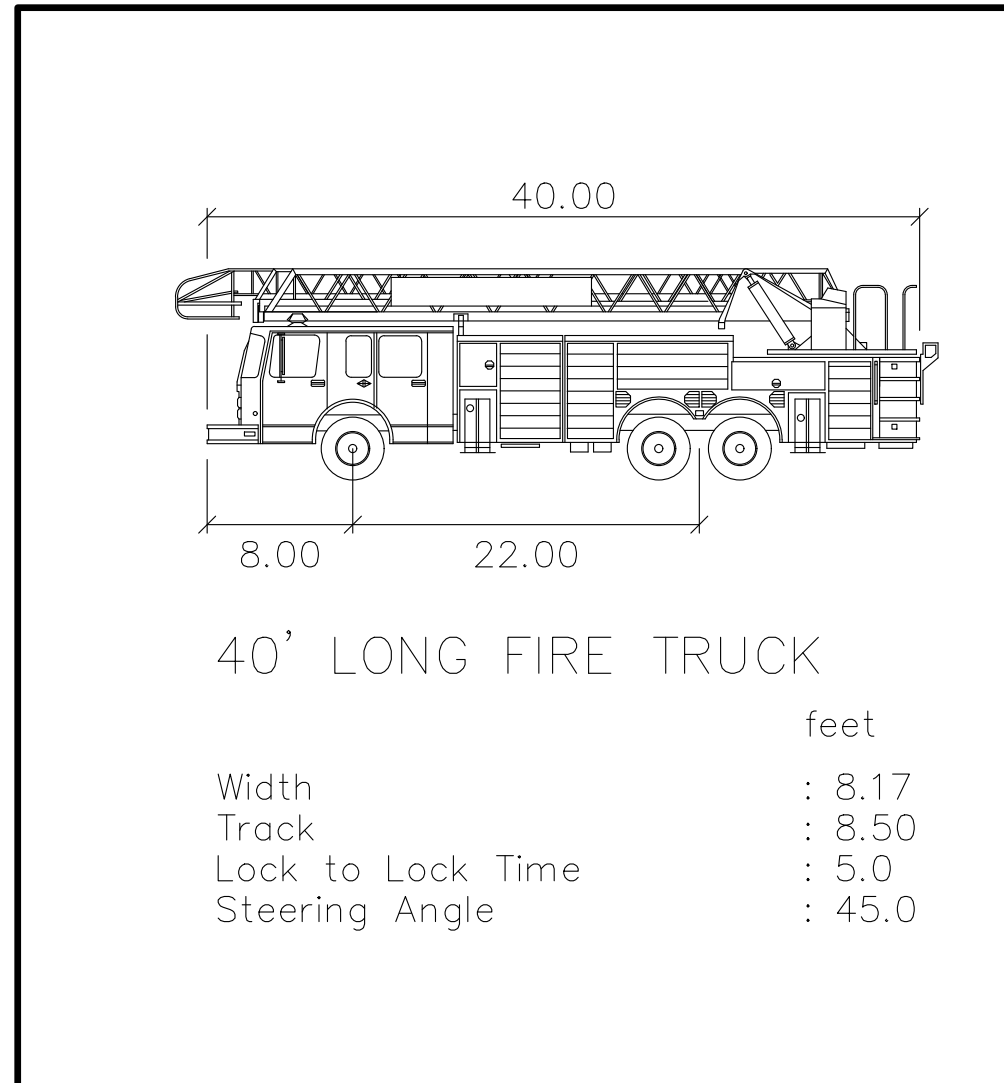
CLINTON TOWNSHIP OFFICE
1700 NINETEEN MILE ROAD, SUITE 3
CLINTON TOWNSHIP, MI 48038
588.422.7050

FARMINGTON HILLS OFFICE
39008 COUNTRY CLUB DRIVE, SUITE C8
FARMINGTON HILLS, MI 48331
248.308.3331

SHEET 27



EXISTING		PROPOSED		
				PAVEMENT (ASPHALT)
				SIDE WALK (CONCRETE)
				CONCRETE CURB AND GUTTER
				STORM SEWER
				SANITARY SEWER
				WATER MAIN
				MANHOLE
				CATCH BASIN
				CURB INLET W/SILT SAC
				END SECTION
				GATE VALVE
				HYDRANT
				CONTOURS
				SPOT ELEVATION
				LIGHT POLE
				TRANSFORMER
				SURFACE DRAINAGE
				OVERFLOW ROUTE
				TREE FENCE
				SILT FENCE/LIMITS OF DISTURBANCE
				PROPOSED DRIVEWAY LOCATION
				LIMIT OF DISTURBANCE



WEST VALLEY
MULTI-FAMILY RESIDENTIAL COMMUNITY
SECTION 36, TOWN 3 NORTH, RANGE 8 EAST
WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
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7.	REV PER OWNER, ROAD AND OCMHC	11-21-22	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
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12.	REVISED PER EGE	01-31-24	
13.	REVISE PER TWP	03-18-24	

DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
CHECKED BY: J.E. DRAWING FILE:17031-AT.dwg

EMERGENCY VEHICLE ROUTE

SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050
FARMINGTON HILLS OFFICE: 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

SHEET 28

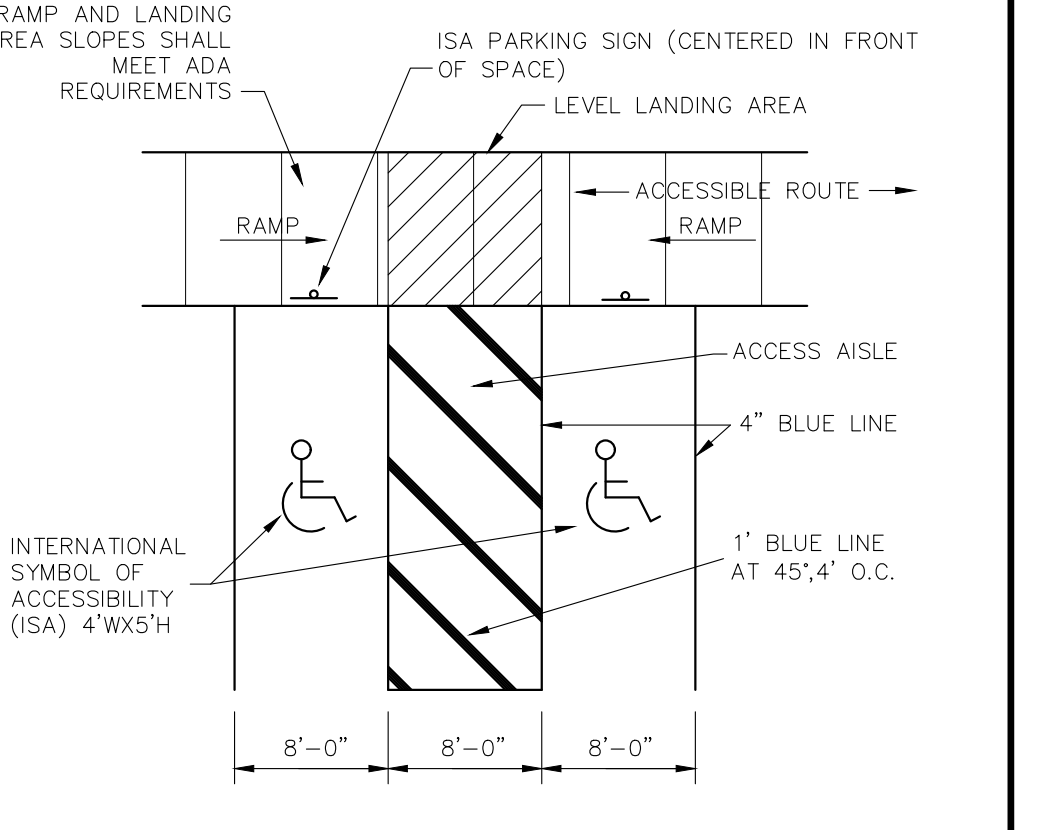
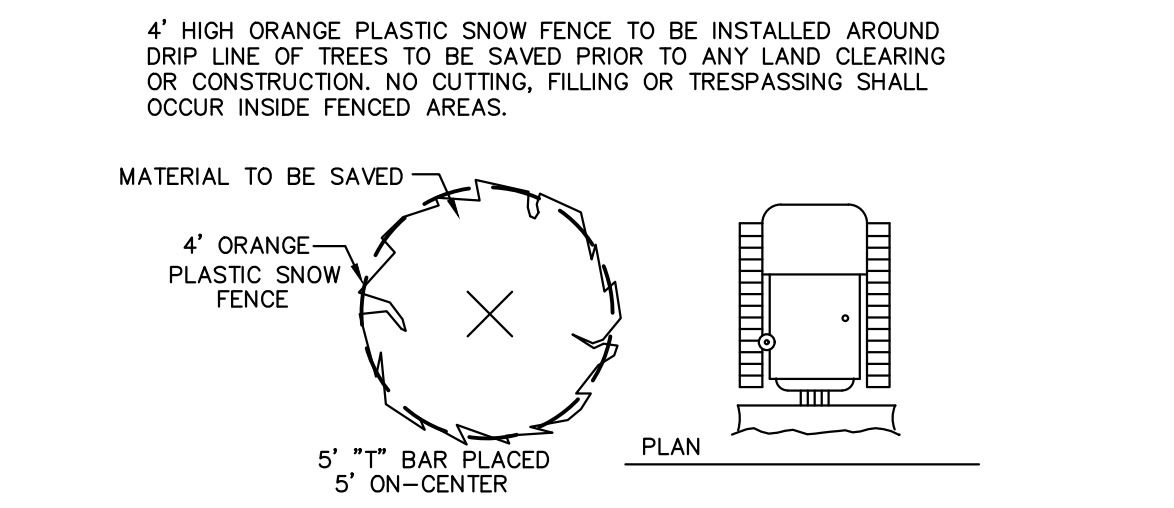
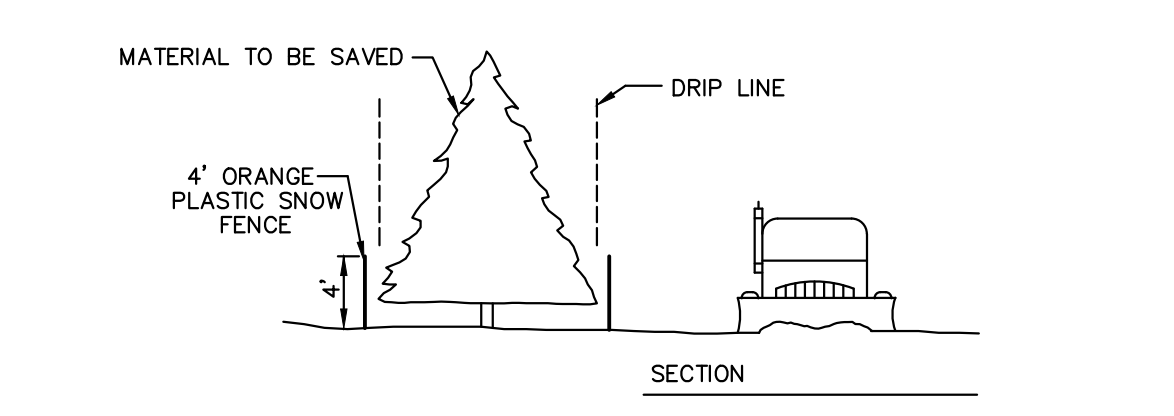
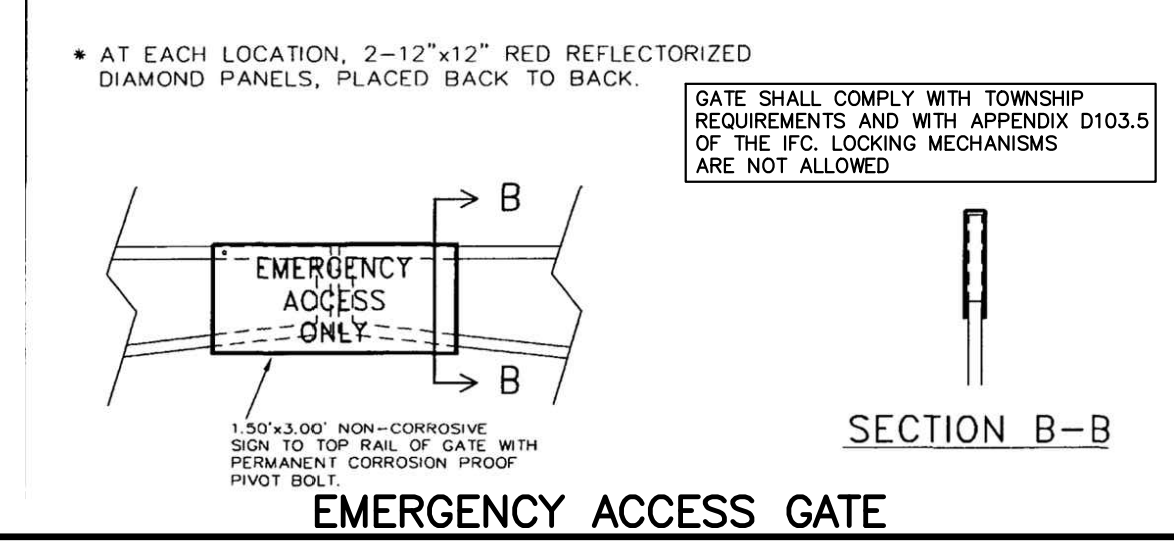
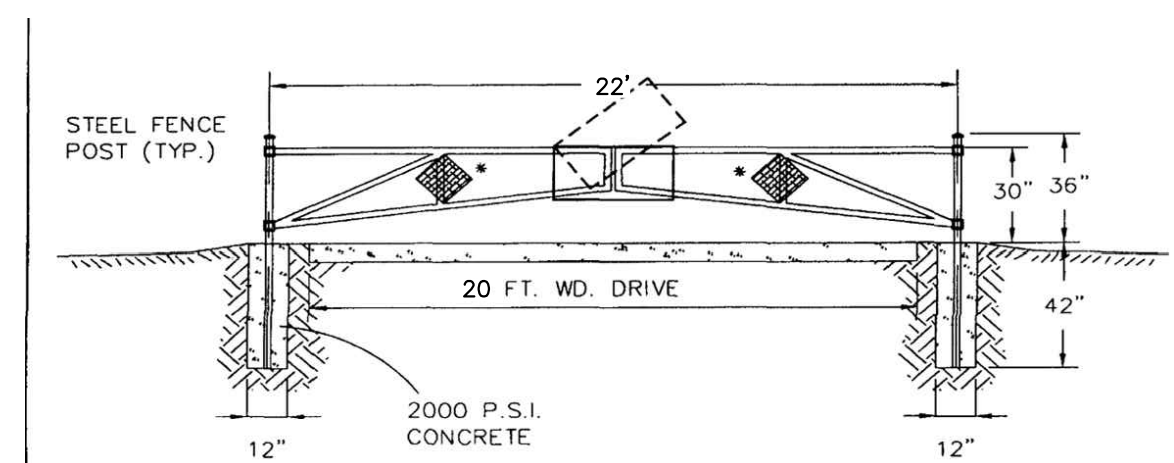
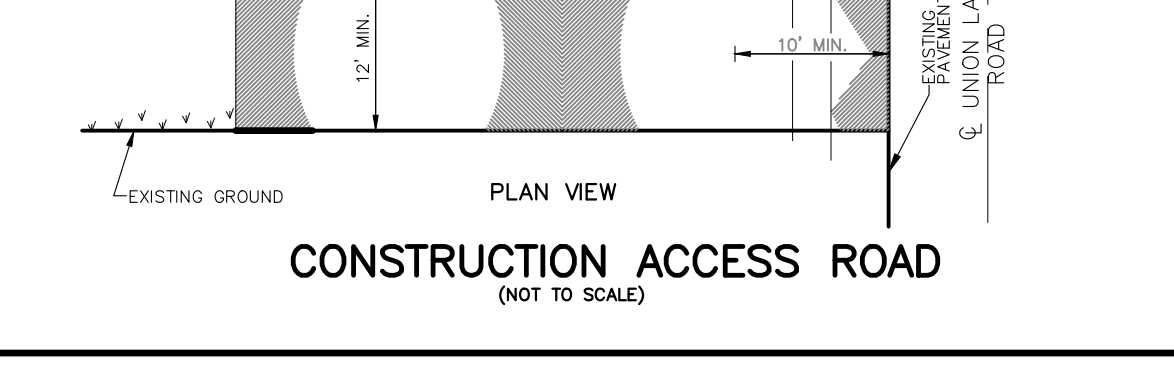
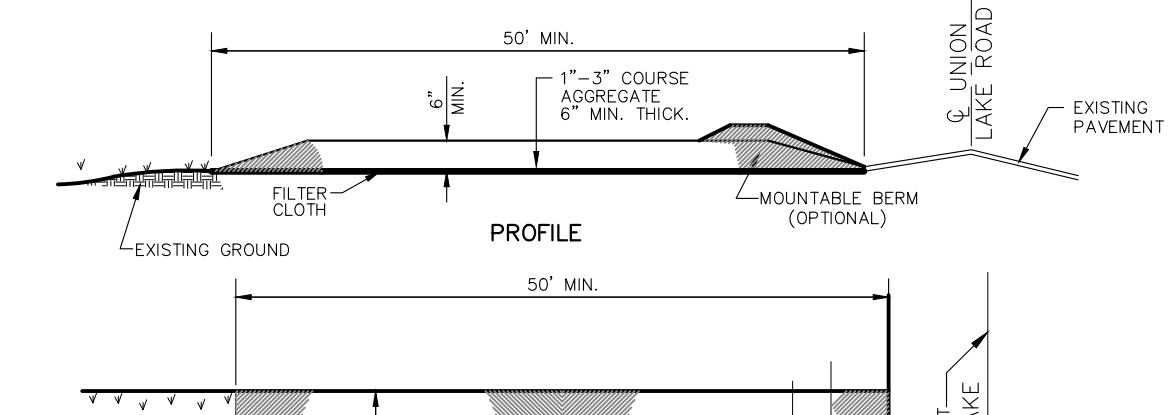
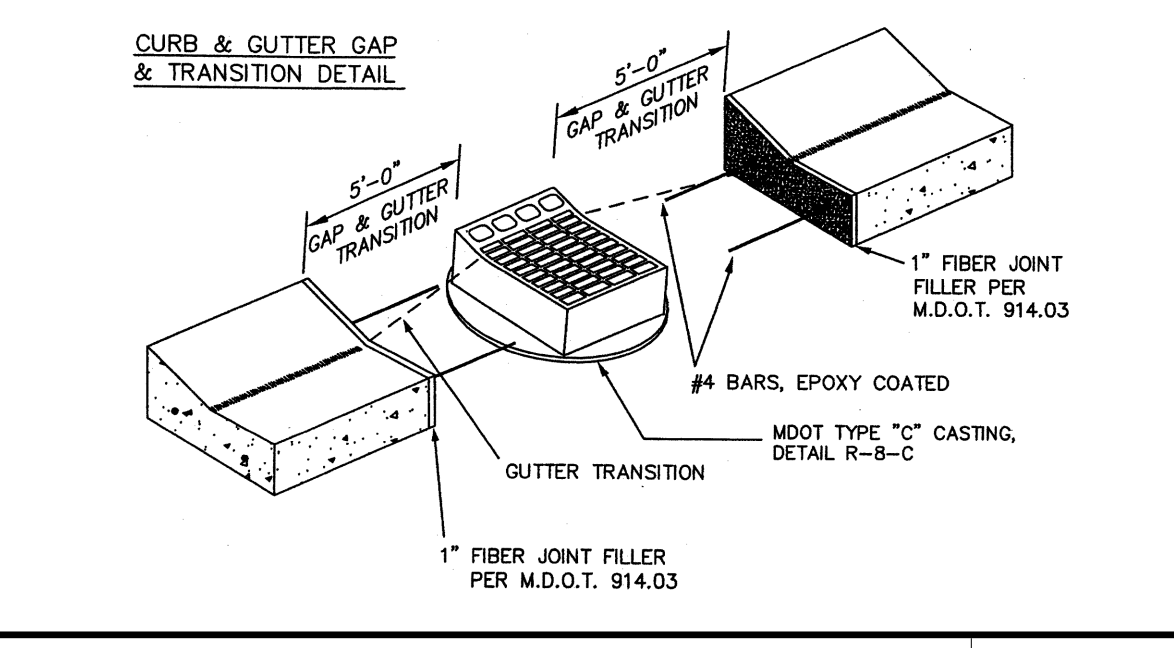
14. REV PER TWP. 06-03-24

SOIL EROSION CONTROL NOTES

- 1. SACK TYPE FILTERS SHALL BE INSTALLED ON ALL CATCH BASINS AND INLETS.
2. DEWATERING OF ANY KIND MUST BE FILTERED THROUGH VEGETATION, STONE OR "FILTER BAG".
3. IT IS THE DEVELOPER'S RESPONSIBILITY TO INSURE THE PROJECT STREETS AND ADJACENT ROADS ARE CLEAN & SWEEPED THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.
4. IT IS THE DEVELOPER'S RESPONSIBILITY TO GRADE AND STABILIZE DISTURBANCES DUE TO INSTALLATION OF PUBLIC UTILITIES (I.E. PHONE, GAS, ELECTRIC, CABLE, ETC.)
5. THE DEVELOPER IS RESPONSIBLE FOR DUST CONTROL THROUGHOUT ALL PERIODS OF CONSTRUCTION. WATERING TANKS WILL BE AVAILABLE AT ALL TIMES TO BE USED ON ANY AREA WHERE DUST BECOMES A PROBLEM.
6. PARKING OF VEHICLES, EQUIPMENT, OR STOCKPILING OF MATERIALS IS STRICTLY PROHIBITED ALONG OR WITHIN THE UNION LAKE ROAD RIGHT OF WAY AREA.
7. ALL CULVERT END SECTIONS MUST CONTAIN GROUTED RIP-RAP IN ACCORDANCE WITH ORDINANCE SPECIFICATIONS.
8. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY THE DEVELOPER.

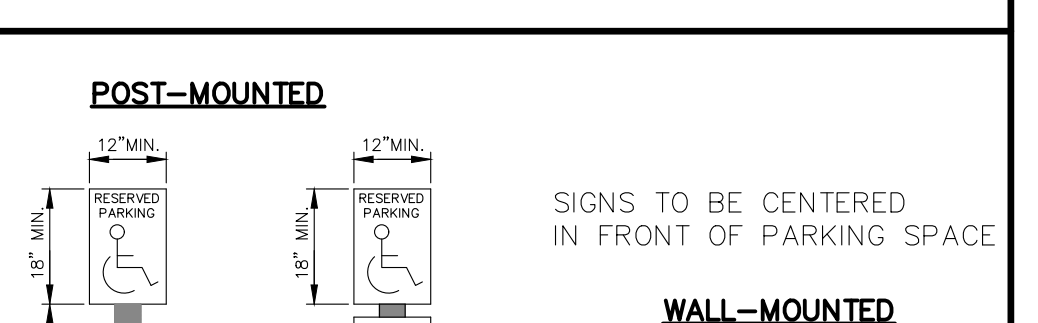
INSPECTION & MAINTENANCE SCHEDULE FOR SOIL EROSION CONTROL

GRADE STABILIZATION STRUCTURES SUCH AS: DROP CONTROL STRUCTURES; SIDE DRAINS (ENCLOSED); DROP INLET SPILLWAYS; DROP PIPES; STRAIGHT PIPES; TOWALLS; DROP BOXES; GUTTES OR FLUMES (SOD, ROCK CONCRETE); EARTH EMBANKMENT STRUCTURES; DOWNDRAINS; SPILLWAYS SHALL BE MAINTAINED AS FOLLOWS:
BECAUSE GRADE STABILIZATION STRUCTURES ARE SUBJECT TO HIGH FLOW CONDITIONS, PERIODIC INSPECTIONS SHOULD BE PERFORMED TO ENSURE THAT EROSION IS NOT OCCURRING, AND THAT VEGETATION IS ADEQUATELY ESTABLISHED. THESE STRUCTURES SHOULD ALSO BE INSPECTED AFTER STORM EVENTS WHICH EXCEED THE DESIGN STORM.
THE DETENTION BASIN SHOULD BE INVESTIGATED TO ENSURE THAT THE CONCENTRATED FLOWS ARE NOT CAUSING EROSION INTO THE BOTTOM OF THE BASIN AND BLOCKING INFILTRATION. CHECK THE EMERGENCY BYPASS/OVERFLOW FOR EROSION. CHECK THE STRUCTURES THEMSELVES FOR CRACKED CONCRETE, UNEVEN OR EXCESSIVE SETTLING, PIPING AND PROPER DRAIN FUNCTIONING. REPAIR OR REPLACE FAILING STRUCTURES IMMEDIATELY. ADDRESS VEGETATION AND EROSION PROBLEMS AS SOON AS WEATHER PERMITS. OPEN STRUCTURES SHOULD BE SIGNED OR MARKED TO ALERT PEOPLE IN THE VICINITY ABOUT POTENTIAL DANGERS.



BARRIER-FREE PARKING SPACE LAYOUT VAN ACCESSIBLE

NOTE: BARRIER FREE SPACES SHALL BE LOCATED TO THE NEAREST ACCESSIBLE ENTRANCE ON AN ACCESSIBLE ROUTE. ONE (1) IN EVERY EIGHT (8) ACCESSIBLE SPACES, BUT NO LESS THAN ONE, SHALL BE SERVED BY AN ACCESS AISLE 8'-0" WIDE MINIMUM AND SHALL BE DESIGNATED "VAN ACCESSIBLE"



BARRIER-FREE RESERVED PARKING SIGNS

NOTE: ACCESSIBLE PARKING SPACE SIGNS SHALL HAVE A MINIMUM HEIGHT AND SIZE TO PERMIT THE SPACE TO BE EASILY IDENTIFIED AND ARE ELEVATED SUCH THAT THEY SHALL NOT PRESENT A HAZARD TO PERSONS WALKING NEAR THE SIGN.

S.E.S.C. SEQUENCE OF CONSTRUCTION

- 1. INSTALL ALL SOIL EROSION AND TREE PROTECTION FENCING AS PER APPROVED PLANS. CLEAR ONLY WHAT IS NECESSARY TO INSTALL FENCING.
2. STRIP AND STOCKPILE TOPSOIL IN A LOCATION APPROVED BY THE OWNER/ENGINEER. PLACEMENT OF ADDITIONAL CONTROL MEASURES MUST BE INSTALLED ON AND AROUND THE STOCKPILE.
3. CONSTRUCT DETENTION BASIN ALONG WITH APPLICABLE STORM SEWER (END-SECTIONS, SHORT STORM SEWER LENGTHS, STANDPIPE OUTLET FILTER). GRADE TO FINAL ELEVATIONS, DISTRIBUTE TOPSOIL, SEED AND STAKE STRAW MULCH BLANKETS ON THE SLOPES OF THE BASIN.
4. INSTALL UTILITIES (WATER MAIN, STORM SEWER, SANITARY SEWER) COMPLETE.
5. INSTALL, AS PER APPROVED PLANS, THE CATCH BASIN INLET FILTERS. INSPECT AND MAINTAIN FILTERS AS DIRECTED TO PREVENT CLOGGING AND UNNECESSARY FLOODING. INSTALL GELFLOC BLOCKS WHERE INDICATED AND MAINTAIN.
6. GRADE ROADWAY LIMITS AND INSTALL PAVEMENT COMPLETE.
7. INSTALL ALL PUBLIC UTILITIES (GAS, ELECTRIC, TELEPHONE, CABLE) COMPLETE.
8. STABILIZE TEMPORARILY OR PERMANENTLY ALL DISTURBED AREAS WITHIN FIVE (5) DAYS OF FINAL GRADE.
9. INSPECT AND MAINTAIN ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES WEEKLY AND AFTER EVERY STORM EVENT THROUGHOUT THE CONSTRUCTION OF THE PROJECT. REMOVAL OF CONTROL MEASURES MAY ONLY TAKE PLACE ONCE THE ENTIRE SITE IS FULLY STABILIZED. UPON FULL STABILIZATION IS COMPLETE, REMOVE THE STAND PIPE AND GRAVEL FILTER. THE DEVELOPER IS RESPONSIBLE FOR ALL SOIL EROSION CONTROL MEASURES.
10. VEGETATION MUST BE ACCEPTABLY ESTABLISHED PRIOR TO FINAL RELEASE OF THE CONSTRUCTION DEPOSIT BY THE ROAD COMMISSION FOR UNION LAKE ROAD.

SOIL EROSION CONTROL VIOLATIONS/CITATIONS

- 1. ROUTINE INSPECTIONS WILL BE PERFORMED BY THE OAKLAND COUNTY WATER RESOURCE COMMISSION (O.C.W.R.C.) OR ITS AGENT ONCE A WEEK.
2. UPON COMPLETION OF INSPECTION, IF THE SITE IS FOUND NOT TO BE IN COMPLIANCE WITH O.C.W.R.C.'S SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE, THEN THE PERMIT HOLDER/SIGNER WILL BE ISSUED, BY HAND, MAIL OR EMAIL, A "NOTICE OF EROSION CONTROL DEFICIENCY" LETTER, THAT WILL INCLUDE ALL CURRENT AND PERTINENT NON-COMPLIANCE ITEMS. THE SITE AND/OR DEVELOPMENT WILL HAVE A PRE-DETERMINED AMOUNT OF TIME, FROM THE DATE OF THE "NOTICE" TO RECTIFY THESE ITEMS.
3. IF ALL OF THE ITEMS HAVE NOT BEEN ADDRESSED AFTER THE ELAPSED TIME SPECIFIED, THE PERMIT HOLDER/SIGNER WILL RECEIVE A "NON-COMPLIANCE" LETTER, WHICH WILL INCLUDE A "NOTICE TO SHOW CAUSE".
4. UPON RECEIPT OF THE "NON-COMPLIANCE" LETTER AND THE "NOTICE TO SHOW CAUSE", THE PERMIT HOLDER/SIGNER WILL ATTEND A SHOW CAUSE HEARING AS WELL AS PAY A RE-INSPECTION FEE IN THE AMOUNT OF \$250.00 TO THE O.C.W.R.C. FOR ADDITIONAL INSPECTIONS, HEARINGS AND REPORT FOLLOW UP. TO THE BEFORE MENTIONED ACTIVITIES MUST TAKE PLACE WITHIN 24 HOURS UPON RECEIPT OF THE LETTER. AFTER THE HEARING, THE PROJECT, DEVELOPMENT MAY BE ISSUED A "STOP WORK" ORDER.
5. IF A CITATION IS ISSUED TO THE PERMIT HOLDER/SIGNER AFTER THE SHOW CAUSE HEARING, AN ADDITIONAL \$400.00 WILL BE PAID TO THEN O.C.W.R.C. FOR FOLLOW-UP INSPECTIONS, MEETINGS AND OTHER EXPENSES INCURRED.

DETENTION BASIN MAINTENANCE SCHEDULE :

- THE PROPERTY OWNER IS RESPONSIBLE FOR THE MAINTENANCE OF THE SEDIMENT STRUCTURES. MAINTENANCE SHOULD BE PERFORMED FOLLOWING ANY STORM AND SHOULD INCLUDE:
1. CHECKING THE DEPTH OF SEDIMENT DEPOSIT TO ENSURE THE CAPACITY OF THE SEDIMENT STRUCTURES IS ADEQUATE FOR STORM WATER AND SEDIMENT DEPOSITION, AND FOR THE REMOVING OF SEDIMENT.
2. CHECKING THE BASIN FOR PIPING, SEEPAGE, OR OTHER MECHANICAL DAMAGE.
3. CHECKING FOR THE PRESENCE OF ANY SOIL CAKING, WHICH WOULD PREVENT PROPER DRAINAGE FROM THE BASIN.
4. ANY PROBLEM DISCOVERED DURING THE MAINTENANCE CHECKS SHOULD BE ADDRESSED IMMEDIATELY.
5. SEDIMENT REMOVED DURING CLEANING SHOULD BE PLACED AT AN UPLAND AREA AND STABILIZED SO THAT IT DOES NOT RE-ENTER THE DRAINAGE COURSE.

GROUND WATER NOTES

- 1. IF THE STATIC GROUNDWATER LEVEL IS HIGHER THAN THE ELEVATION AT WHICH PROPOSED CONSTRUCTION WORK WILL TAKE PLACE, WHETHER DETERMINED BY INITIAL SOIL BORINGS OR DURING CONSTRUCTION, SO THAT IT WILL BE NECESSARY TO DEWATER AN AREA TO CONTINUE CONSTRUCTION, THEN THE WHITE LAKE TOWNSHIP WILL REQUIRE A WRITTEN DEWATERING PROCEDURE PROVIDED BY THE APPLICANT'S ENGINEER, PRIOR TO COMMENCEMENT OF THE DEWATERING OPERATION.
2. IF GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR MUST CONTACT WHITE LAKE DPS IN WRITING SHOWING NEED TO DEWATER PRIOR TO ANY FURTHER CONSTRUCTION.
3. IF PROCEDURES ARE NOT SUBMITTED OR, ONCE APPROVED, ARE NOT ADHERED TO, THEN WHITE LAKE TOWNSHIP MAY TAKE ACTION TO SUSPEND DEWATERING ACTIVITIES AT THE PROJECT TO REQUIRE THE ADHERENCE TO PROCEDURES.

RIP-RAP

INSPECTIONS SHOULD BE MADE OF ALL RIP-RAPPED SITES IMMEDIATELY AFTER THE FIRST RAINFALL FOLLOWING INSTALLATION. THIS IS PARTICULARLY IMPORTANT IN AREAS WHERE RIP-RAP THAT IS DISPLACED DURING THE STORM WOULD IMPACT CULVERTS. THEREFORE, RIP-RAP SITES SHOULD BE CHECKED FOLLOWING STORMS, ESPECIALLY THOSE WHICH ARE NEAR OR EXCEED STORM FREQUENCY USED IN THE DESIGN. DISPLACED RIP-RAP SHOULD BE REMOVED FROM ITS DOWNSTREAM LOCATION AND NEW RIP-RAP PLACE ACCORDING TO THE ENGINEERED SPECIFICATIONS.

STORMWATER CONVEYANCE CHANNEL

AT MINIMUM, CHECK ALL CONSTRUCTED CHANNELS AFTER EACH STORM WHICH MEETS OR EXCEEDS THE DESIGN STORM. ON RIP-RAP LINED WATERWAYS, CHECK FOR SCOURING BELOW THE RIP-RAP LAYER, AND BE SURE THE STONES HAVE NOT BEEN DISPLACED BY THE FLOW. PARTICULAR ATTENTION SHOULD BE PAID TO THE OUTLET OF THE CHANNEL. IF EROSION IS OCCURRING, APPROPRIATE ENERGY DISSIPATION MEASURES SHOULD BE TAKEN. SEDIMENT SHOULD BE REMOVED FROM RIP-RAP LINED CHANNELS IF IT REDUCES THE CAPACITY OF THE CHANNEL.

SPOIL PILES

WHEN VEGETATION STABILIZATION IS PROMPTLY AND EFFECTIVELY APPLIED, VERY LITTLE MAINTENANCE IS REQUIRED. THE GUIDELINES BELOW SHOULD BE FOLLOWED ON ALL SITES: (1) PERIODIC INSPECTIONS SHOULD BE DONE TO ENSURE EXCESSIVE EROSION HASN'T OCCURRED. IF RUN OFF OR WIND EROSION HAS OCCURRED, REDUCE THE SIDE OF SLOPES OF THE SPOIL PILE, OR STABILIZE THE SPOIL PILE WITH PIECES OF SOD Laid PERPENDICULAR TO THE SLOPE, AND STAKED. (2) WHEN FILTER FENCING IS USED AROUND A SPOIL PILE, PERIODIC CHECKS SHOULD BE MADE TO ENSURE THAT PIPING HAS NOT OCCURRED UNDER FENCING, AND TO ENSURE THE FENCE HAS NOT COLLAPSED DUE TO SOIL SLIPPING OR ACCESS BY CONSTRUCTION EQUIPMENT. REPAIR ANY DAMAGED FENCING IMMEDIATELY. (3) BERMS AT THE BASE OF THE SPOIL PILE WHICH BECOME DAMAGED SHOULD BE REPLACED.

CATCH BASIN FILTERS

EFFECTIVE FILTERS WILL COLLECT SEDIMENT, PARTICULARLY WHEN THE SOIL IS SANDY. THESE FILTERS MUST BE CLEANED PERIODICALLY, SO THEY DON'T BECOME CLOGGED AND CAUSE FLOODING CONDITIONS, PIPING, OR OVERTOPPING OF THE CONTROL STRUCTURES. MAINTENANCE OF THESE ITEMS IS REQUIRED WEEKLY OR AFTER EACH RAIN EVENT. ALSO, THESE ITEMS ARE REUSABLE IF MAINTAINED CORRECTLY. THEY CAN BE REMOVED, EMPTIED, CLEANED AND REPLACED WITHOUT PURCHASING NEW ONES.

BUFFER/FILTER STRIPS

(25' ENVIRONMENTAL SETBACKS) PERIODIC INSPECTIONS SHOULD BE DONE TO ENSURE THAT CONCENTRATED FLOWS HAVE NOT DEVELOPED, AND TO MAKE SURE THE VEGETATIVE COVER IS MAINTAINING ITS EFFECTIVENESS. IF THE INTEGRITY OF THE BUFFER/FILTER STRIP IS JEOPARDIZED BY UPLAND EROSION, OR IF CONCENTRATED FLOWS ARE CREATING RILLS OR GULLIES UP-SLOPE OF THE STRIP, ADDITIONAL BMP'S MAY NEED TO BE INSTALLED. IF THE BUFFER STRIP IS BEING JEOPARDIZED BY STREAM BANK EROSION, THEN THE CAUSE OF THE BANK EROSION NEEDS TO BE INVESTIGATED AND ACTIONS TAKEN TO ADDRESS THE CAUSES. DAMAGED STRIPS SHOULD BE REPAIRED AS SOON AS POSSIBLE. STRIPS DAMAGED DUE TO CONSTRUCTION UP-SLOPE OF THE BUFFER/FILTER SHOULD BE REPLANTED, AS NECESSARY, AFTER THE CAUSE OF THE DAMAGE IS ASSESSED AND ANY OTHER BMP'S ARE NEEDED ARE IMPLEMENTED.

SILT FENCE

SILT FENCES SHOULD BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND SEVERAL TIMES DURING PROLONGED RAINFALLS. IF THE FENCE IS SAGGING OR THE SOIL HAS REACHED ONE HALF THE HEIGHT OF THE FABRIC, THE SOIL BEHIND THE FABRIC MUST BE REMOVED AND DISPOSED OF IN A STABLE UPLAND SITE. THE SOIL CAN BE ADDED TO THE SPOIL PILE. IF THE FABRIC IS BEING UNDERCUT (I.E. IF THE WATER IS SEEPING UNDER THE FENCE), THE FENCE SHOULD BE REMOVED AND REINSTALLED FOLLOWING THE GIVEN PROCEDURES. FABRIC WHICH DECOMPOSES OR OTHERWISE BECOMES INEFFECTIVE SHOULD BE REMOVED AND REPLACED WITH NEW FILTER FABRIC IMMEDIATELY. FILTER FENCES SHOULD BE REMOVED ONCE VEGETATION IS WELL ESTABLISHED AND THE UP-SLOPE AREA IS FULLY STABILIZED OR UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

SEEDING, SODDING & MULCHING

SEEDED, SODDED OR MULCHED AREAS SHOULD BE CHECKED FOLLOWING EACH RAIN TO ENSURE THE MATERIAL IS STAYING IN PLACE. ADDITIONAL TACKING MATERIALS OR NETTING MAY BE NEEDED TO BE APPLIED TO HOLD THE AFOREMENTIONED MATERIALS IN PLACE. MAINTENANCE PROCEDURES SHOULD ALSO BE FOLLOWED FOR THE BMP'S WHICH WERE IMPLEMENTED TO KEEP ERODED SOIL OR CONCENTRATED RUNOFF AWAY FROM THESE TARGET AREAS.

ACCESS ROAD (UNION LAKE ROAD)

PROPER MAINTENANCE INCLUDE ADDING ADDITIONAL LAYERS OF STONE WHEN THE ORIGINAL STONE BECOMES COVERED WITH MUD. AFTER EACH STORM EVENT, INSPECT THE ROAD FOR EROSION AND MAKE ANY NECESSARY REPAIRS. IT IS ALSO IMPORTANT TO CHECK AND MAINTAIN ANY BMP'S WHICH ARE USED IN CONJUNCTION WITH THIS BMP. ESPECIALLY THOSE FOR DRAINAGE. ALL SEDIMENT DROPPED OR ERODED ONTO PUBLIC RIGHT-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY SWEEPING.

GELFLOC

GelFloc is the dry powder version of Chitosan. GelFloc is integrated into treatment systems as a sock. The GelFloc Sock is a geotextile tube filled with GelFloc powder, designed to dose the chitosan by dissolving the powder into water as it flows over the sock.
GelFloc socks will dose approximately 100ppm at 150gpm flow. If a higher dose is required, or the system flow is higher, you can add additional socks in series. Each sock will treat approximately 100,000 gallons of water, and is highly variable based on flow rate, water temp, and turbulence of the water flowing over the sock.
Deployment method:
• Dry sock systems
• Passive and semi-passive treatment systems

HaloKlear PRODUCT FACTS
GELFLOC NATURAL FLOCCULANT
Description: HaloKlear GelFloc products are formulated from natural flocculants. The patented design and concentrated formula delivers superior and consistent performance and is 100% biodegradable through enzymatic activity preventing bioaccumulation.
Product Benefits: All-natural, No bioaccumulation, Wide pH range, Not soil specific, Consistent performance, Wide range of applications.
Product Properties: Appearance: A fine, off-white powder; Bulk Density: (freely settled) 0.217 gm/ml; Tap Density: 0.252 gm/ml; pH: 3.0 - 4.5 (3.5 as measured); LCS0 fish 1: 22.8 mg/l Fathead Minnow.
Industry Applications: Stormwater management, Construction, Remediation.
Deployment Method: GelFloc products can be used in several Best Management Practices (BMPs) including passive systems, semi-passive or active treatment system.
Packaging: 6' segmented black material with yellow handle. 4 socks per bucket, individually bagged. Lot Number must be legible on each container. Available in 5-gallon pails.
Handling and Storage: All containers must be free of leaks, damage, and gross contamination. Product should be maintained between 40°F and 90°F. Keep from freezing.
For additional information contact Dober at: (800) 323-4983, info@dober.com, www.dober.com/water_treatment

WEST VALLEY

Estimated Quantity Summary table for Sanitary Sewer (West Valley) with items like 6 inch PVC SDR 23.5 Building Lead, 8 inch PVC Truss Sanitary Sewer, 4 inch Dia. Manhole, 4 inch Force Main, Air Release Valve, Manhole Vault, 6 inch San Manhole Pump Station.

Sanitary Sewer (Union Lake Road) table with items like 8 inch PVC Truss Sanitary Sewer, 12 inch PVC Truss Sanitary Sewer, 4 inch Dia. Manhole.

Water Main table with items like 8 inch Water Main D.I. CL 54, 12 inch Water Main D.I. CL 54, Hydrant, Valve & Box, TSV&W, Gate Valve and Well, Gate Valve and Well, Pressure Reducing Valve and Vault, K-Copper Water Service.

Storm Sewer table with items like 8 inch PVC SDR 35 Pipe, C-76 CL 4, C-76 CL 4, C-76 CL 4, C-76 CL 4, C-76 CL 4, C-76 CL 4, 2 inch Inlet, 4 inch Dia. Catch Basin, 5 inch Dia. Catch Basin, 6 inch Dia. Catch Basin, 6 inch Dia. Manhole, 5 inch Dia. Manhole, 6 inch Dia. Manhole, 36 inch CMP Standpipe, 12 inch Conc. End Section w/ Rip Rap, 24 inch Conc. End Section w/ Rip Rap, 18 inch Conc. End Section w/ Rip Rap, Storm Water Treatment Manhole.

Paving table with items like On Site Road Pavement (4 inch HMA on 8 inch 21AA), Driveway Pave 8739 Cedar Island, 3 inch Mounable Curb, On Site Road Sidewalks, Union LK RD ROW Pave (9 inch HMA on 8 inch 21AA), MDOT Type B-2 Curb, MDOT Type F-4 Curb, Union LK RD 8 inch Wide Pathway.

ESTIMATED QUANTITIES ARE FOR REFERENCE ONLY. CONTRACTOR SHALL DETERMINE THE QUANTITIES OF WORK REQUIRED TO COMPLETE THE PROJECT

UNION LAKE SANITARY SEWER EXTENSION Quantity Summary table with items like 8 inch PVC Truss Sanitary Sewer, 12 inch PVC Truss Sanitary Sewer, 4 inch Dia. Manhole, Fabric Silt Fence, Construction Road Access.

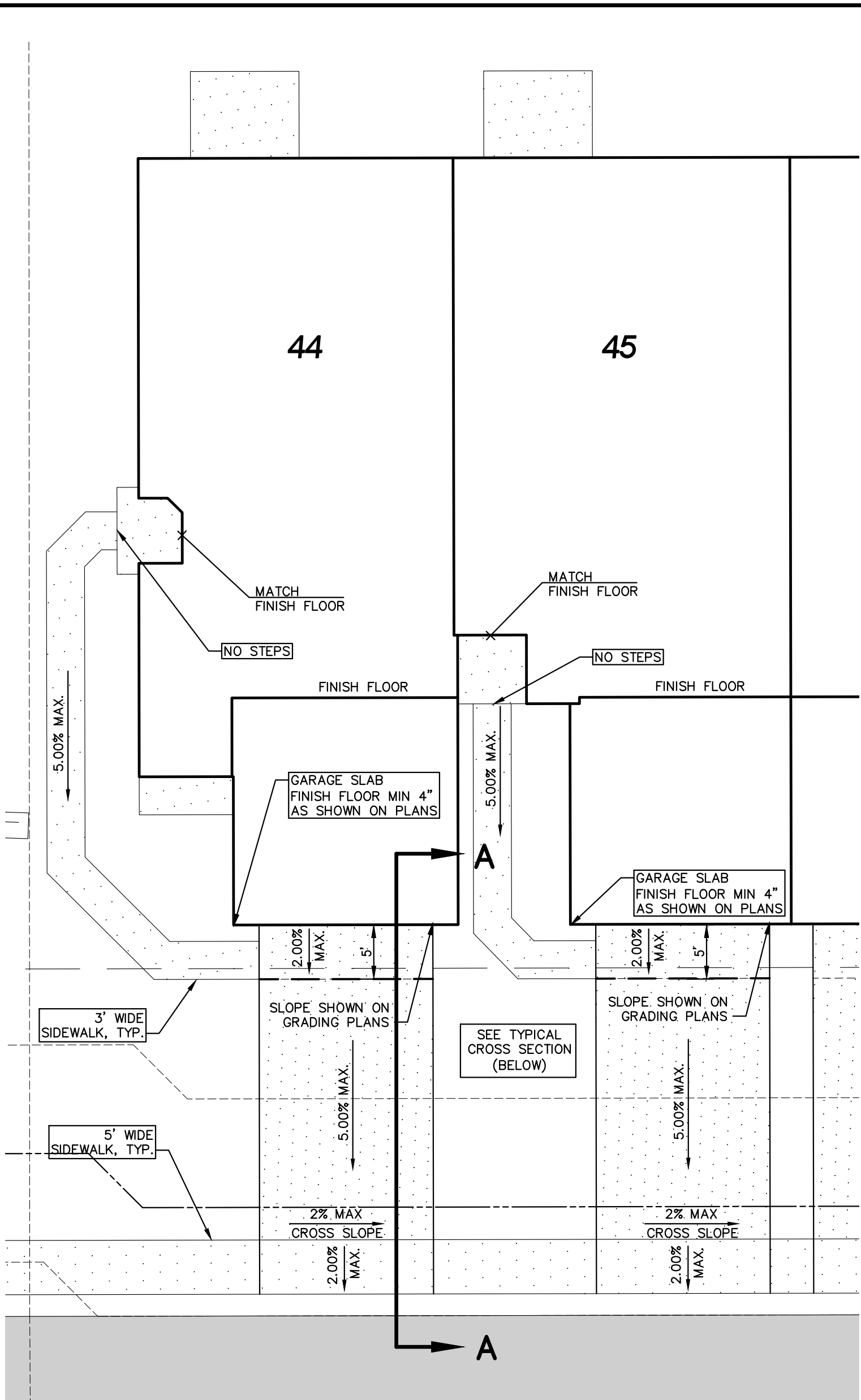
WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS table with columns for NO., ITEM, DATE, and description of revisions.

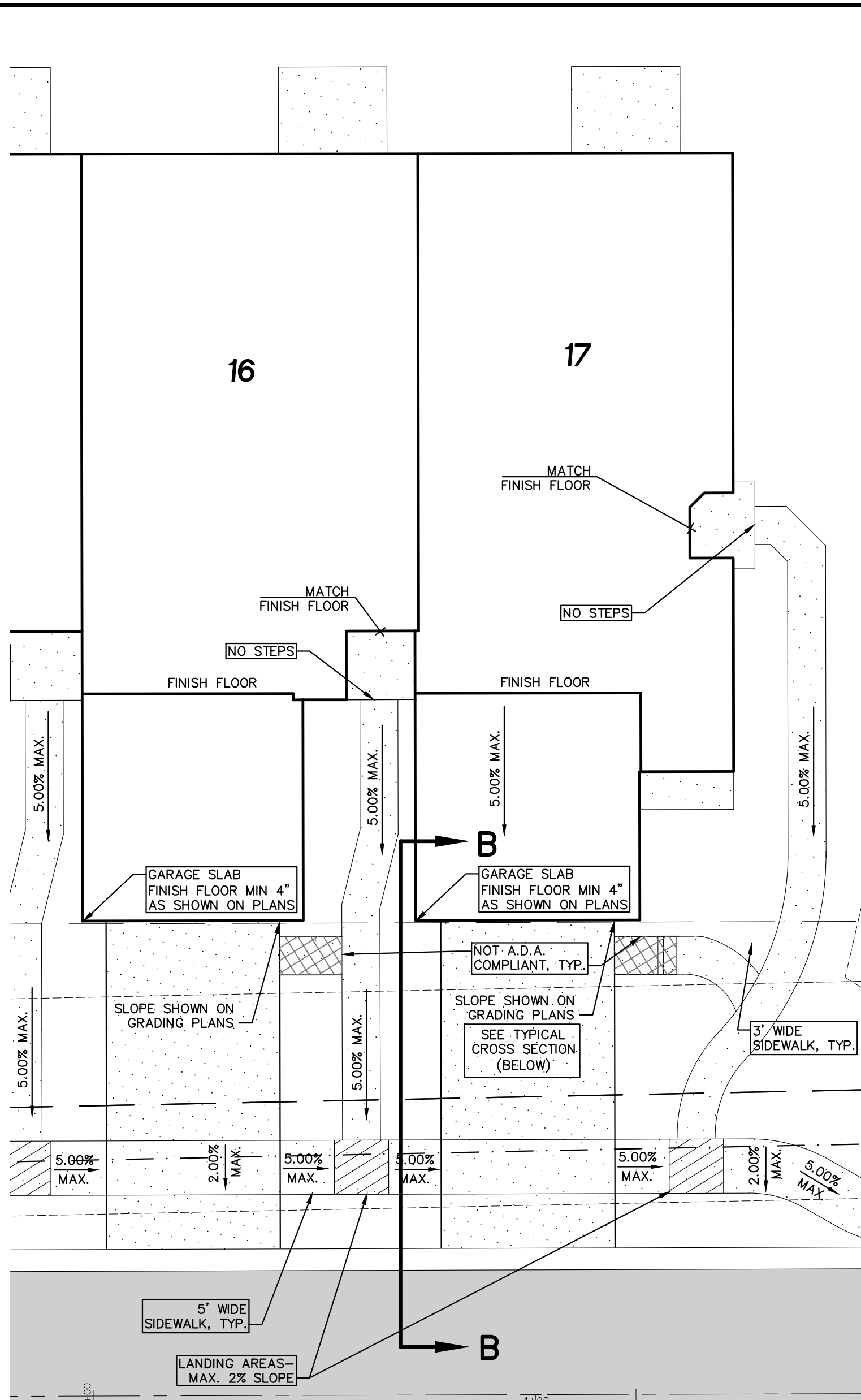
UTILITY WARNING table with information about underground utility locations and the 811 Know what's below. Call before you dig. logo.

NOTES AND DETAILS
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CHECKED BY: J.E. DRAWING FILE: 17031-ND.dwg

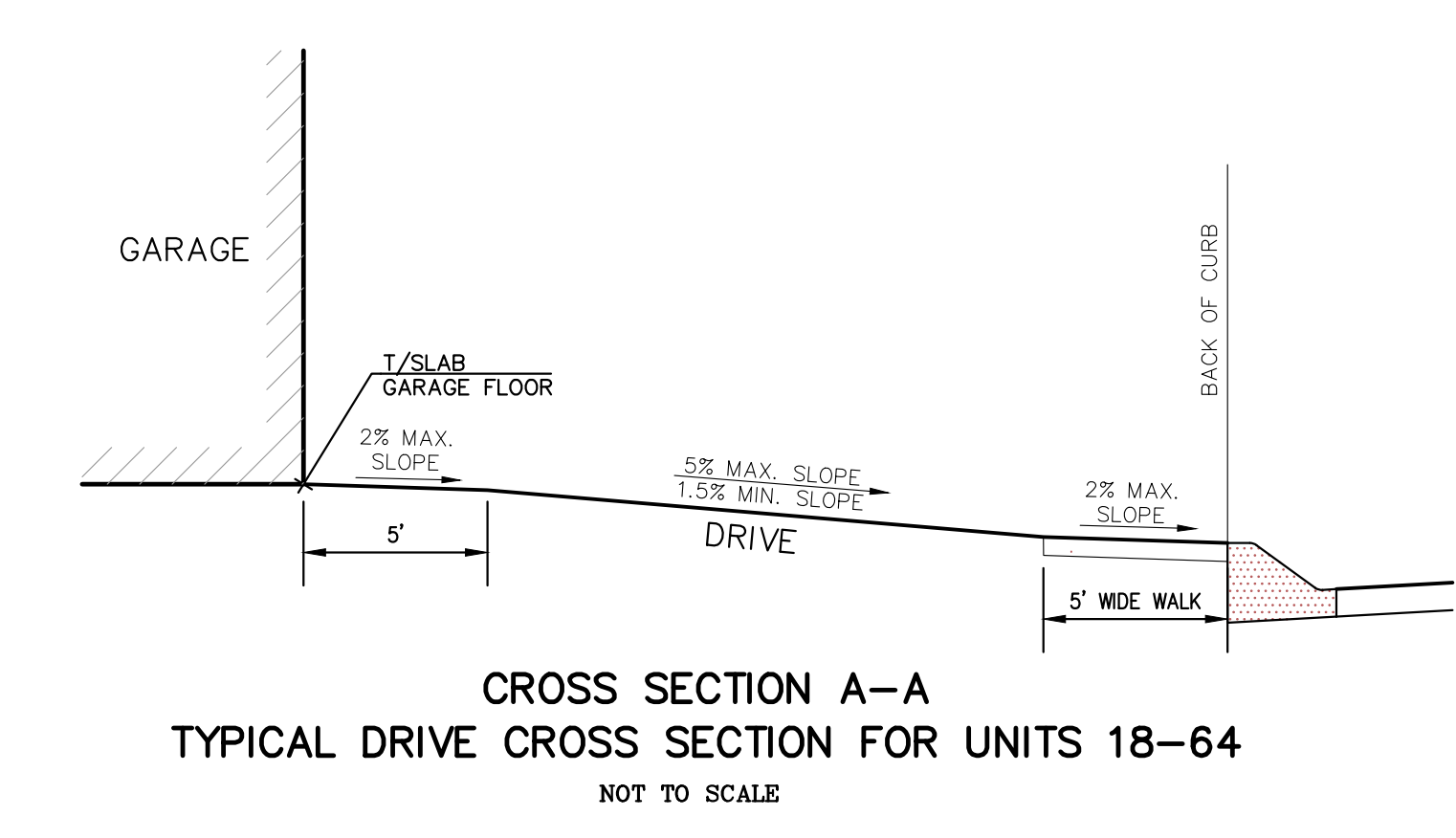
SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING SHEET 29
CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050
FARMINGTON HILLS OFFICE: 38008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321



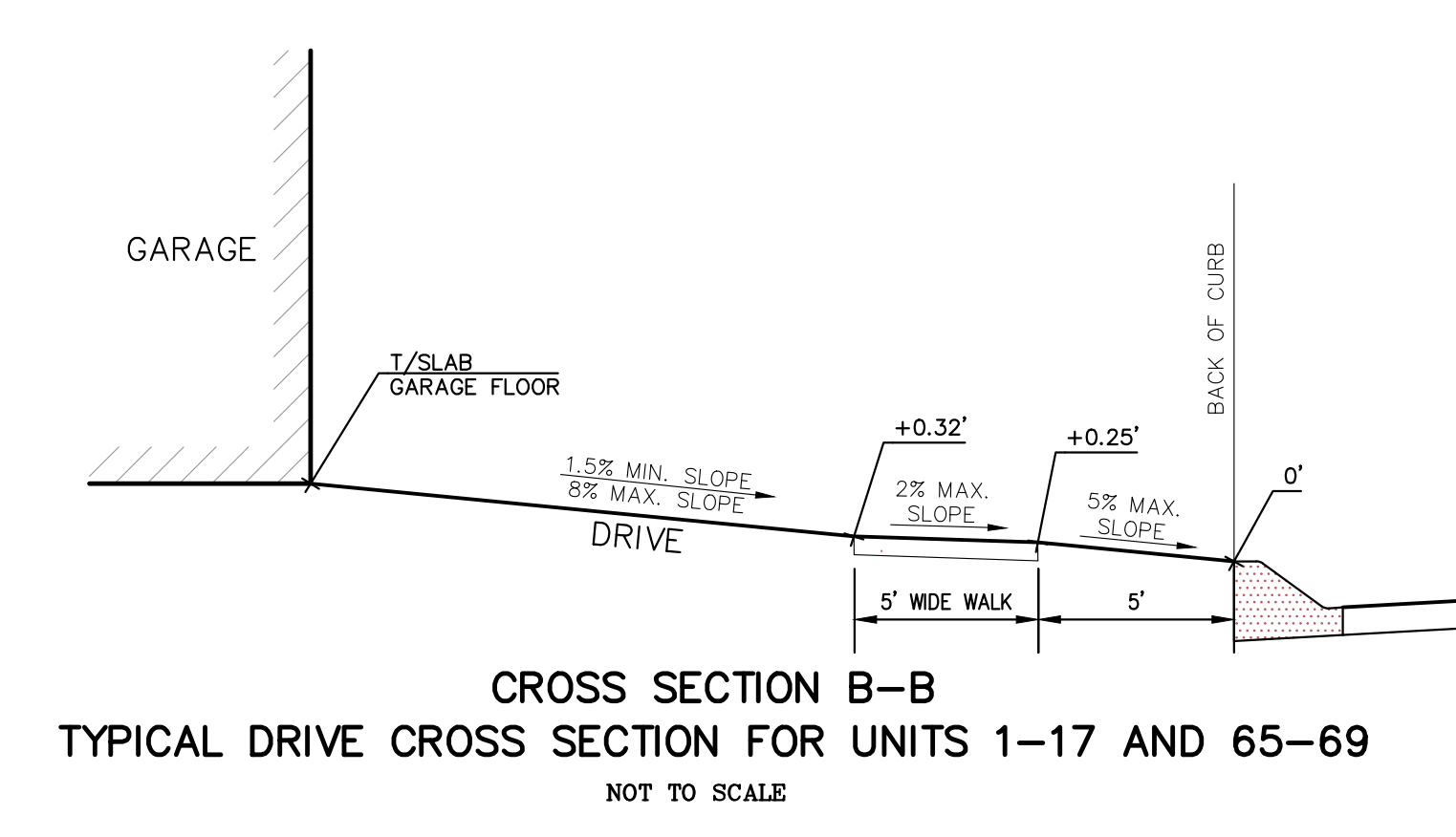
TYPICAL DRIVE AND SIDEWALK DESIGN FOR UNITS 18-64
 A.D.A. COMPLIANT SIDEWALK- MAXIMUM 2% CROSS SLOPE AND MAXIMUM 5% RUNNING SLOPE
 Scale: 1 inch = 10 ft.



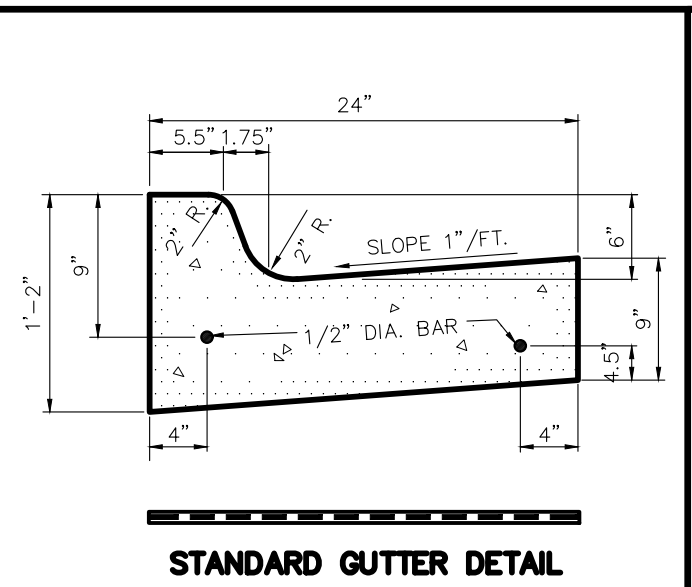
TYPICAL DRIVE AND SIDEWALK DESIGN FOR UNITS 1-17 AND 65-69
 A.D.A. COMPLIANT SIDEWALK- MAXIMUM 2% CROSS SLOPE AND MAXIMUM 5% RUNNING SLOPE
 Scale: 1 inch = 10 ft.



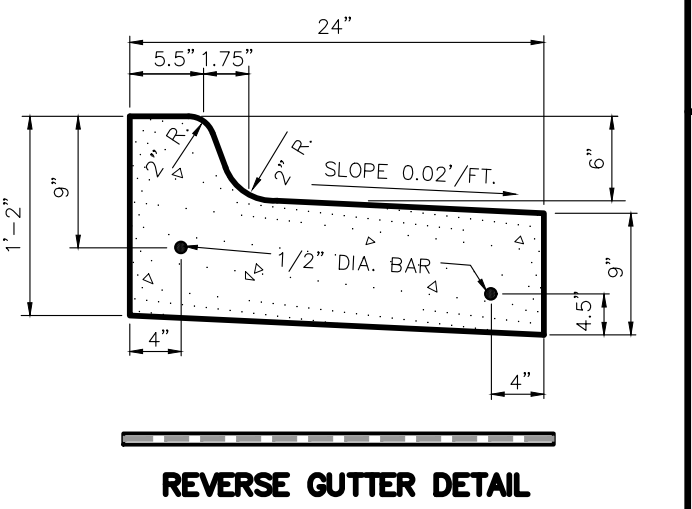
CROSS SECTION A-A
 TYPICAL DRIVE CROSS SECTION FOR UNITS 18-64
 NOT TO SCALE



CROSS SECTION B-B
 TYPICAL DRIVE CROSS SECTION FOR UNITS 1-17 AND 65-69
 NOT TO SCALE

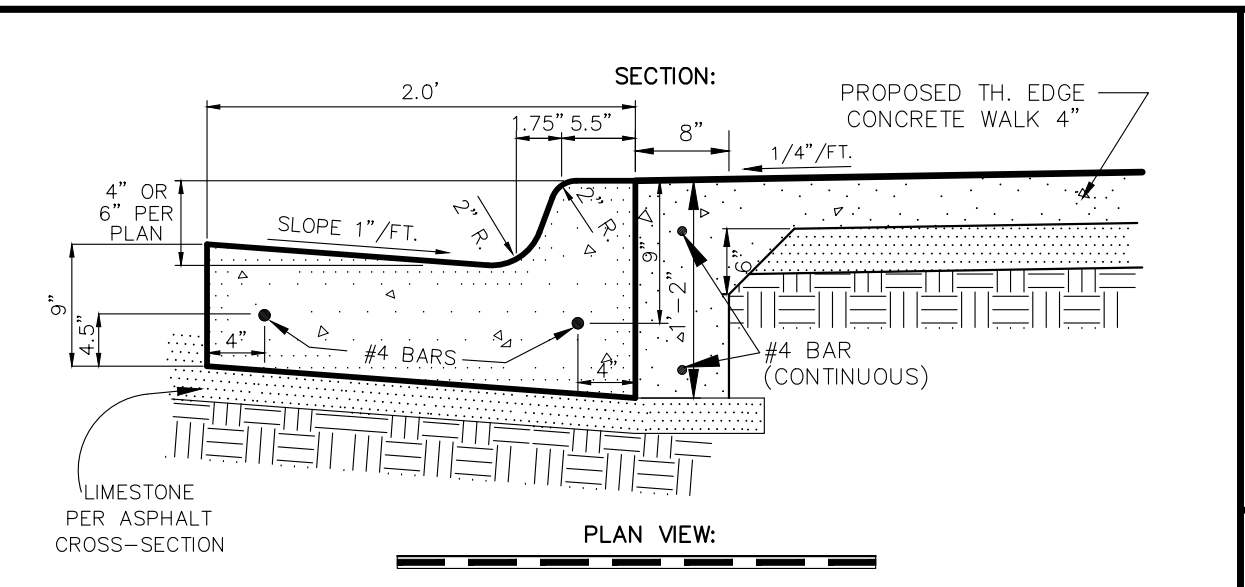


STANDARD GUTTER DETAIL

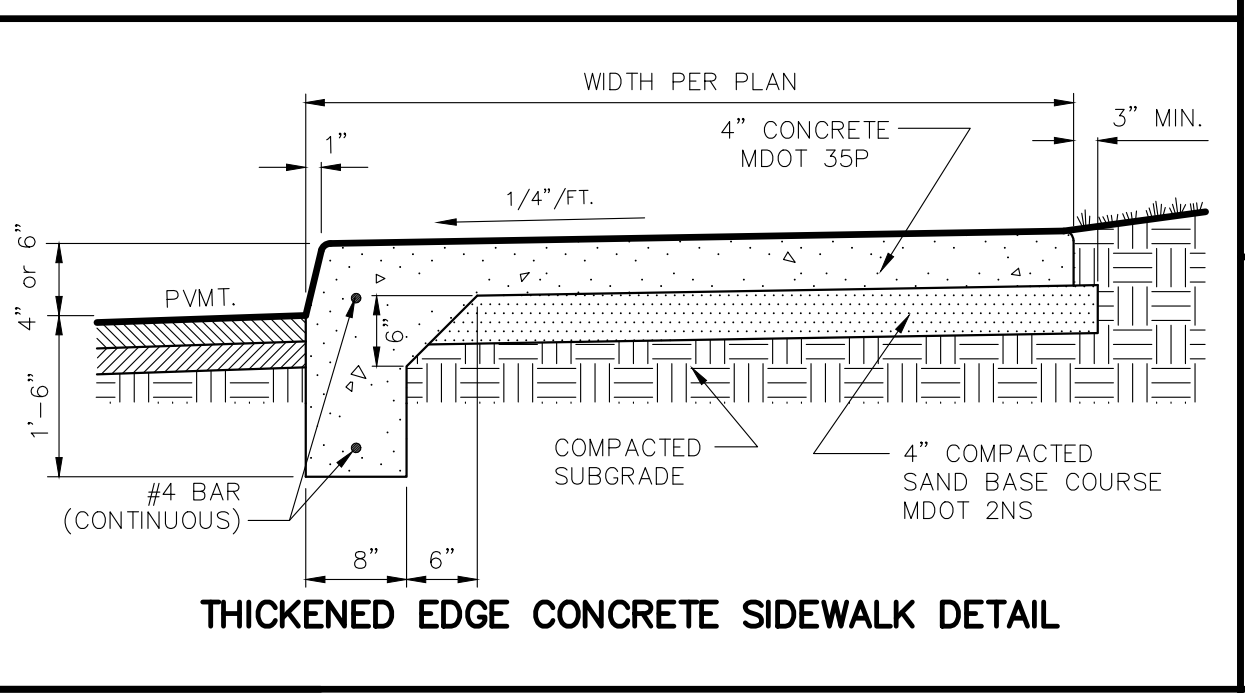


REVERSE GUTTER DETAIL

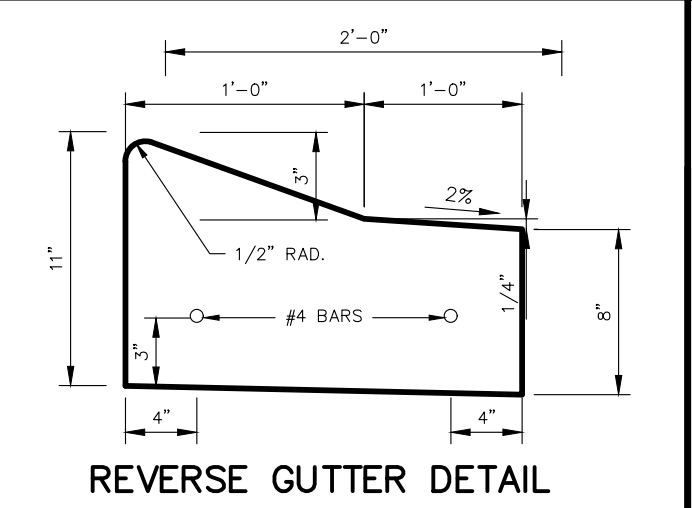
M.D.O.T. F-4 STRAIGHT FACE CONCRETE CURB AND GUTTER



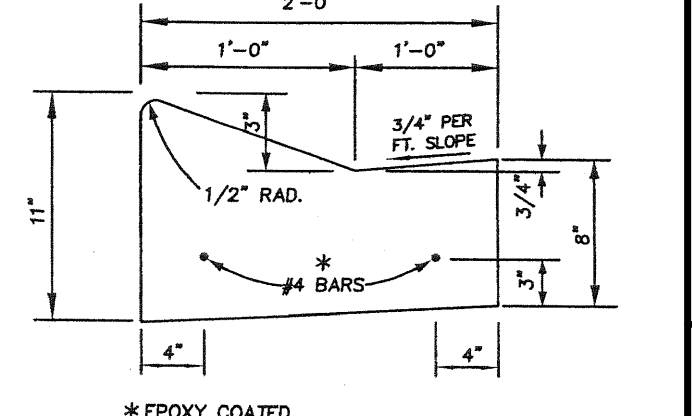
CONCRETE CURB WITH STANDARD GUTTER ABUTTING CONCRETE SIDEWALK DETAIL



THICKENED EDGE CONCRETE SIDEWALK DETAIL

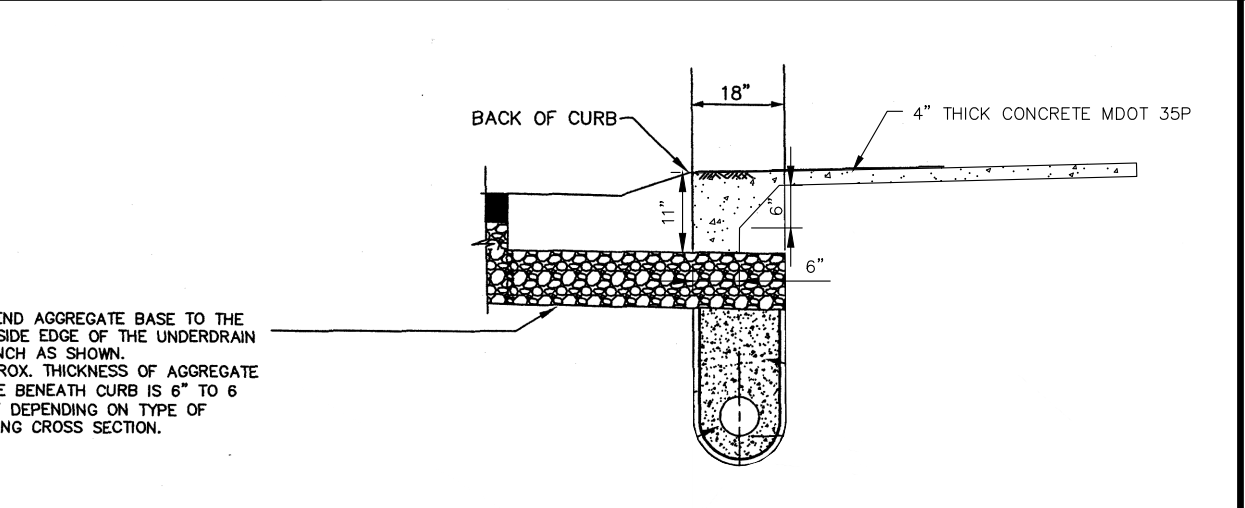


REVERSE GUTTER DETAIL

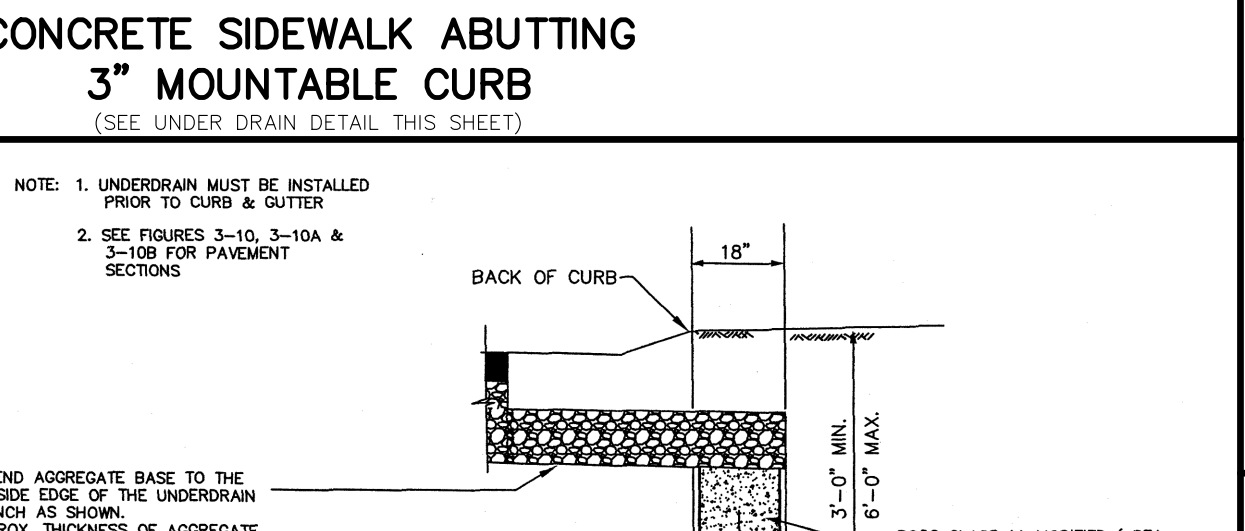


STANDARD GUTTER DETAIL

MOUNTABLE CONCRETE CURB & GUTTER DETAIL



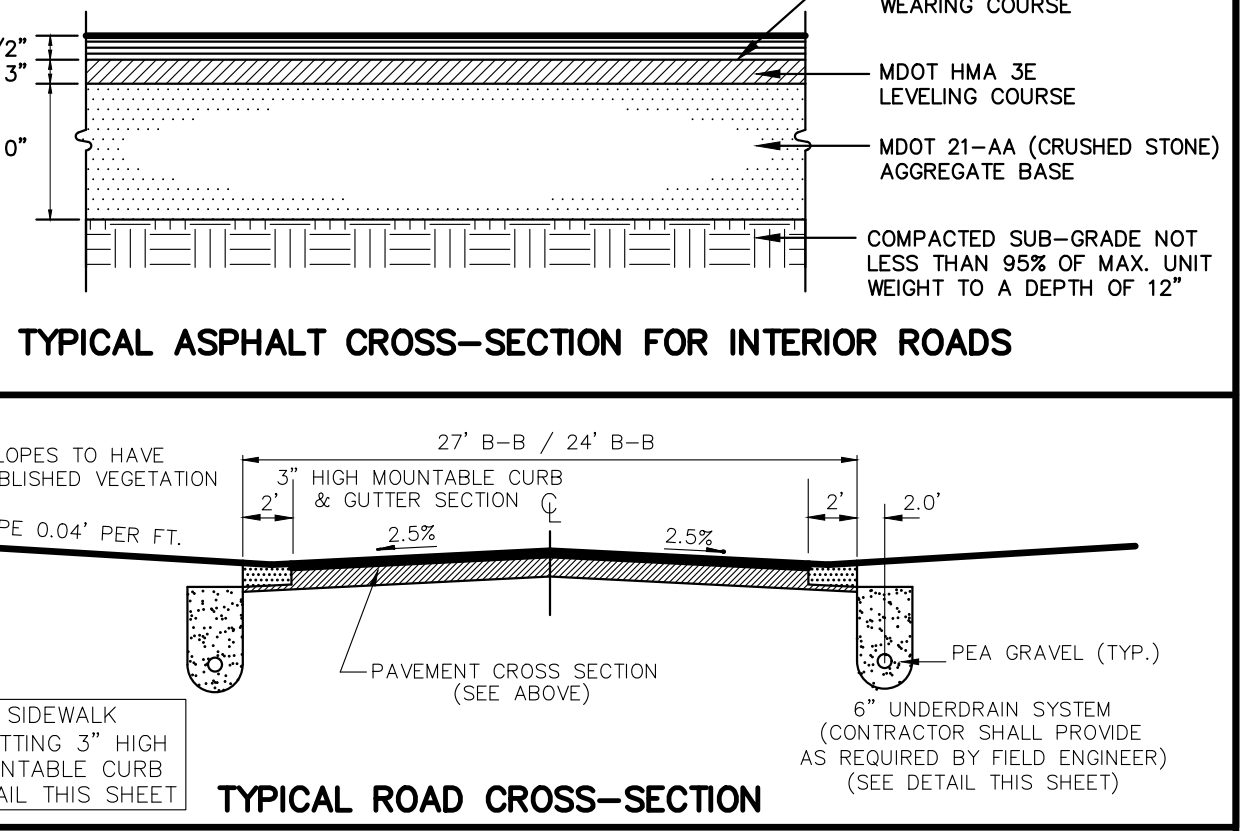
CONCRETE SIDEWALK ABUTTING 3" MOUNTABLE CURB
 (SEE UNDER DRAIN DETAIL THIS SHEET)



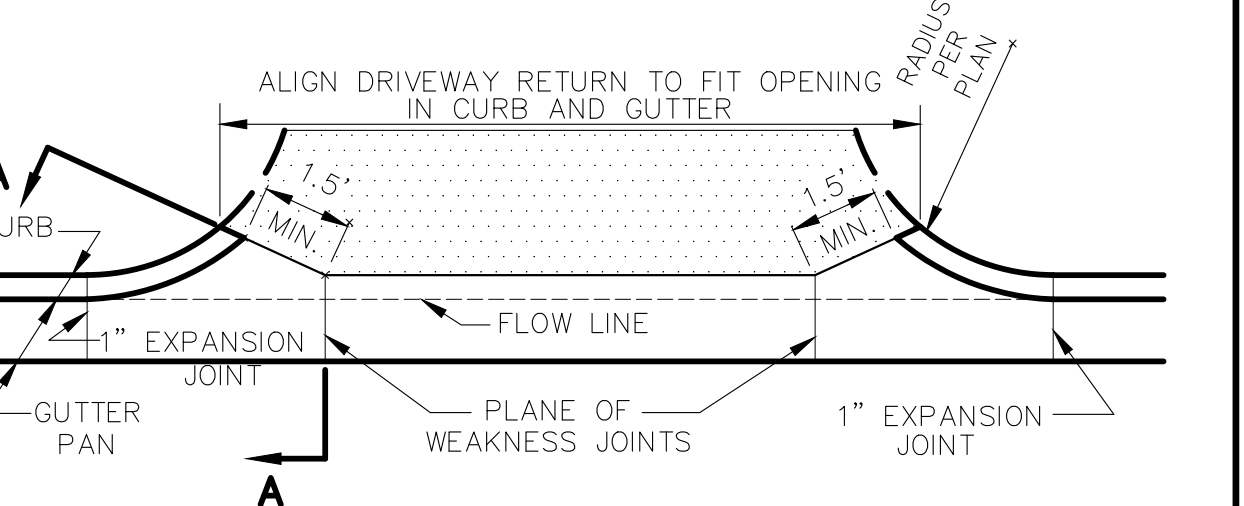
CONCRETE DROP CURB DETAIL (MDOT DETAIL "M")



TYPICAL ASPHALT CROSS-SECTION FOR INTERIOR ROADS



TYPICAL ROAD CROSS-SECTION



CONCRETE DRIVEWAY PAVEMENT CROSS SECTION



UNDERDRAIN

WEST VALLEY MULTI-FAMILY RESIDENTIAL COMMUNITY SECTION 36, TOWN 3 NORTH, RANGE 8 EAST WHITE LAKE TWP., OAKLAND COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	
1.	REV. PER RCOC PERMITS DEPARTMENT	10-22-19	UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED. 811 Know what's below. Call before you dig. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.
2.	REV. SAN AND STORM PER OWNER	04-10-20	
3.	REV. SAN, ST. & PAV. PER OWNER	5-18-20	
4.	REVISE PER TWP.	02-18-21	
5.	REVISE PER TWP.	03-17-21	
7.	REV PER OWNER, RCOC AND DCRCM	11-21-23	
8.	REVISED WATERMAIN FOR OWNER	04-05-23	
9.	REVISED PER TOWNSHIP	04-25-23	
10.	REVISE PER TWP.	7-27-23	
11.	REVISED PER TWP.	09-21-23	
12.	REVISED PER EOLE	01-31-24	
13.	REVISE PER TWP	03-18-25	

DATE: 08-23-19 DESIGNED BY: G.N. JOB NUMBER: 17-031
 CHECKED BY: J.E. DRAWING FILE:17031-ND.dwg

NOTES AND DETAILS

SKL SEIBER KEAST LEHNER ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE: 1700 NINETEEN MILE ROAD, SUITE 3 CLINTON TOWNSHIP, MI 48038 888.422.7050

FARMINGTON HILLS OFFICE: 39008 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 248.308.3321

OAKLAND COUNTY WATER RESOURCE COMMISSION

STANDARD LIFT STATION DRAWINGS

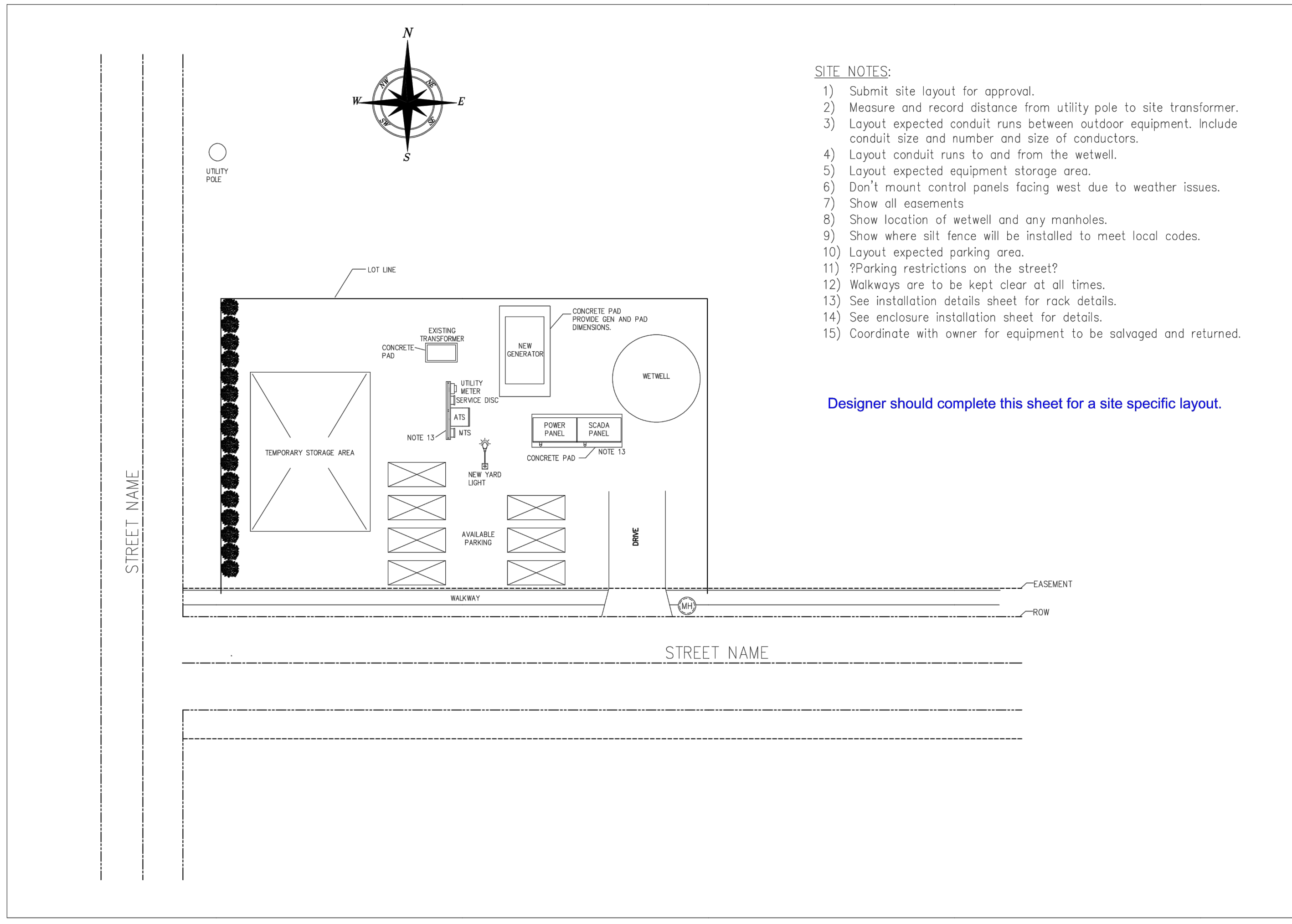
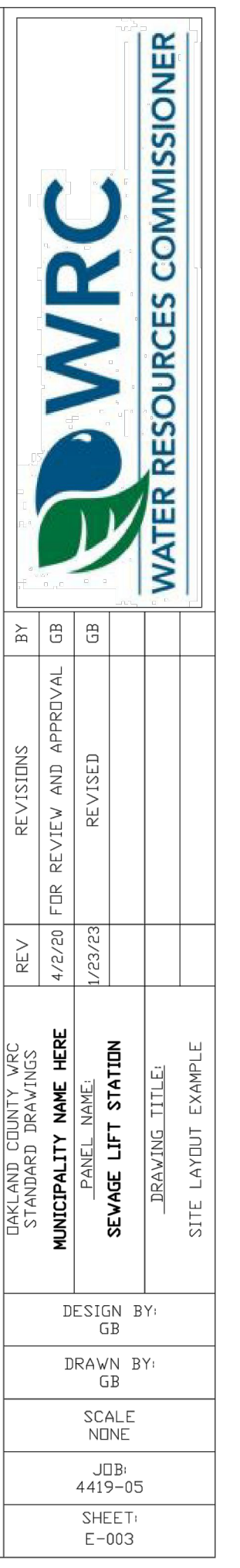
SHEET #	DESCRIPTION
4422-23-01	SITE LAYOUT EXAMPLE
4422-23-01	UTILITY POWER AND PUMP WIRING
4422-23-02	120VAC POWER WIRING
4422-23-03	120VAC/24VDC CONTROL WIRING
4422-23-04	24VDC CONTROL POWER
4422-23-05	24VDC CONTROL POWER
4422-23-06	PLC I/O WIRING
4422-23-07	PLC I/O WIRING
4422-23-08	PLC I/O WIRING
4422-23-09	SPARE SHEET
4422-23-10	PLC SUBPLATE LAYOUT
4422-23-11	PLC PANEL LAYOUT

SHEET #	DESCRIPTION
4422-23-12	SCADA PANEL SUBPLATE LAYOUT
4422-23-13	SCADA PANEL ENCLOSURE LAYOUT
4422-23-14	SCADA PANEL BILL OF MATERIAL
4422-23-15	SPARE SHEET
4422-23-16	POWER/PUMP PANEL SUBPLATE LAYOUT
4422-23-17	POWER/PUMP PANEL ENCLOSURE LAYOUT
4422-23-18	POWER/PUMP PANEL BILL OF MATERIAL
4422-23-19	CONTROLS WIRING LEGEND
4422-23-20	ELECTRICAL ONE-LINE EXAMPLE
4422-23-21	EQUIPMENT INSTALLATION DETAILS
4422-23-22	WRC STANDARD DUPLEX PUMP STATION DETAILS



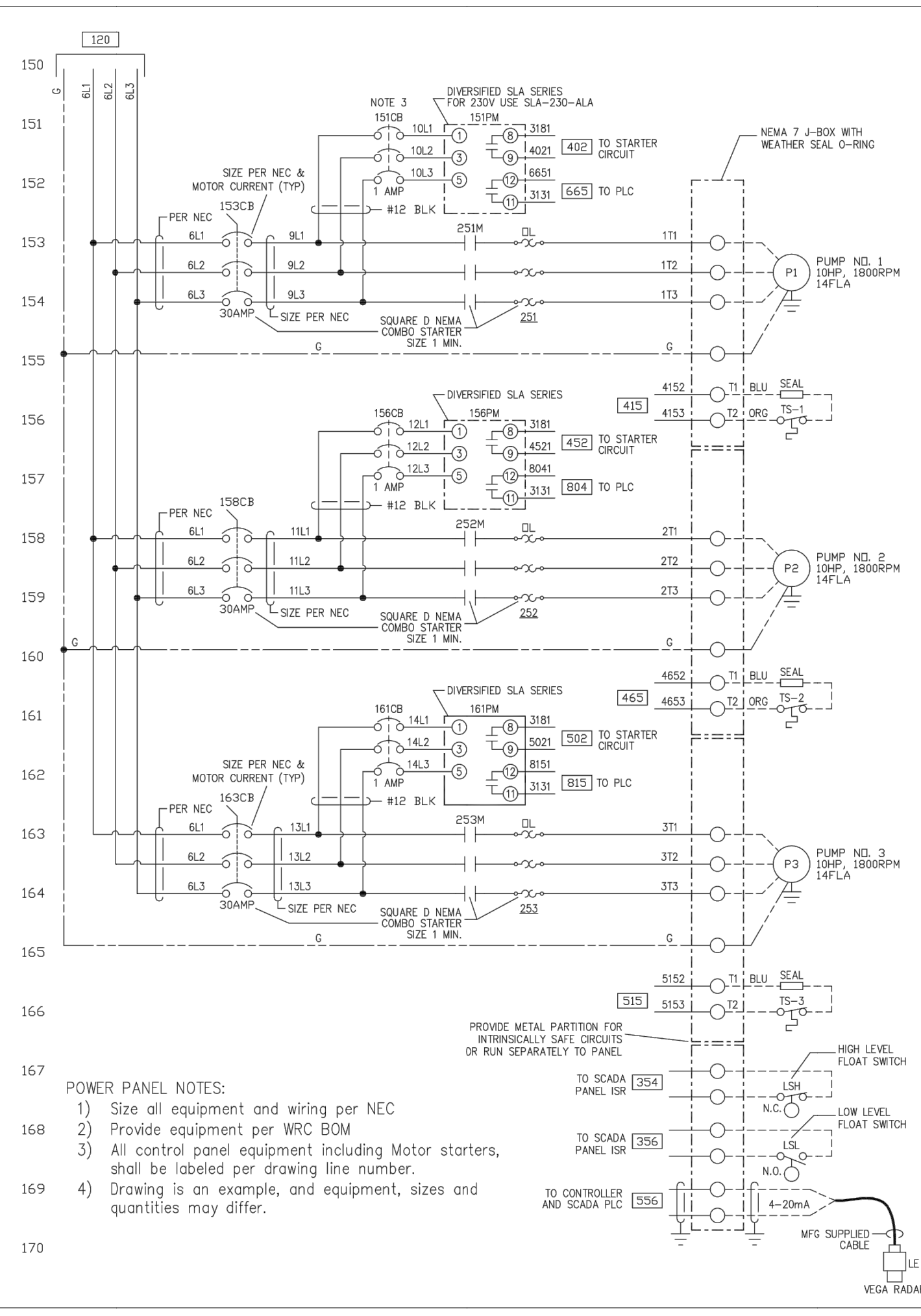
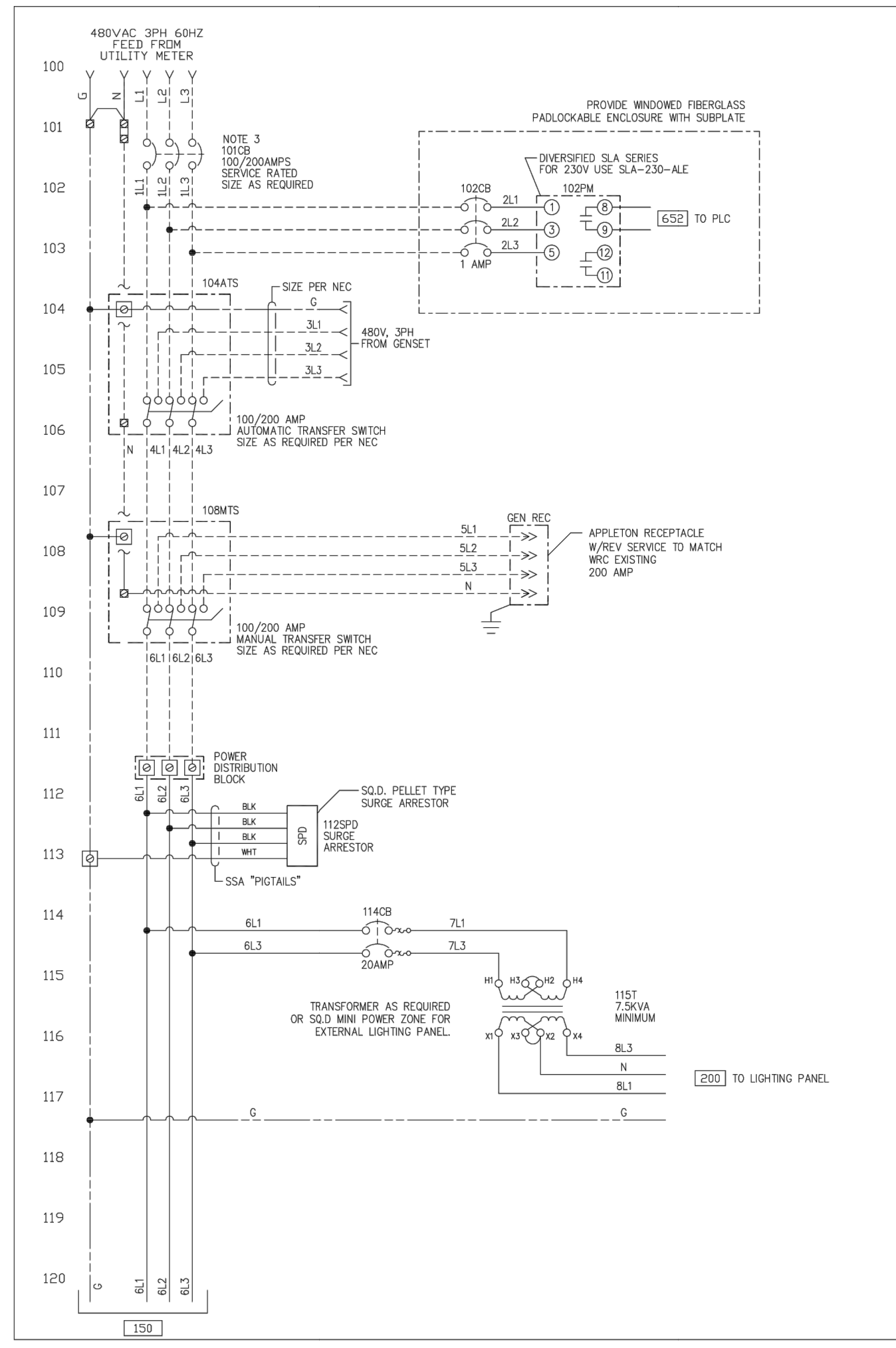
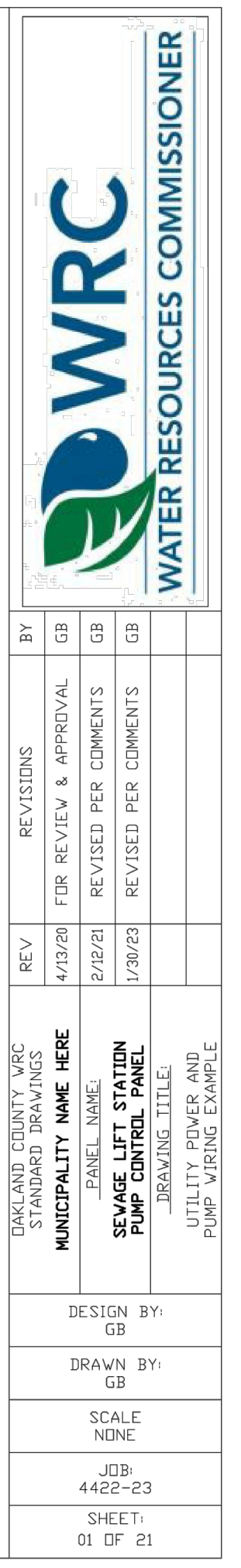
WRC
WATER RESOURCES COMMISSION

DESIGN BY: GB
DRAWN BY: GB
SCALE: NONE
JOB: 4422-23
SHEET: 00 OF 23

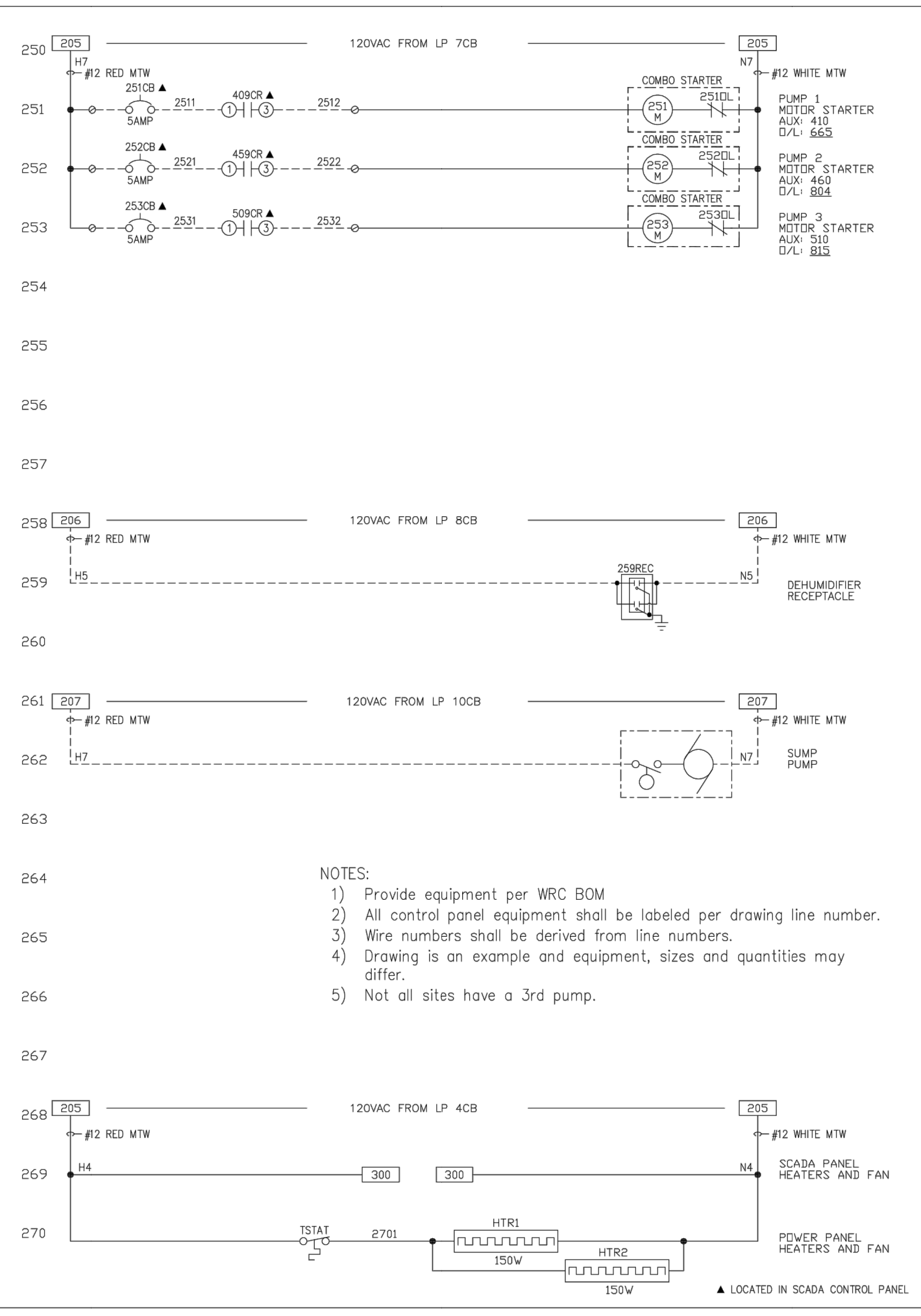
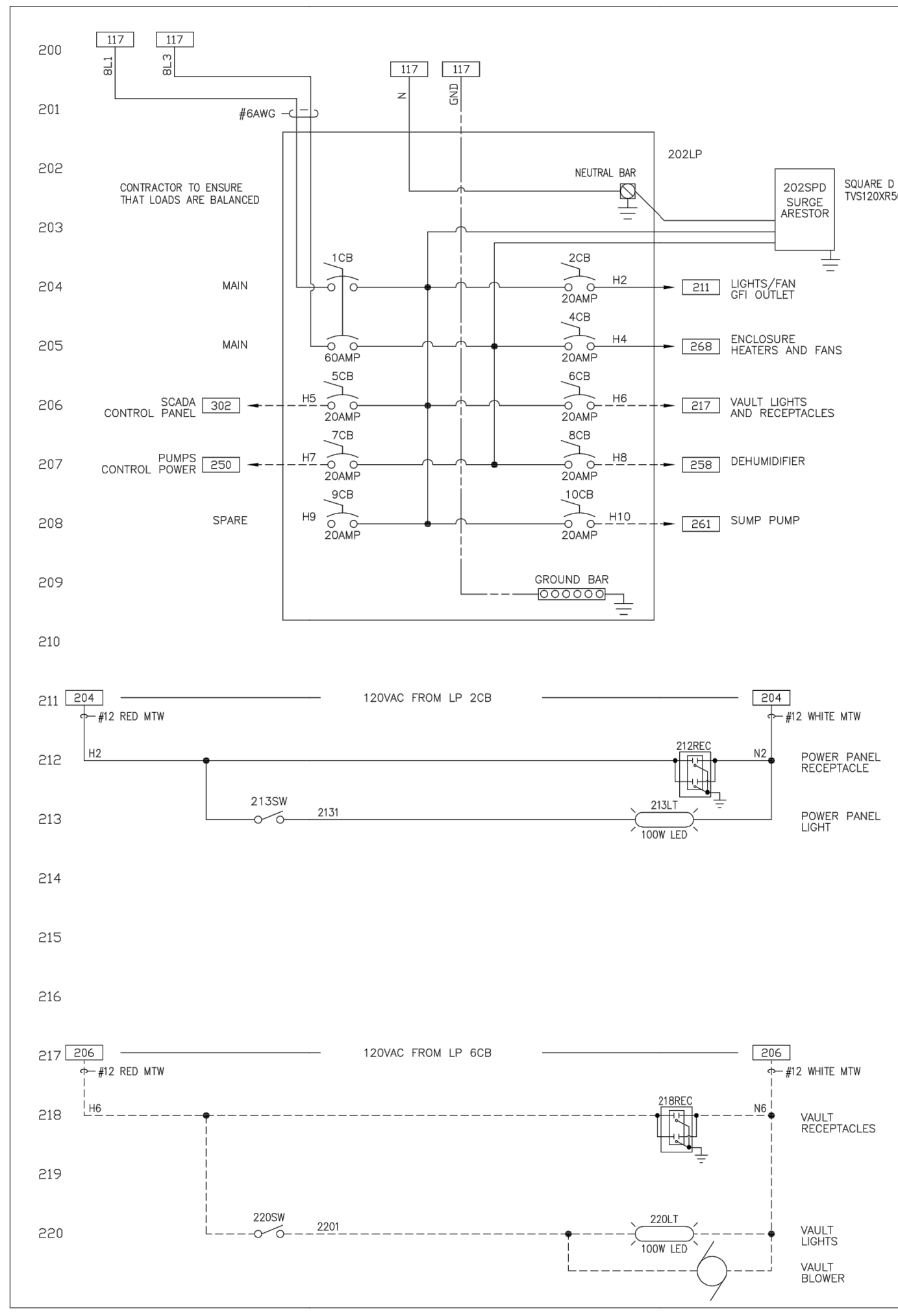
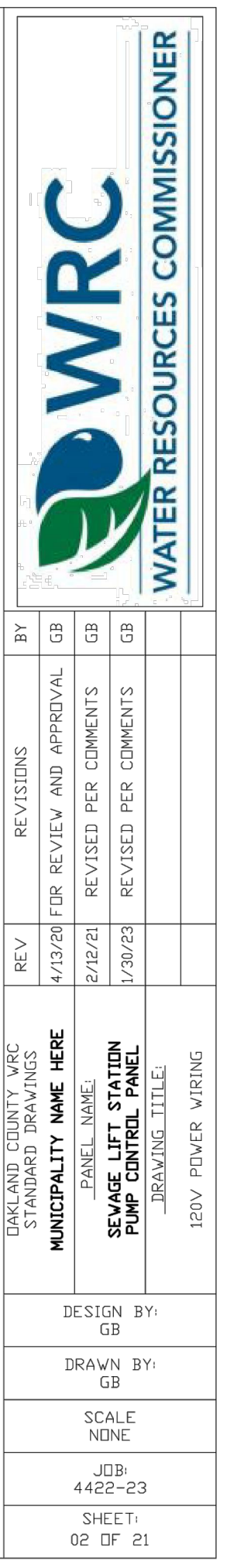
WRC
WATER RESOURCES COMMISSION

DESIGN BY: GB
DRAWN BY: GB
SCALE: NONE
JOB: 4419-05
SHEET: F-003

WRC
WATER RESOURCES COMMISSION

DESIGN BY: GB
DRAWN BY: GB
SCALE: NONE
JOB: 4422-23
SHEET: 01 OF 21

WRC
WATER RESOURCES COMMISSION

DESIGN BY: GB
DRAWN BY: GB
SCALE: NONE
JOB: 4422-23
SHEET: 02 OF 21

POWER PANEL NOTES:

- 1) Size all equipment and wiring per NEC
- 2) Provide equipment per WRC BOM
- 3) All control panel equipment including Motor starters, shall be labeled per drawing line number.
- 4) Drawing is an example, and equipment, sizes and quantities may differ.

NOTES:

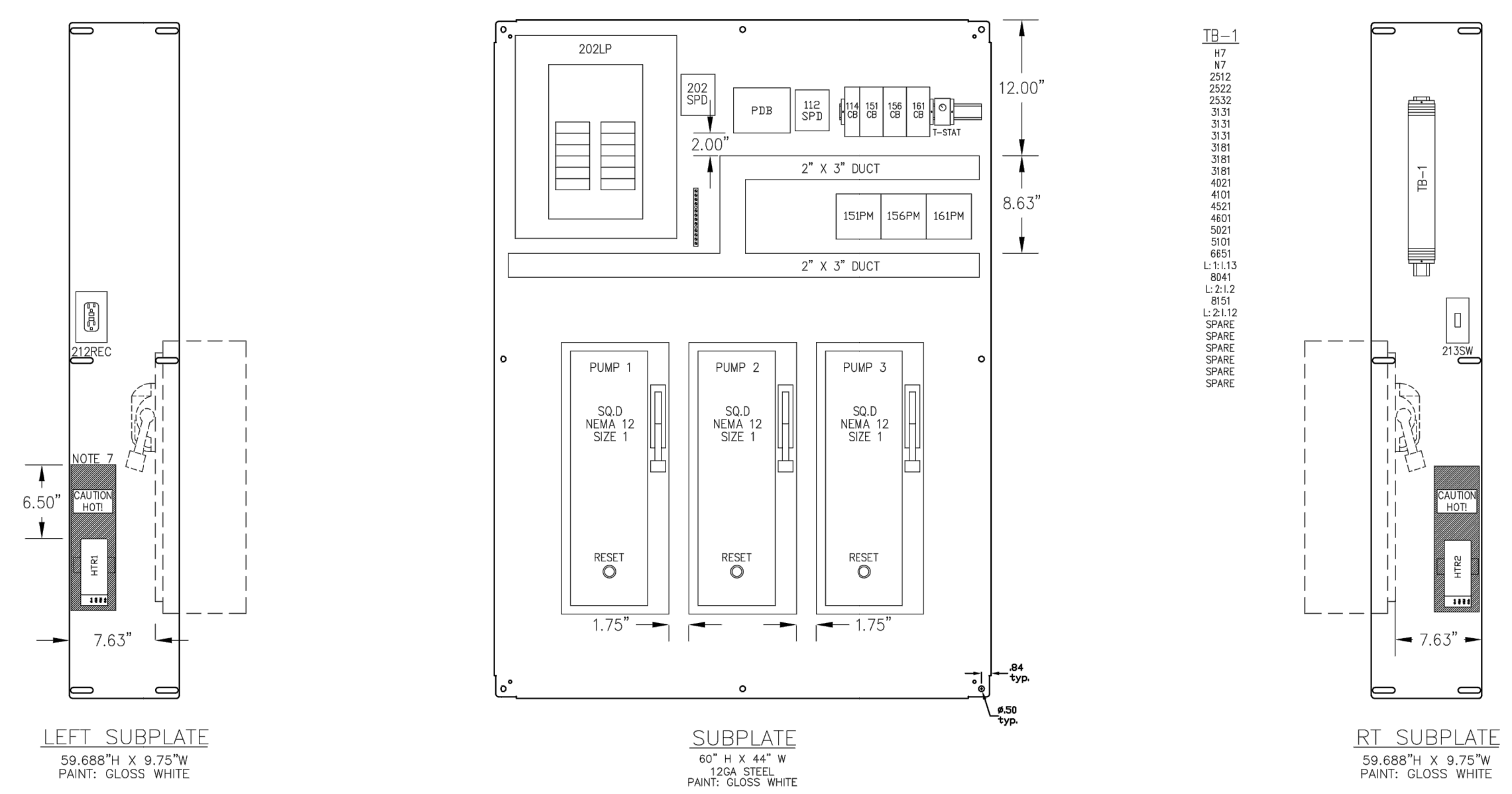
- 1) Provide equipment per WRC BOM
- 2) All control panel equipment shall be labeled per drawing line number.
- 3) Wire numbers shall be derived from line numbers.
- 4) Drawing is an example and equipment, sizes and quantities may differ.
- 5) Not all sites have a 3rd pump.

SPARE SHEET

WRC
WATER RESOURCES COMMISSIONER

BY: GB
REVISIONS:
REV: 4/23/20
DESIGN BY: GB
DRAWN BY: GB
SCALE: NONE
JOB: 4422-23
SHEET: 15 OF 21

OAKLAND COUNTY WRC STANDARD DRAWINGS
MUNICIPALITY NAME HERE
PANEL NAME: SEWAGE LIFT STATION
POWER/PUMP CONTROL PANEL
DRAWING TITLE: SPARE SHEET

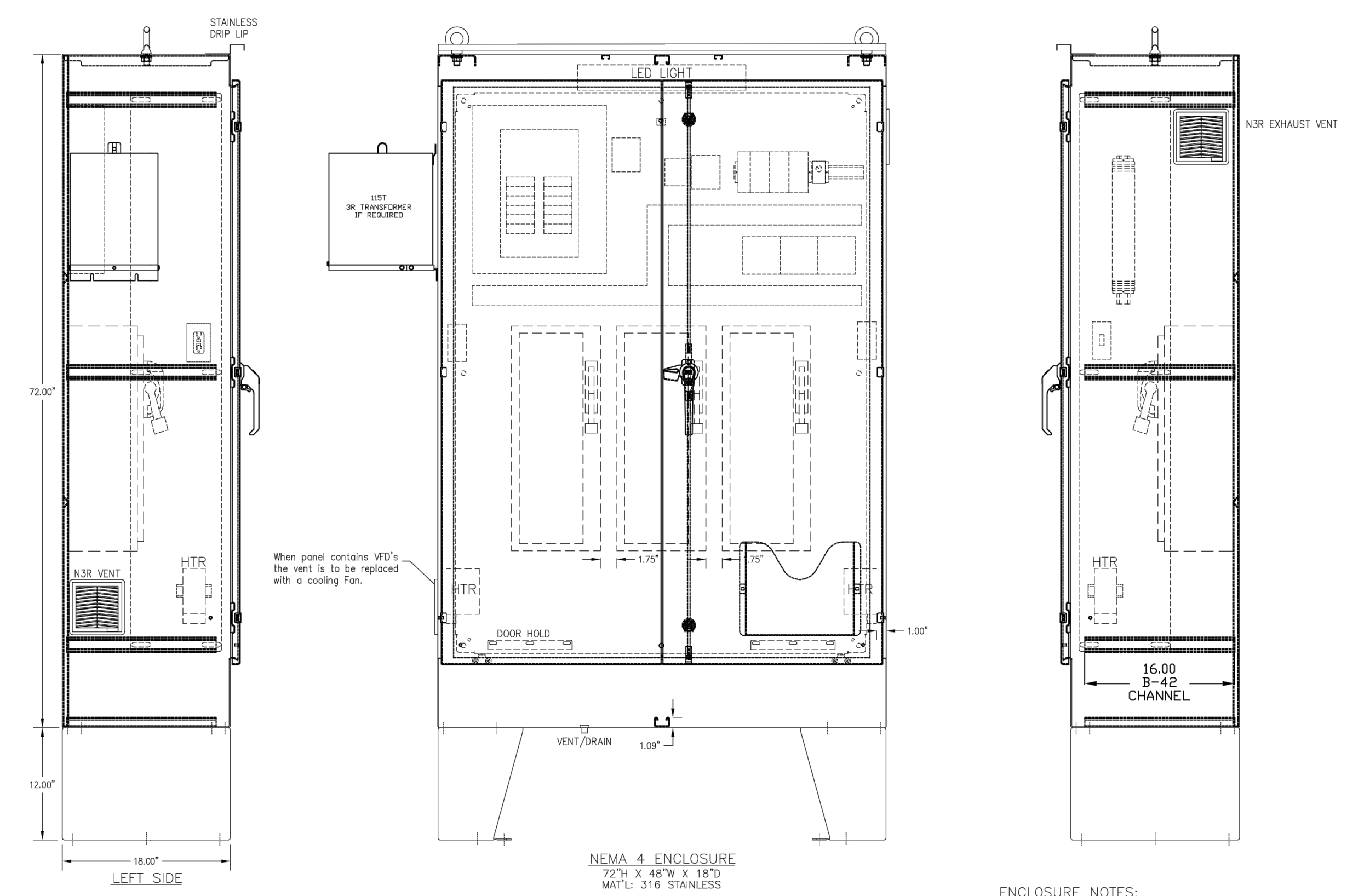


- NOTES:
- 1) Duct shall be Panduit or equal wide slotted type. Maximum duct wirefill is 50%.
 - 2) Provide components per WRC BOM.
 - 3) All equipment shall be properly labeled to match wiring schematics.
 - 4) Receptacle shall be GFI.
 - 5) Provide dimensions for mounting equipment and clearances.
 - 6) Mark and dimension all unusable areas.
 - 7) Maintain proper clearances for heaters to prevent damage due to high temps.
 - 8) Ensure proper spacing for internal panels to allow doors to open 110deg.
 - 9) Drawing is an example based on 460VAC and size 1 starters. Equipment, sizes and quantities may differ.

WRC
WATER RESOURCES COMMISSIONER

BY: GB
REVISIONS:
REV: 4/23/20
DESIGN BY: GB
DRAWN BY: GB
SCALE: NONE
JOB: 4422-23
SHEET: 16 OF 21

OAKLAND COUNTY WRC STANDARD DRAWINGS
MUNICIPALITY NAME HERE
PANEL NAME: SEWAGE LIFT STATION
POWER/PUMP CONTROL PANEL
DRAWING TITLE: SUBPLATE LAYOUT



ENCLOSURE NOTES:
Closed bottom, overlapping doors, 3pt padlockable handle
Louvered air intake N3R with filtered air exhaust.
No interior insulation required.
Provide door hold mechanism for each door.
PROVIDE SUBPLATES
BACK PANEL: 60"H x 44"W w/heavy duty mounting rails.
SIDE PANELS: 59.68"H x 9.75"W

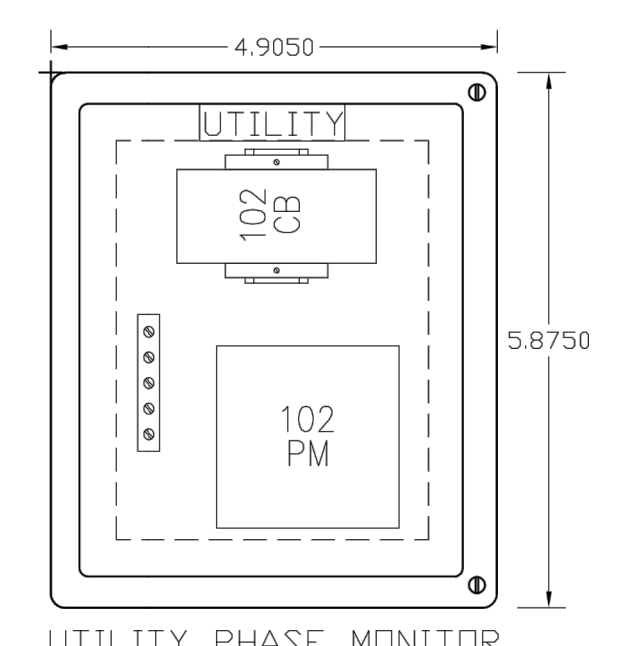
WRC
WATER RESOURCES COMMISSIONER

BY: GB
REVISIONS:
REV: 1/23/23
DESIGN BY: GB
DRAWN BY: GB
SCALE: NONE
JOB: 4422-23
SHEET: 17 OF 21

OAKLAND COUNTY WRC STANDARD DRAWINGS
MUNICIPALITY NAME HERE
PANEL NAME: SEWAGE LIFT STATION
POWER/PUMP CONTROL PANEL
DRAWING TITLE: ENCLOSURE LAYOUT

UTILITY PHASE MONITOR BILL OF MATERIAL

SYMBOL	QTY.	MANUFACTURER	PART NUMBER	DESCRIPTION
PM ENCL	1	SAGINAW	502-10089PCW	NEMA 4X ENCLOSURE WITH WINDOW 11.41"H X 9.41"W X 7.36"D OR EQUAL.
PM ENCL	1	SAGINAW	50210PB	SUBPLATE 9"H X 7"W
100PM	1	DIVERSIFIED	SLA-440-ALE	480V 3PHASE POWER MONITOR
102CB	1	ALLEN BRADLEY	1489-M3C010	120VAC/480VDC 3 POLE CIRCUIT BREAKER 1 AMP
102SB	2	ALLEN BRADLEY	1492-CAJ30	END BAR/NER
END	1	EATON	GBK10	5 SPACE GROUNDING BAR



UTILITY PHASE MONITOR
SEE SHEET 1 FOR WIRING

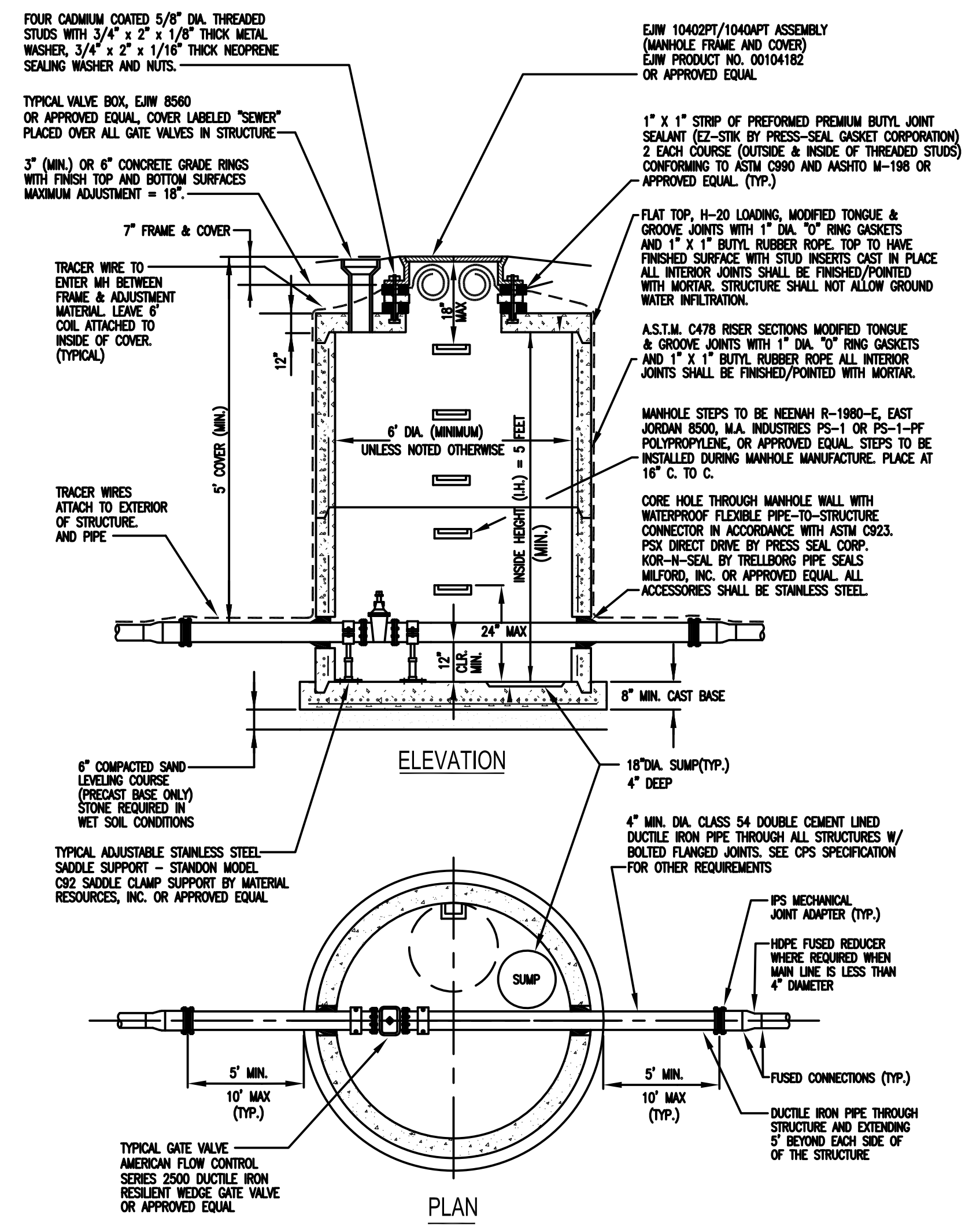
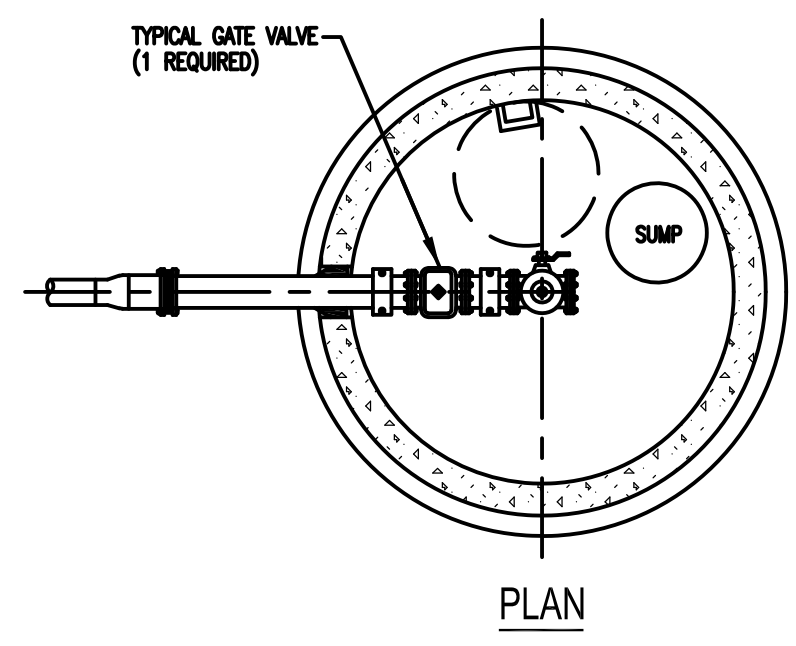
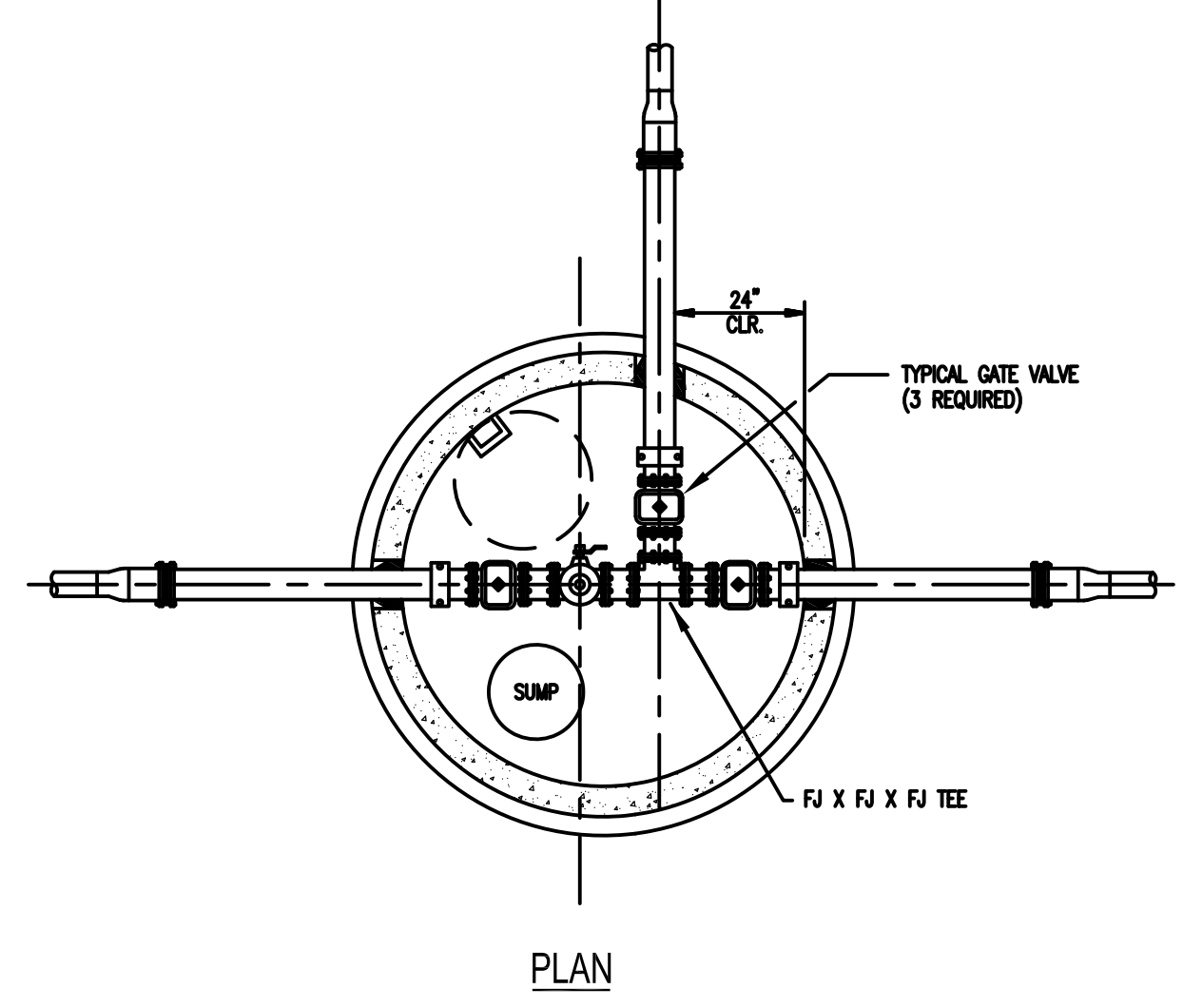
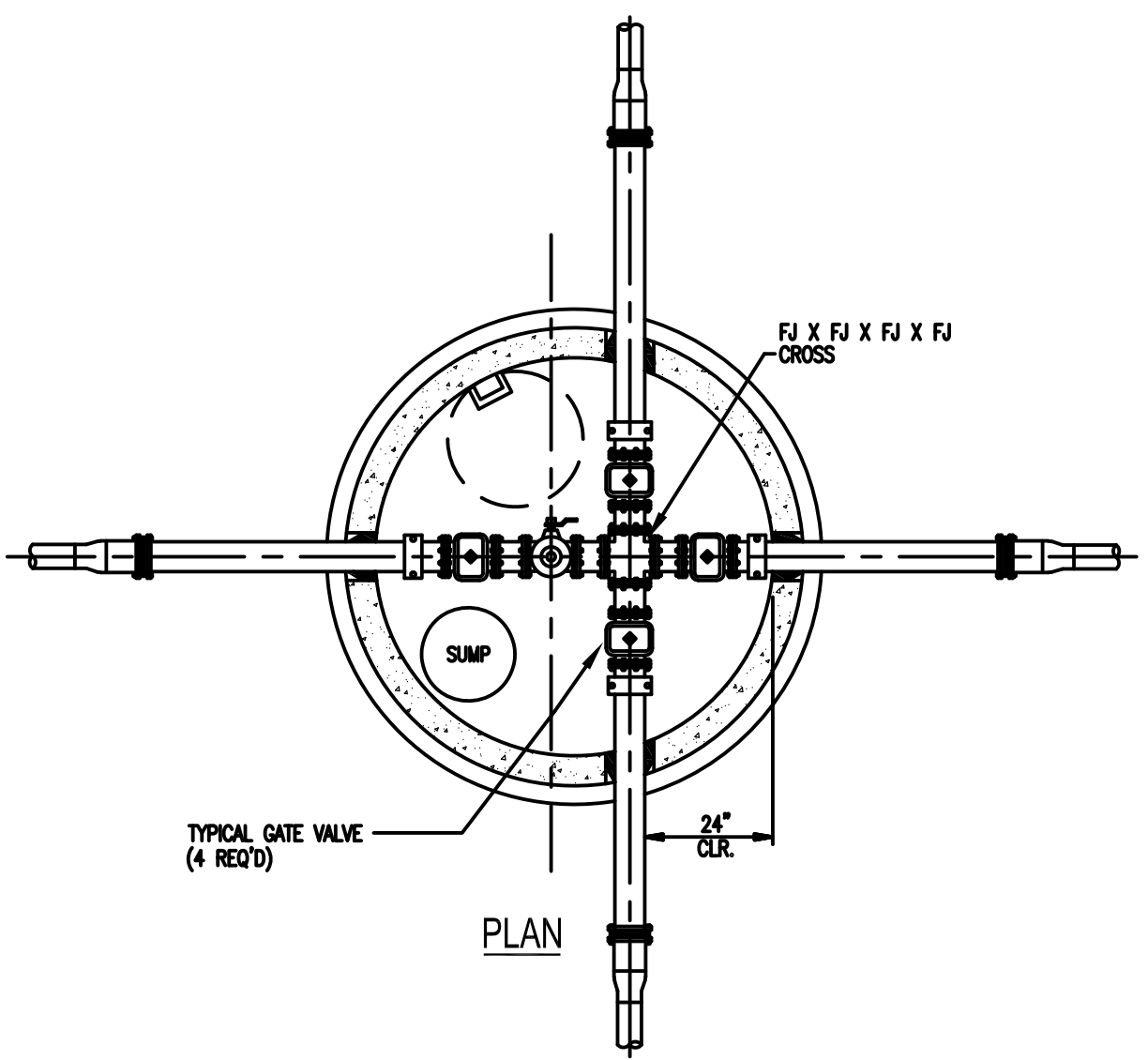
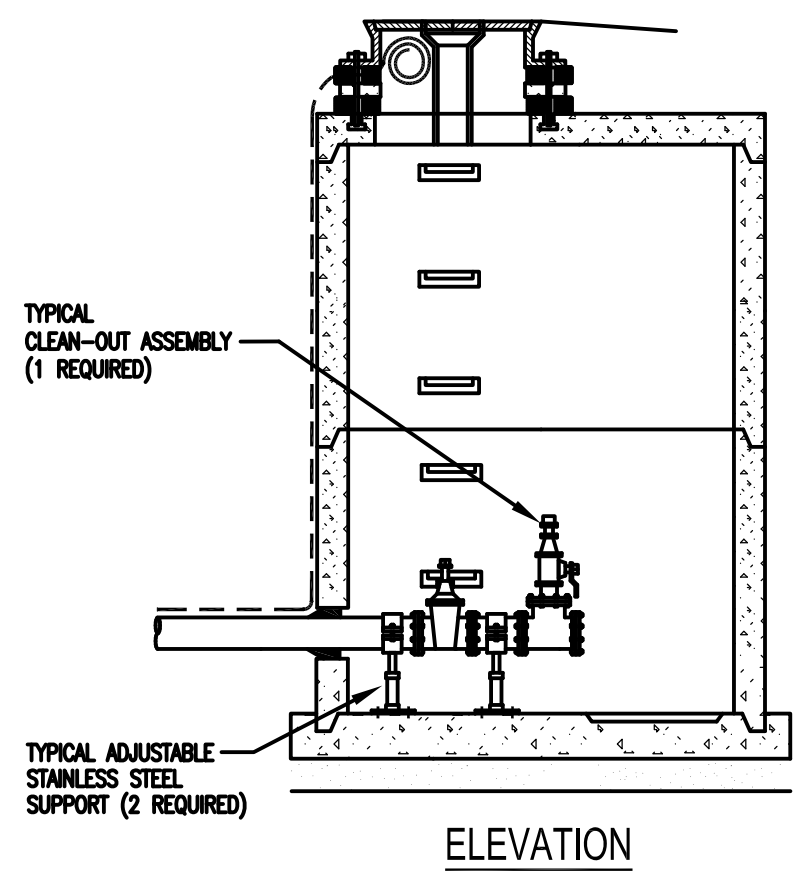
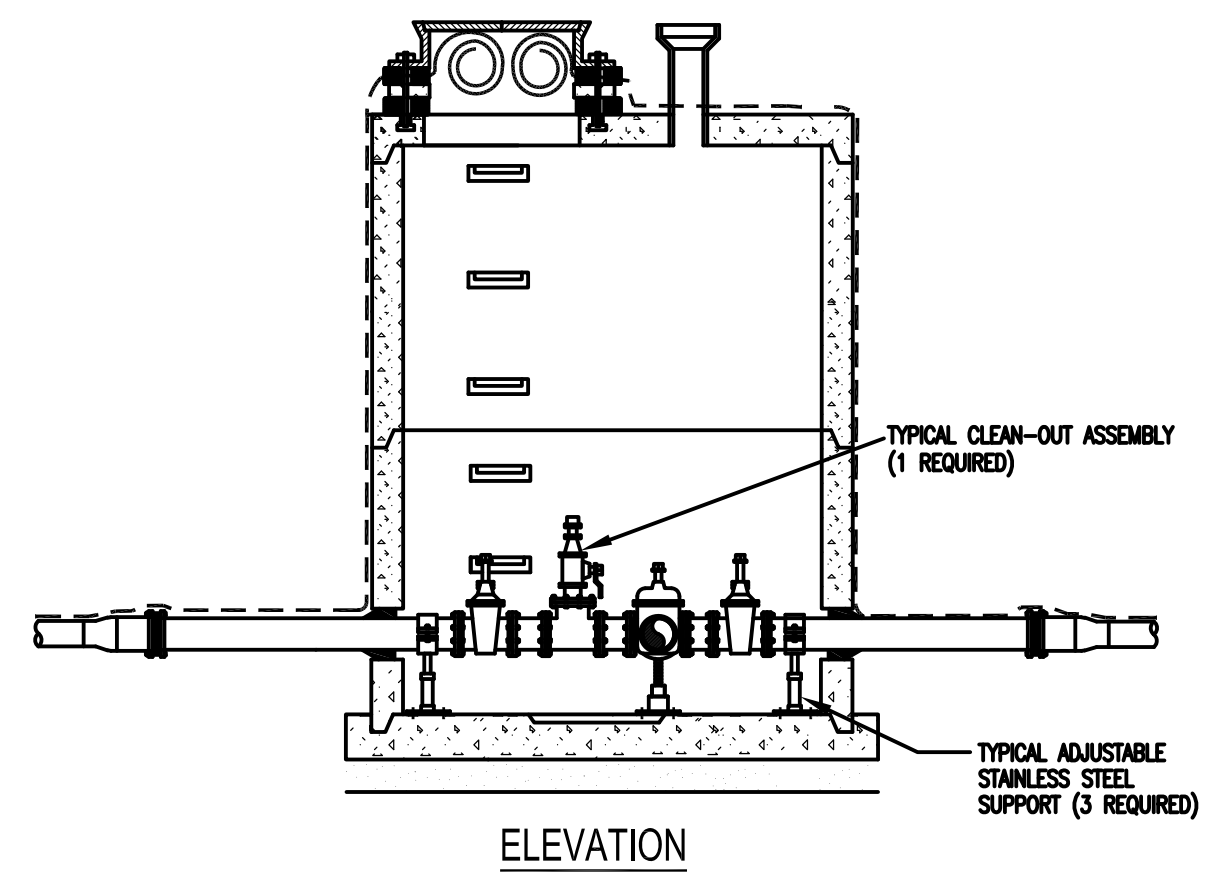
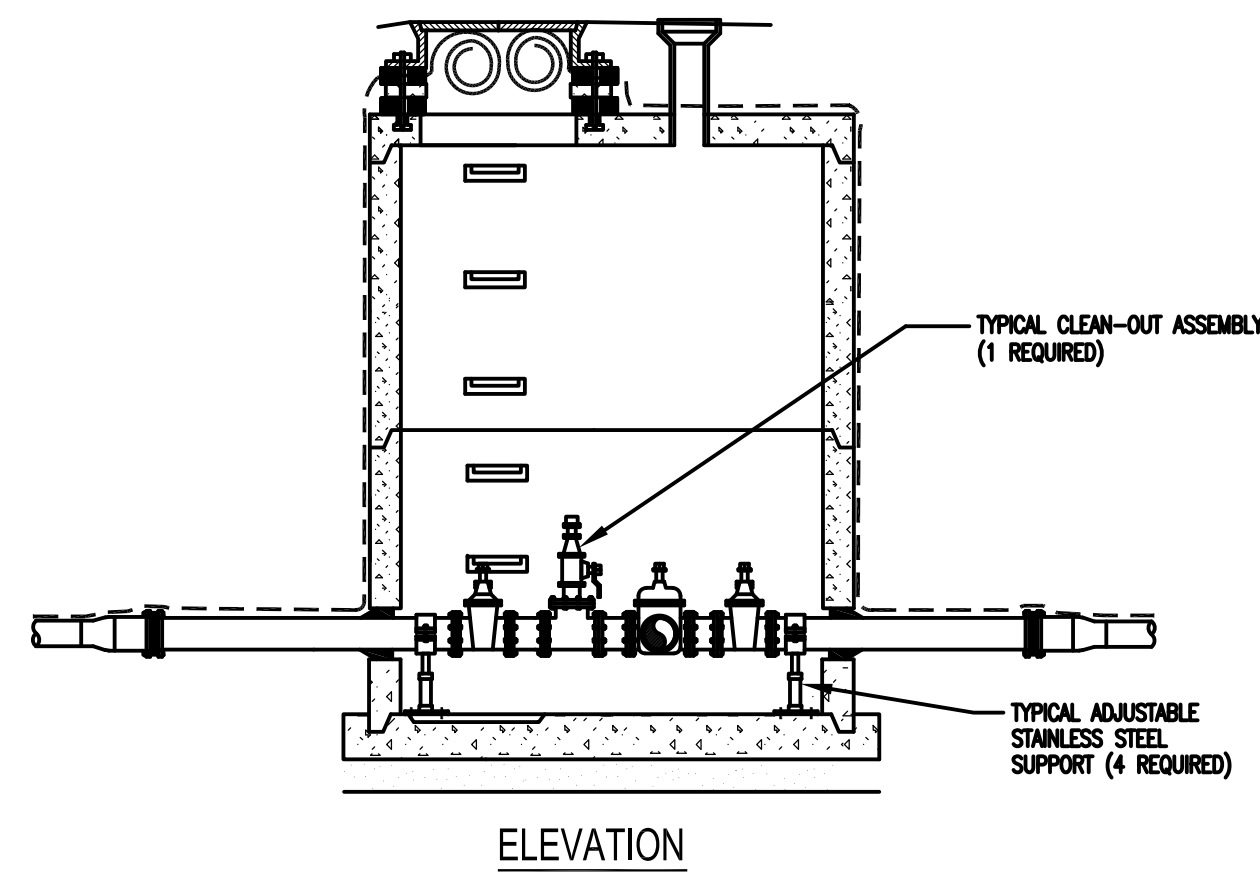
BILL OF MATERIAL

SYMBOL	QTY.	MANUFACTURER	PART NUMBER	DESCRIPTION
ENCL	1	SAGINAW	502-7248185SF30	NEMA 3R 316 STAINLESS STEEL ENCLOSURE 72"H X 48"W X 18"D
ENCL	1	SAGINAW	FK1218556	ENCLOSURE LEGS 12"H X 18"W 316 STAINLESS STEEL
ENCL	1	SAGINAW	502-729SHOPS	HEAVY DUTY PANEL SUPPORT KIT
ENCL	1	SAGINAW	502-049853	48" STAINLESS STEEL DRIP LIP
DOOR STOP	2	SAGINAW	502-05109K	DOOR STOP KIT
SUBPLATE	1	SAGINAW	502-72948T1	SUBPLATE 60"H X 44"W GLOSS WHITE
SUBPLATE	2	SAGINAW	502-729P	FILLER PLATE 59.688"H X 9.75"W GLOSS WHITE
CHANNEL NUT	12	CUSTOM		3/8-18 STREET CHANNEL NUT WITH SPRING
VENT/ DRAIN	1	SAGINAW	502-BW00	ENCLOSURE VENT/ DRAIN
FILTER	2	SAGINAW	502-N3RFG144	EXHAUST FILTER KIT
TSTAT	1	STEGO	011409-00	120VAC 15 AMP DUAL HEATING THERMOSTAT
HEATER	2	STEGO	060200-00	120VAC 150 WATT ENCLOSURE HEATER
LIGHT	1	SAGINAW	502-LTPR60	18" LED ENCLOSURE LIGHT
304SW	1	RACO	5121-0	120V 15AMP WEATHER PROOF LIGHT SWITCH w/cover
304SW	2	RACO	5320-0	2" WEAHERPROOF BUSH
303RCC	1	PARABELL	021R1512	15AMP GFI RECEPTACLE
303RCC	1	LITTON	000-86401	GFI RECEPTACLE COVER
115T	1	SQUARE D	7400-7244F	480V-120/240 3 PHASE NEMA 3R TRANSFORMER
PDB	1	SQUARE D	9060LB43106	335AMP SPOLE POWER DISTRIBUTION BLOCK 1 LINE, 6 LOAD CONNECTIONS
PDB	1	SQUARE D	9060LB33	3 POLE POWER DISTRIBUTION BLOCK COVER
112SPD	1	SQUARE D	505A-3650	600VAC 3 PHASE SURGE PROTECTIVE DEVICE
112SPD	1	SQUARE D	025AMK	5045 MOUNTING BRACKET
202SPD	1	SQUARE D	1752209505	120V/240V ANNE SURGE PROTECTIVE DEVICE
202LP	1	SQUARE D	0012122SPD	120V/240V 125A 12SPACE LIGHTING PANEL WITH GROUND BAR KIT
202LP	1	SQUARE D	00C16US	SURFACE MOUNT COVER
202LP	1	SQUARE D	00560	2 POLE 60 AMP CIRCUIT BREAKER
202LP	8	SQUARE D	00100	1 POLE 20 AMP CIRCUIT BREAKER
202LP	1	SQUARE D	PK4MBZLA	2 POLE CIRCUIT BREAKER RETAINING KIT
251252J25W	3	SQUARE D	8539-SC454025-H311	460VAC NEMA 12 COMBINATION STARTER PANEL, MAG GUARD FLANGE MOUNTED, 6P DISCONNECT, MINIMUM NEMA SIZE 1 STARTER, 120V COIL, RESET PB DOOR, 1 EXTRA AC VOLT CONTACT, AUX RUNNING CONTACT
151256161CB	3	ALLEN BRADLEY	1489-M3C010	120VAC/480VDC 3 POLE CIRCUIT BREAKER 1 AMP
151256161PM	3	DIVERSIFIED	SLA-440-ALE	480V 3PHASE POWER MONITOR
114CB	1	ALLEN BRADLEY	1489-M3C200	120VAC/480VDC 3 POLE CIRCUIT BREAKER 20 AMP
TERM	29	ALLEN BRADLEY	1492-J3	600V 25AMP GREY TERMINAL
TERM	1	ALLEN BRADLEY	1492-EBJ3	END BAR/NER
TERM	5	ALLEN BRADLEY	1492-EAUS	END BAR/NER
TERM	2	ALLEN BRADLEY	1492-CAB-3	SCREW IN CENTER JUMPER STRIP, 3 POINT
END	1	EATON	GBK10	10 SPACE GROUNDING BAR

WRC
WATER RESOURCES COMMISSIONER

BY: GB
REVISIONS:
REV: 1/23/23
DESIGN BY: GB
DRAWN BY: GB
SCALE: NONE
JOB: 4422-23
SHEET: 18 OF 21

OAKLAND COUNTY WRC STANDARD DRAWINGS
MUNICIPALITY NAME HERE
PANEL NAME: SEWAGE LIFT STATION
POWER/PUMP CONTROL PANEL
DRAWING TITLE: BILL OF MATERIAL

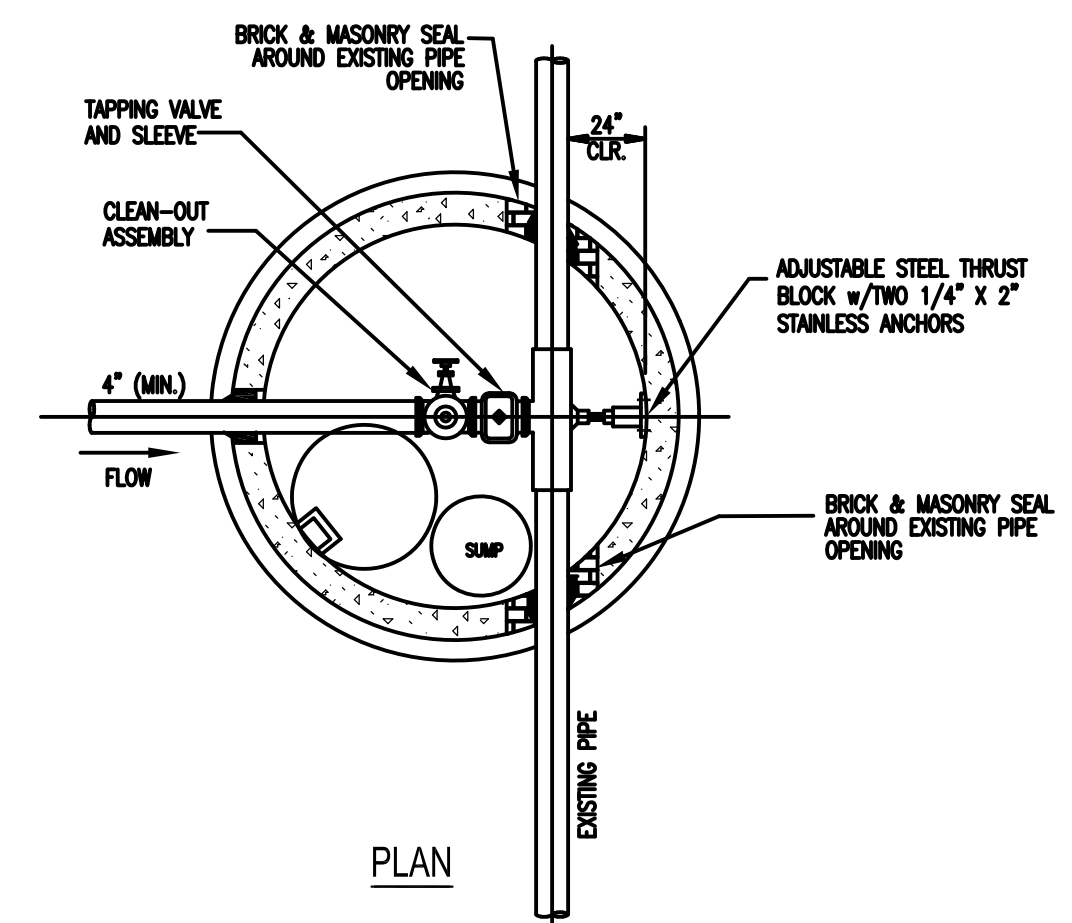
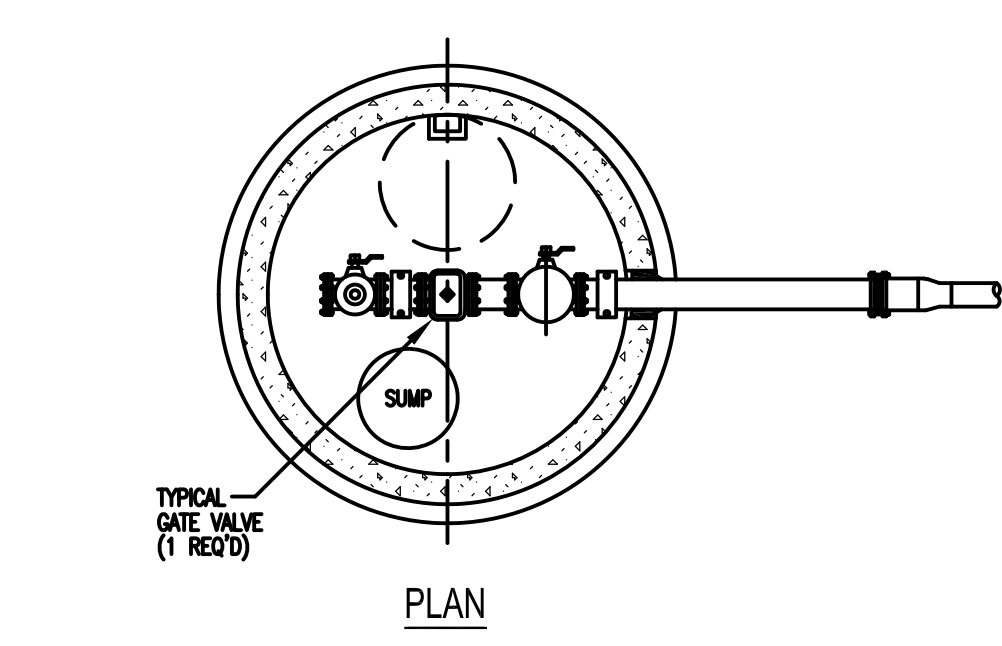
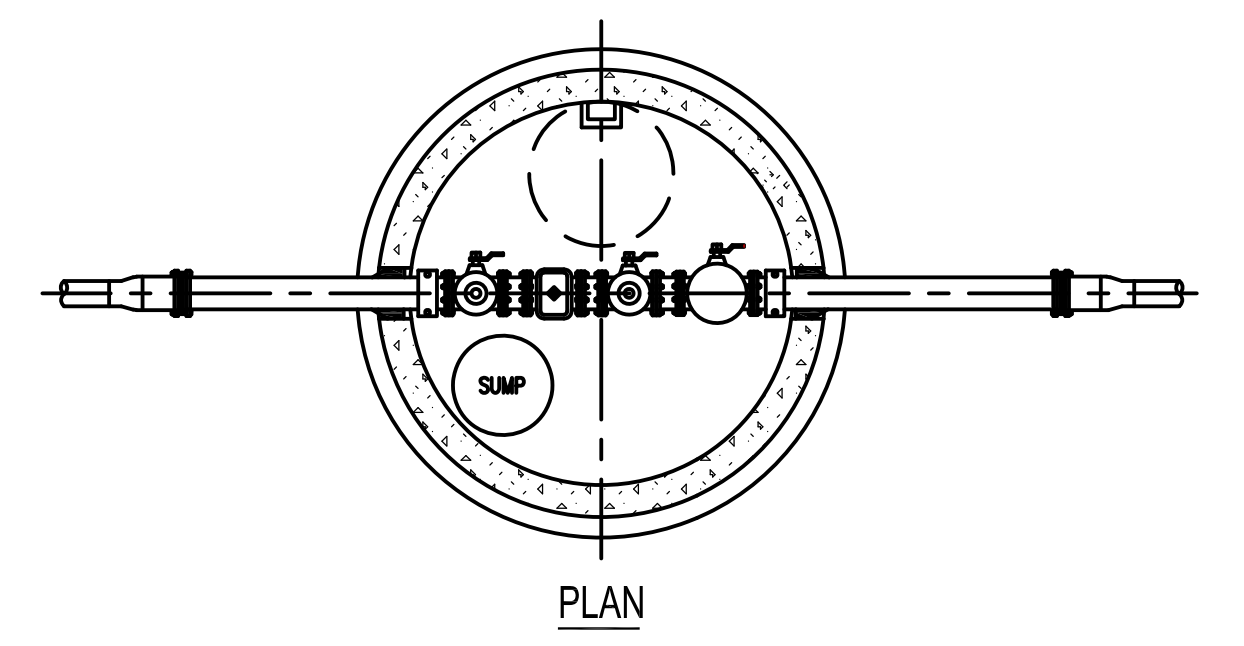
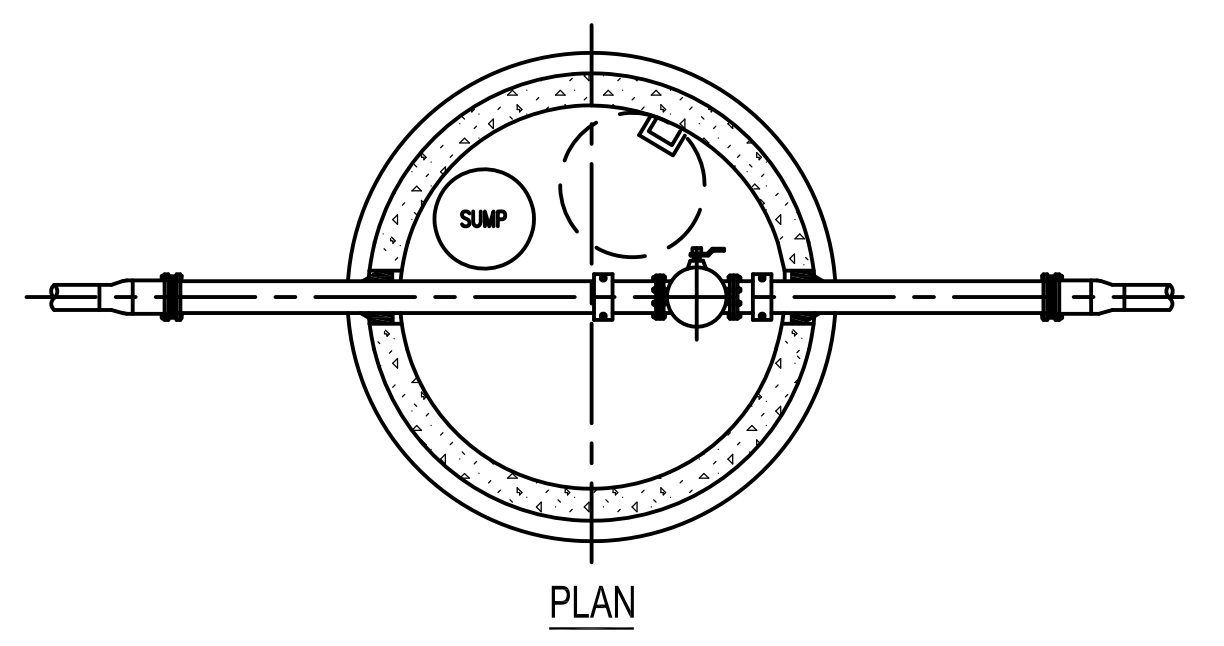
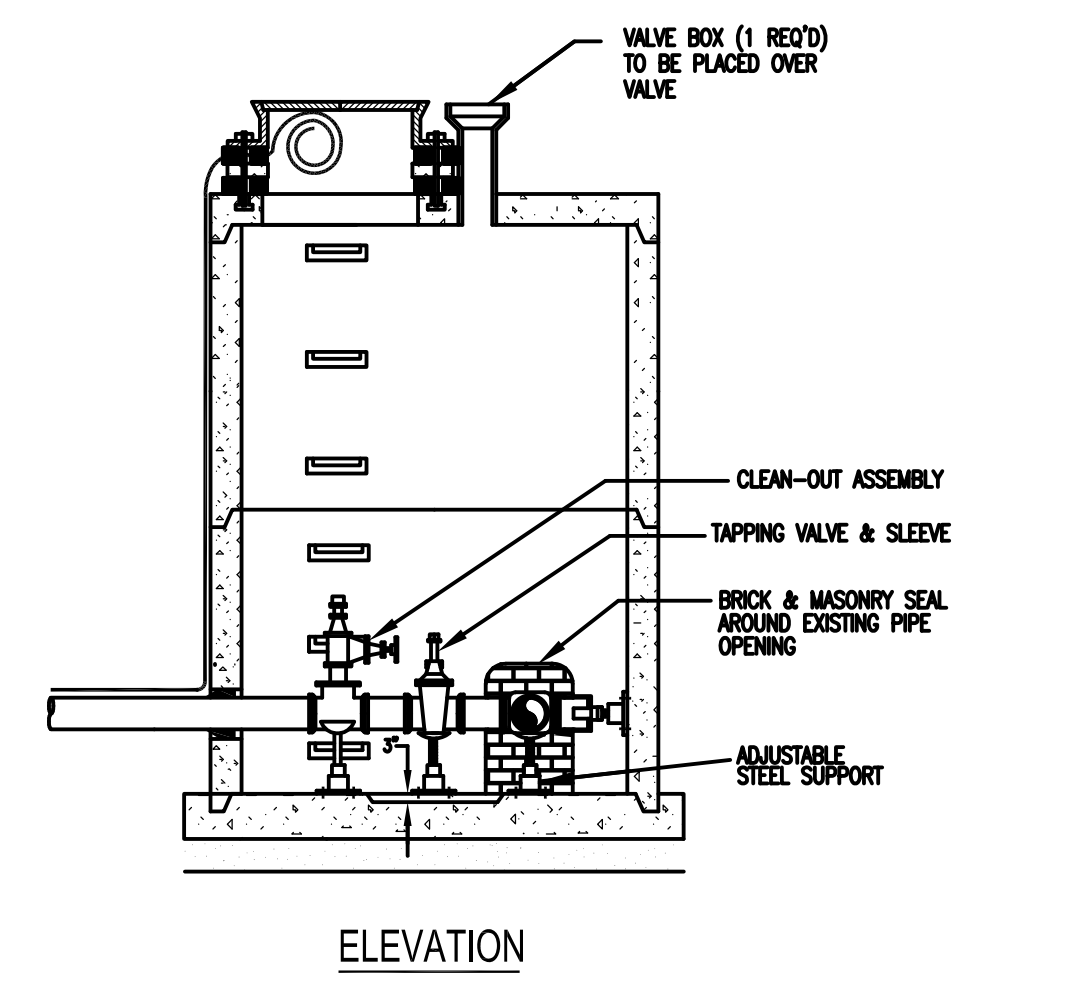
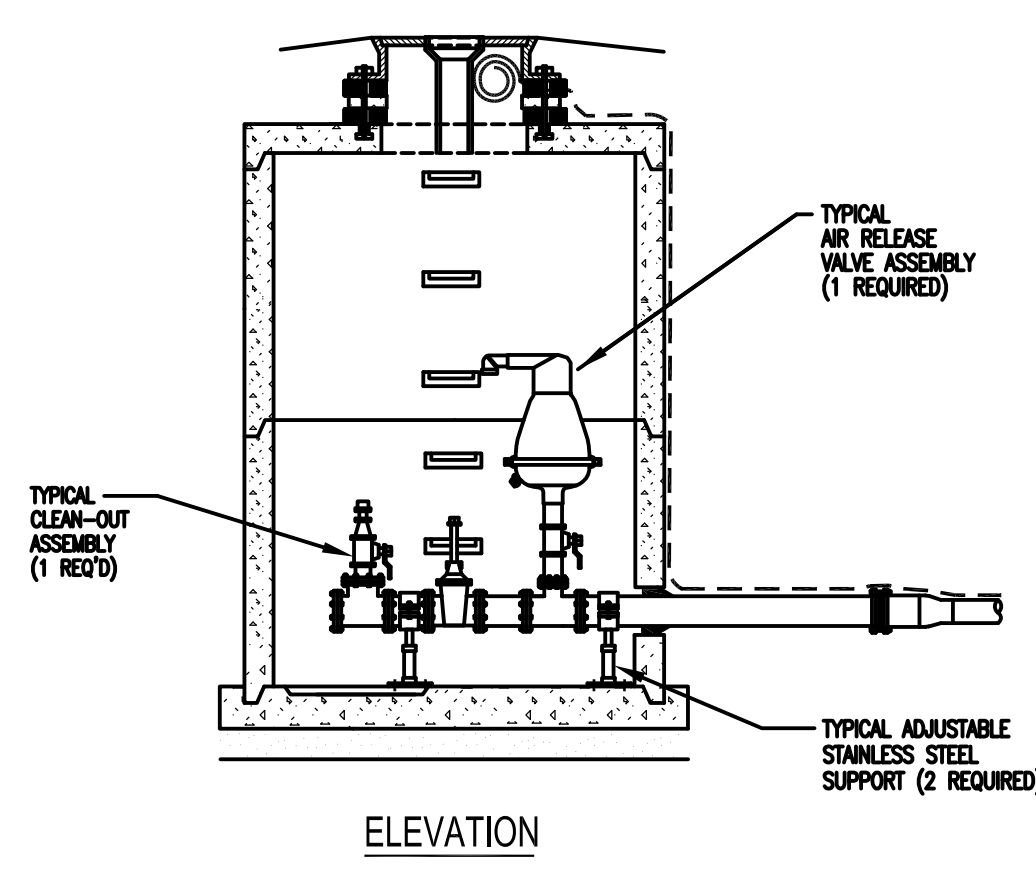
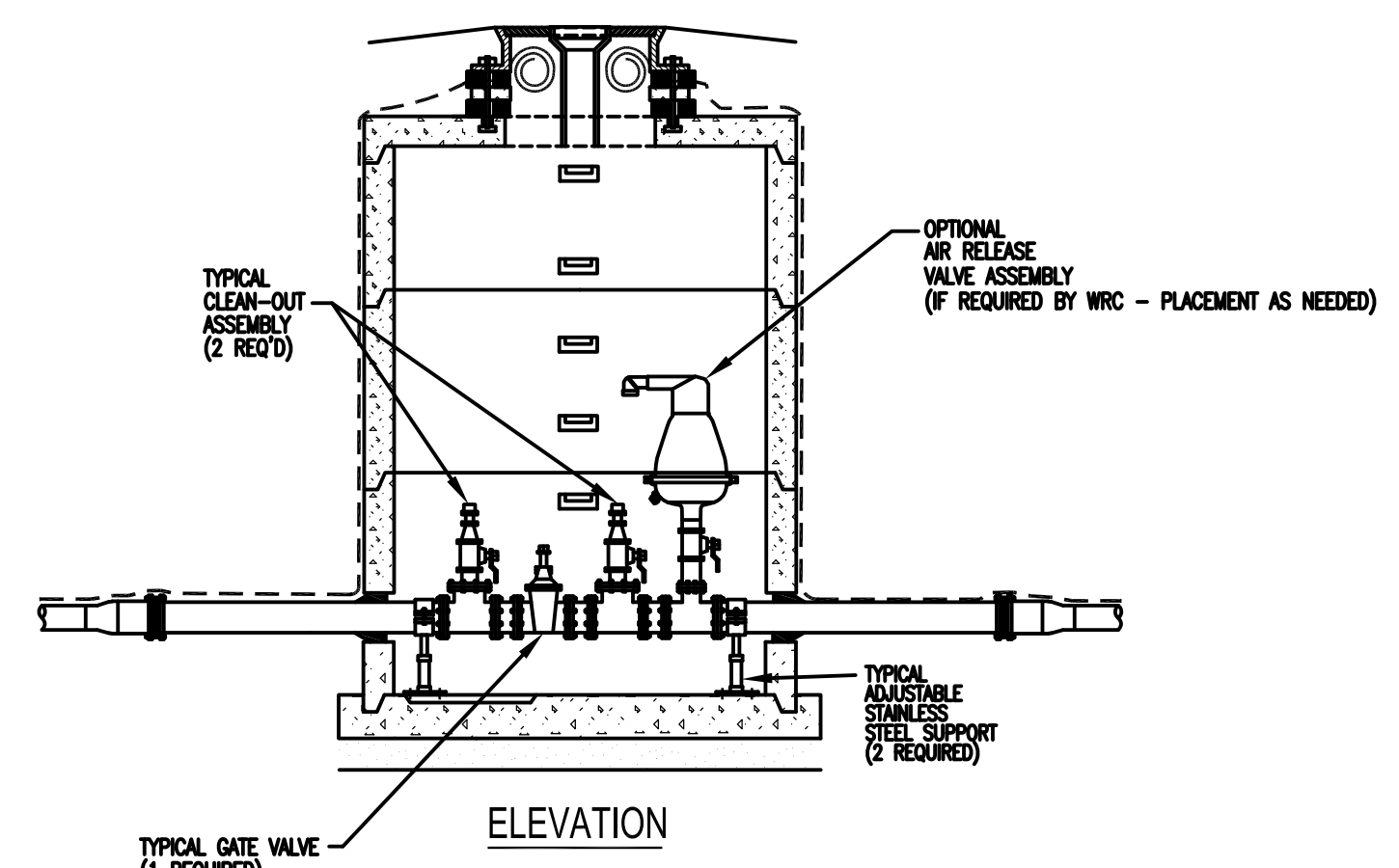
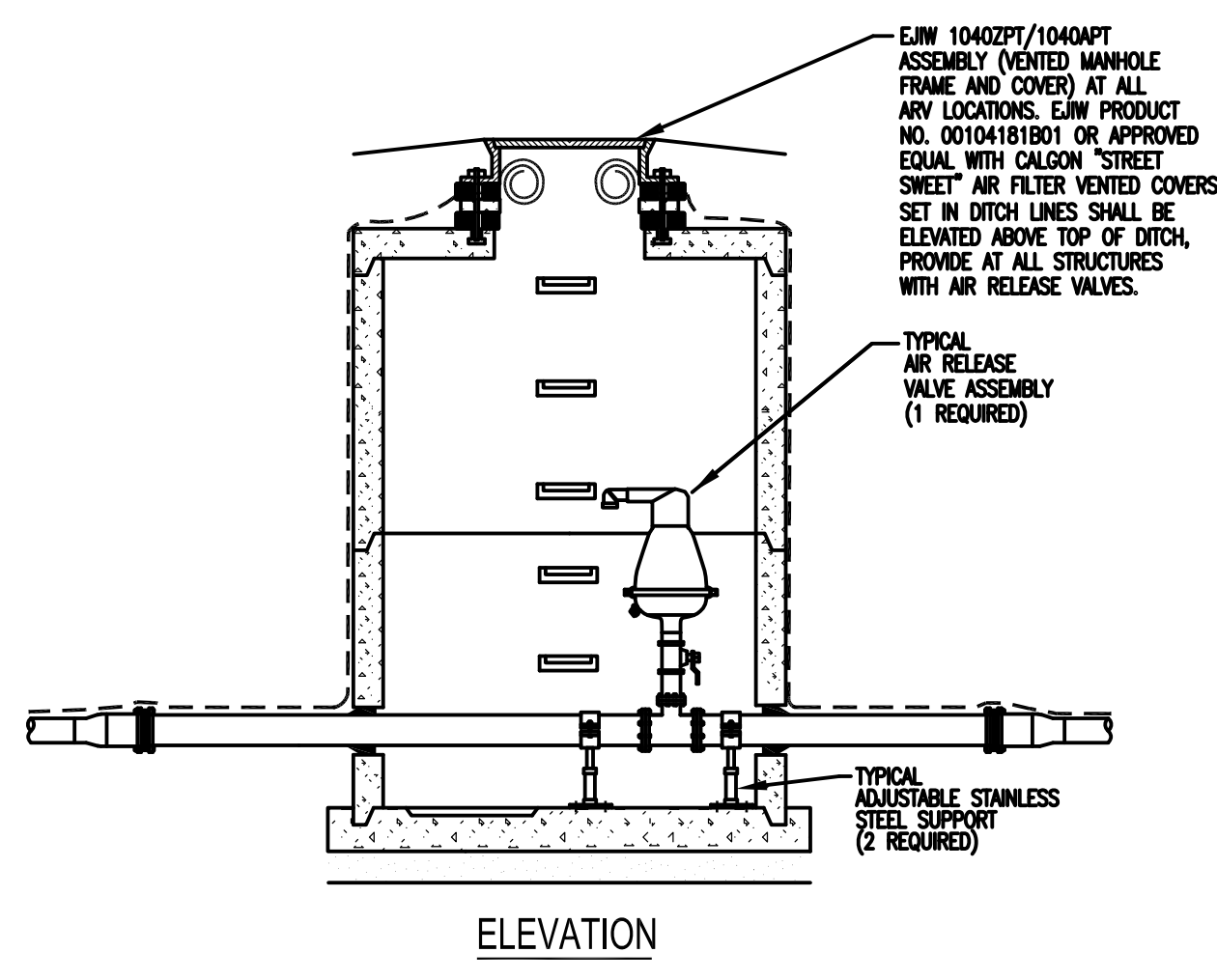


TYPICAL STRUCTURE DETAIL

BRANCH FLUSHING CONNECTION (BFC) 4 WAY IN WELL

BRANCH FLUSHING CONNECTION (BFC) 3 WAY IN WELL

TERMINAL FLUSHING CONNECTION (TFC) IN WELL



AIR/VACUUM RELEASE VALVE (ARV) IN WELL

INTERMEDIATE FLUSHING CONNECTION (IFC/OPTIONAL ARV) IN WELL

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

TAPPING SLEEVE & VALVE (TSV) IN WELL

LOW PRESSURE SANITARY SEWER DETAILS AND NOTES

REVISION BLOCK			
Rev.	By	Date	Description
1	OS	4-15-13	APPROVED BY ENGINEERING STANDARDS COMMITTEE
2	AB	4-15-13	APPROVED BY ENGINEERING STANDARDS COMMITTEE
3	AB	8-28-22	UPDATED TSV DETAIL
4			

ORIG. DATE: 05/15/2013
 SCALE: NONE
 DESIGNED BY: WRC
 DRAWN BY: WRC Mapping

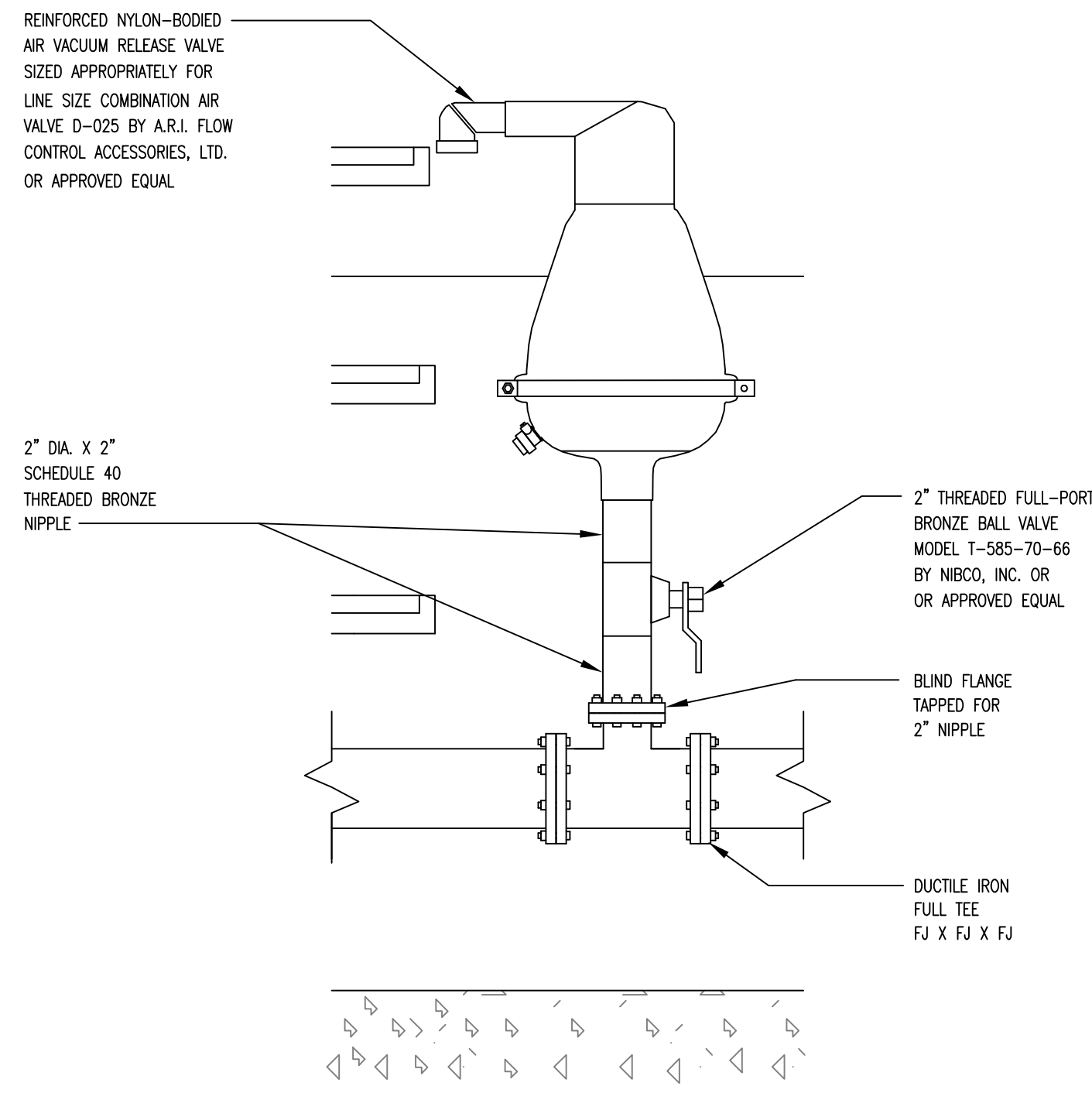
WRC
 WATER RESOURCES COMMISSIONER
 Jim Nash

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

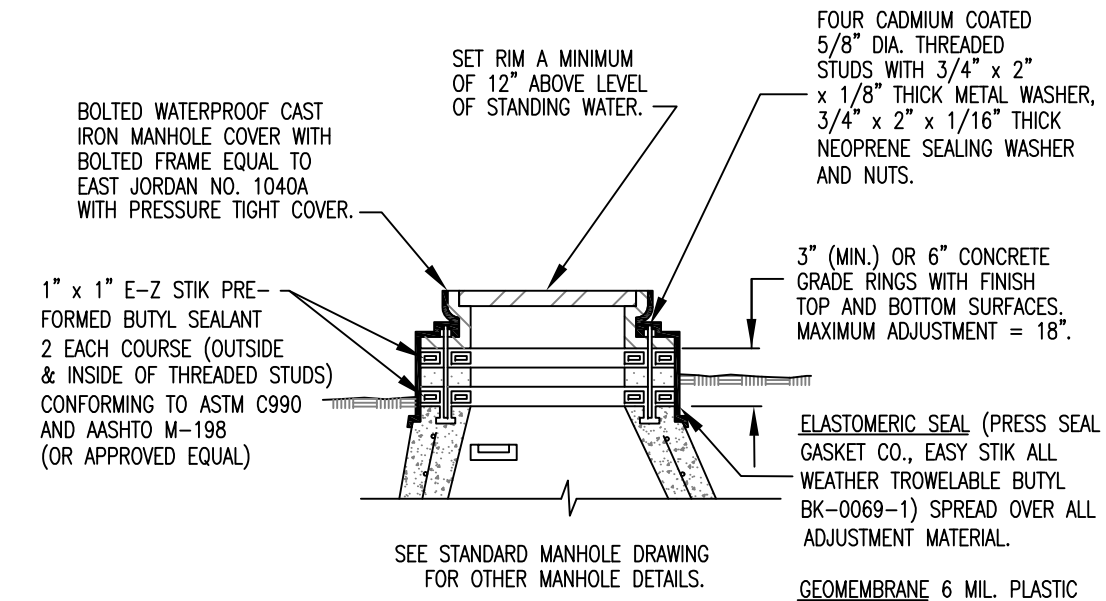
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CONSTRUCTION NOTES

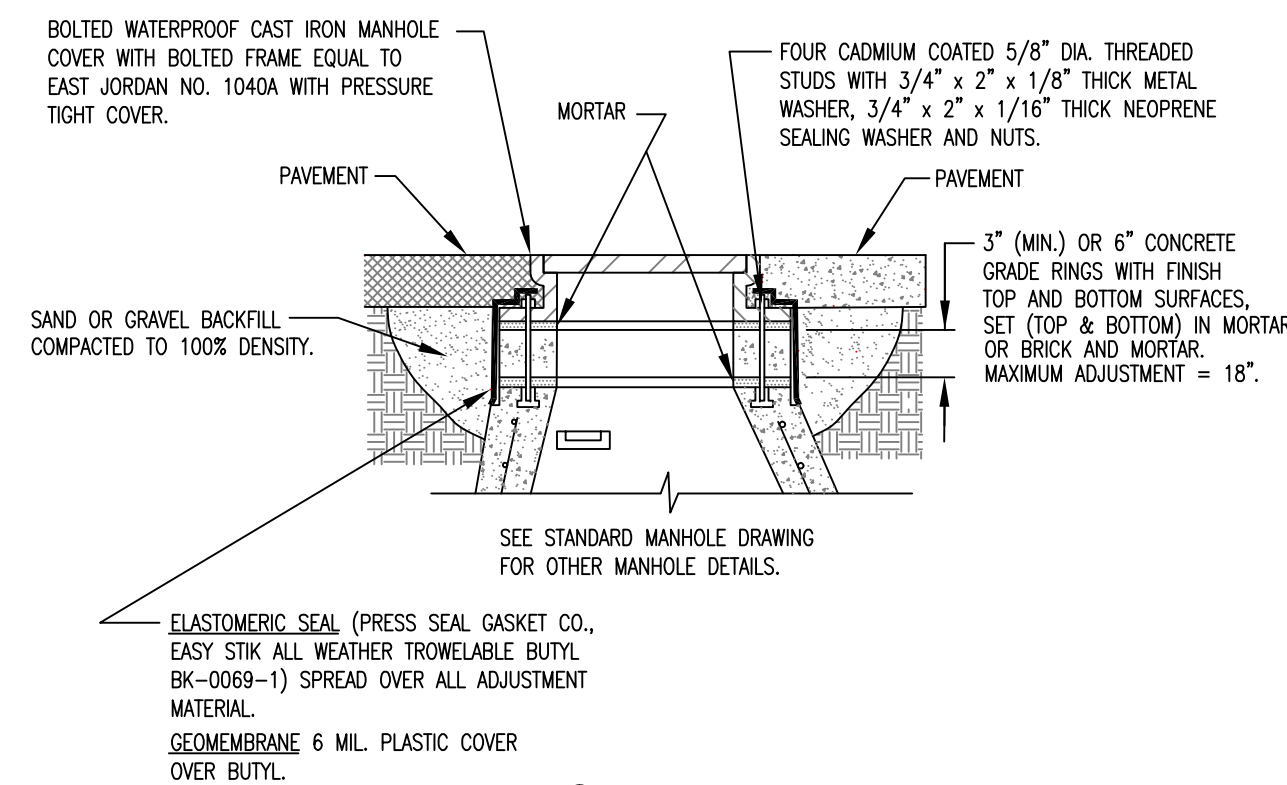
1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE LOCAL UNIT OF GOVERNMENT AND THE OAKLAND COUNTY WATER RESOURCES COMMISSIONER (WRC). ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY A PROFESSIONAL ENGINEER PROVIDED BY, OR CAUSED TO BE PROVIDED BY THE LOCAL UNIT OF GOVERNMENT.
2. 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.
3. 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.
4. TAPS TO EXISTING MANHOLES SHALL BE MADE BY CORING. BLIND DRILLING IS ONLY PERMITTED WITH PRE-APPROVAL FROM THE WRC OFFICE.
5. 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.
6. 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.
7. 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.)
8. NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE, OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
9. 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.
10. 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).
11. 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.
12. 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).
13. SEE OAKLAND COUNTY LOW PRESSURE SEWER SPECIFICATION (i.e. SECTION NO. 33.33.00) FOR ADDITIONAL REQUIREMENTS.



TYPICAL AIR VACUUM RELEASE VALVE ASSEMBLY



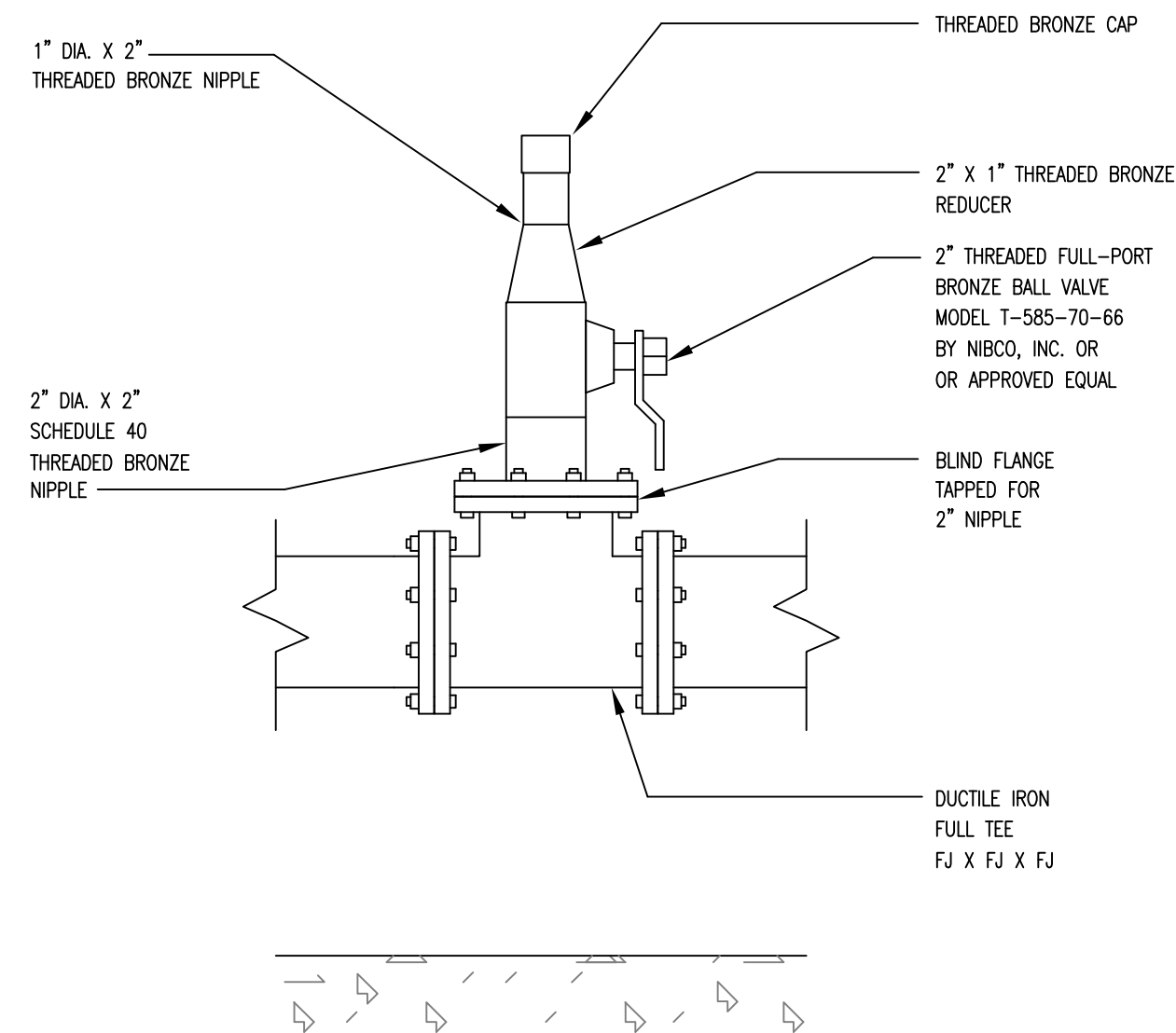
ADJUSTMENT DETAIL FOR MANHOLE TOPS WITHIN FLOOD PRONE AREAS



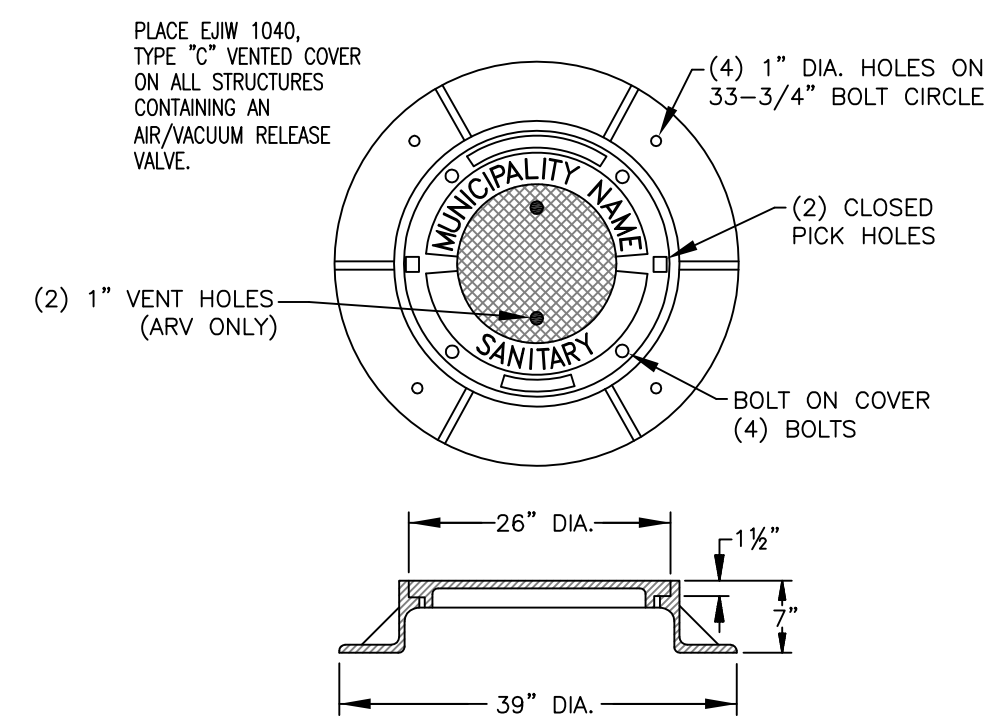
ADJUSTMENT DETAIL MANHOLE TOPS WITHIN PAVEMENT AREAS

MANHOLE RIM ADJUSTMENT CHART

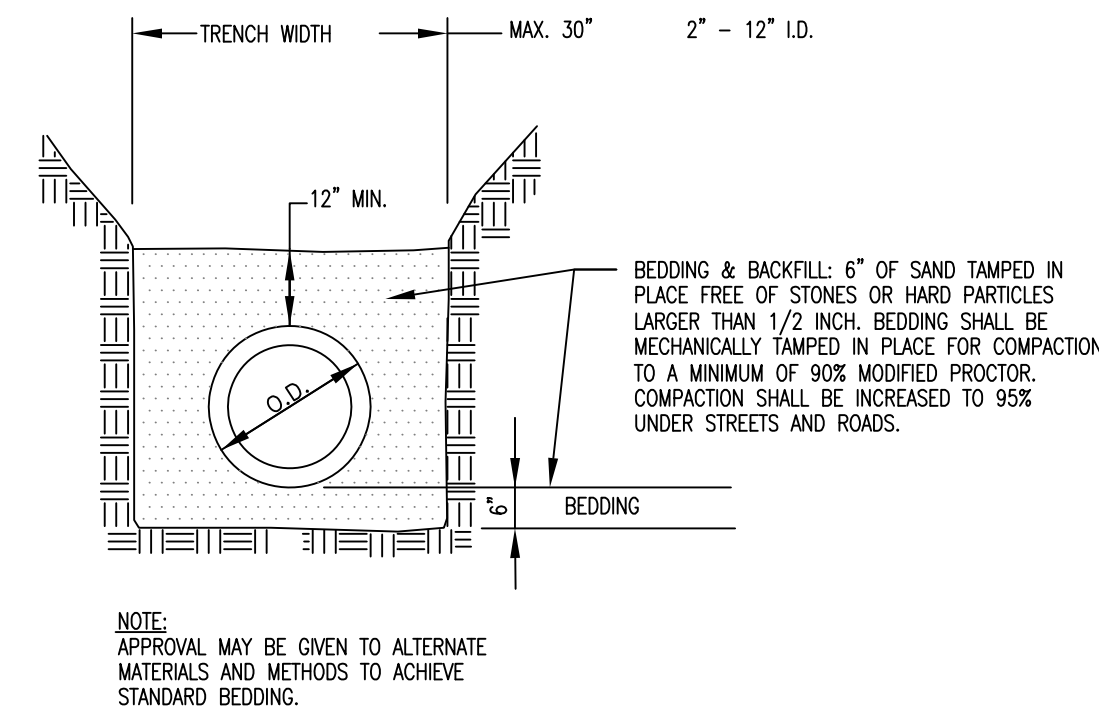
MANHOLE LOCATION	SET RIM ELEVATION
DITCH	12" ABOVE FINISH GRADE
FLOOD PLAIN	12" ABOVE STANDING WATER
GRAVEL ROAD / SHOULDER	6" BELOW FINISH GRADE
PAVEMENT / GREENBELT	FLUSH WITH FINISH GRADE



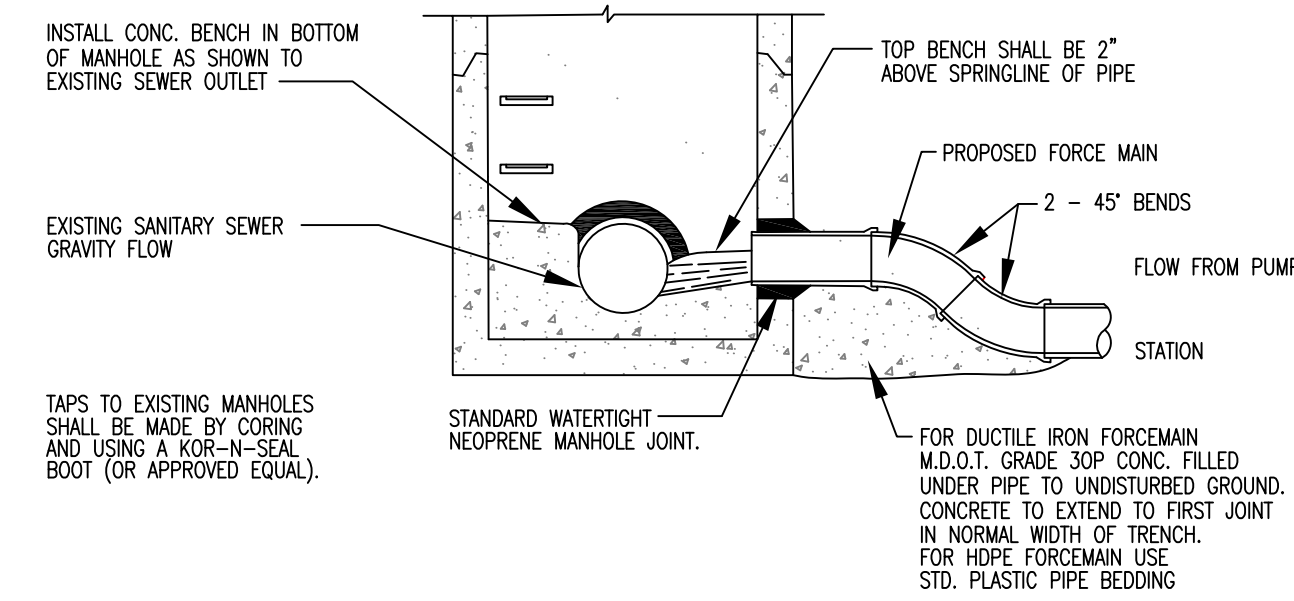
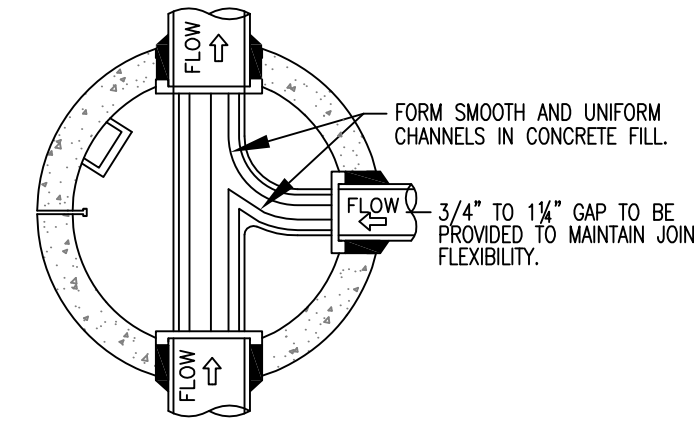
TYPICAL CLEAN OUT ASSEMBLY



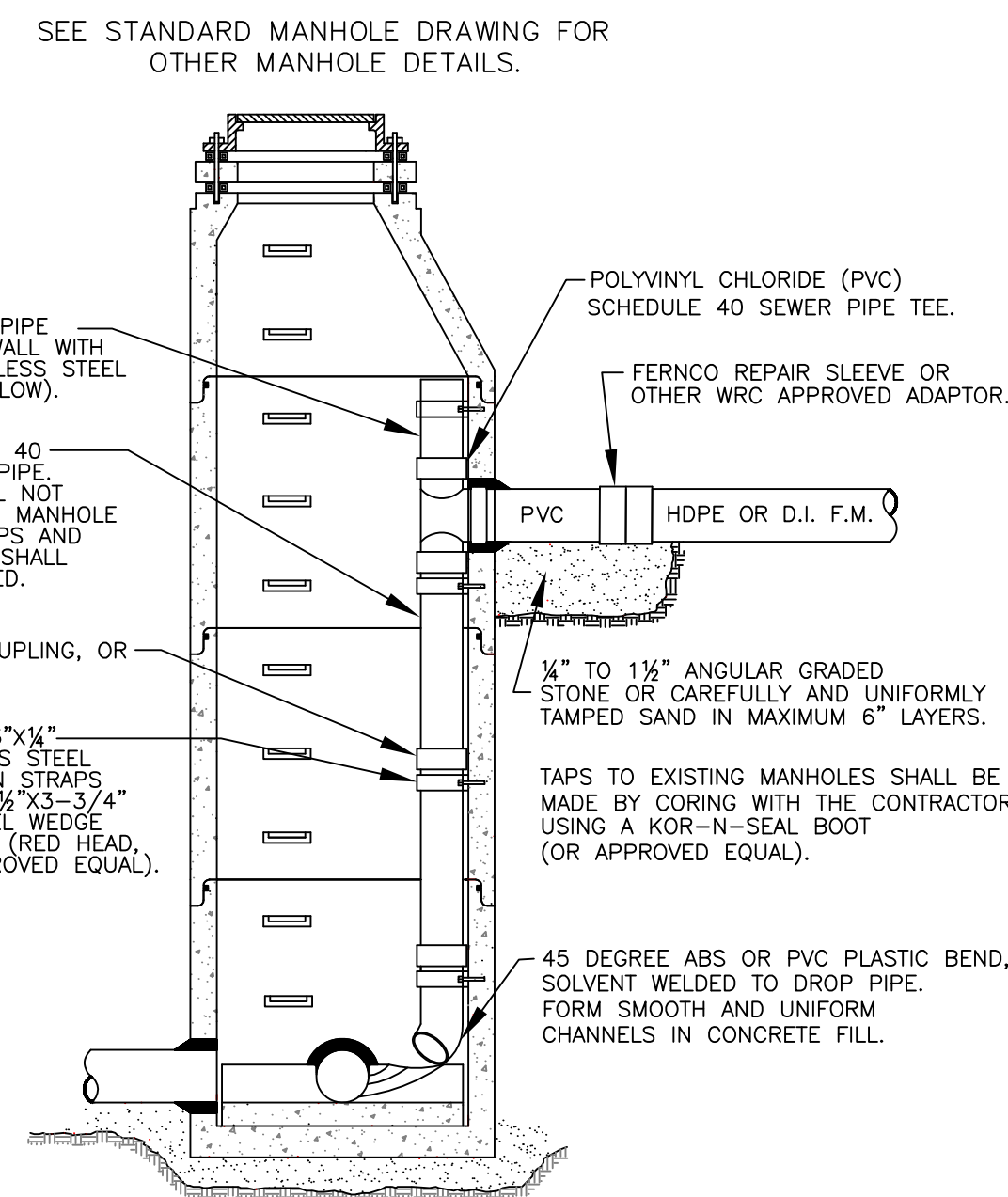
LETTERED MANHOLE COVER FOR LOCAL MUNICIPALITIES



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.

LOW PRESSURE SANITARY SEWER DETAILS AND NOTES

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

ORIG. DATE: 05/15/2013

SCALE: NONE

DESIGNED BY: WRC

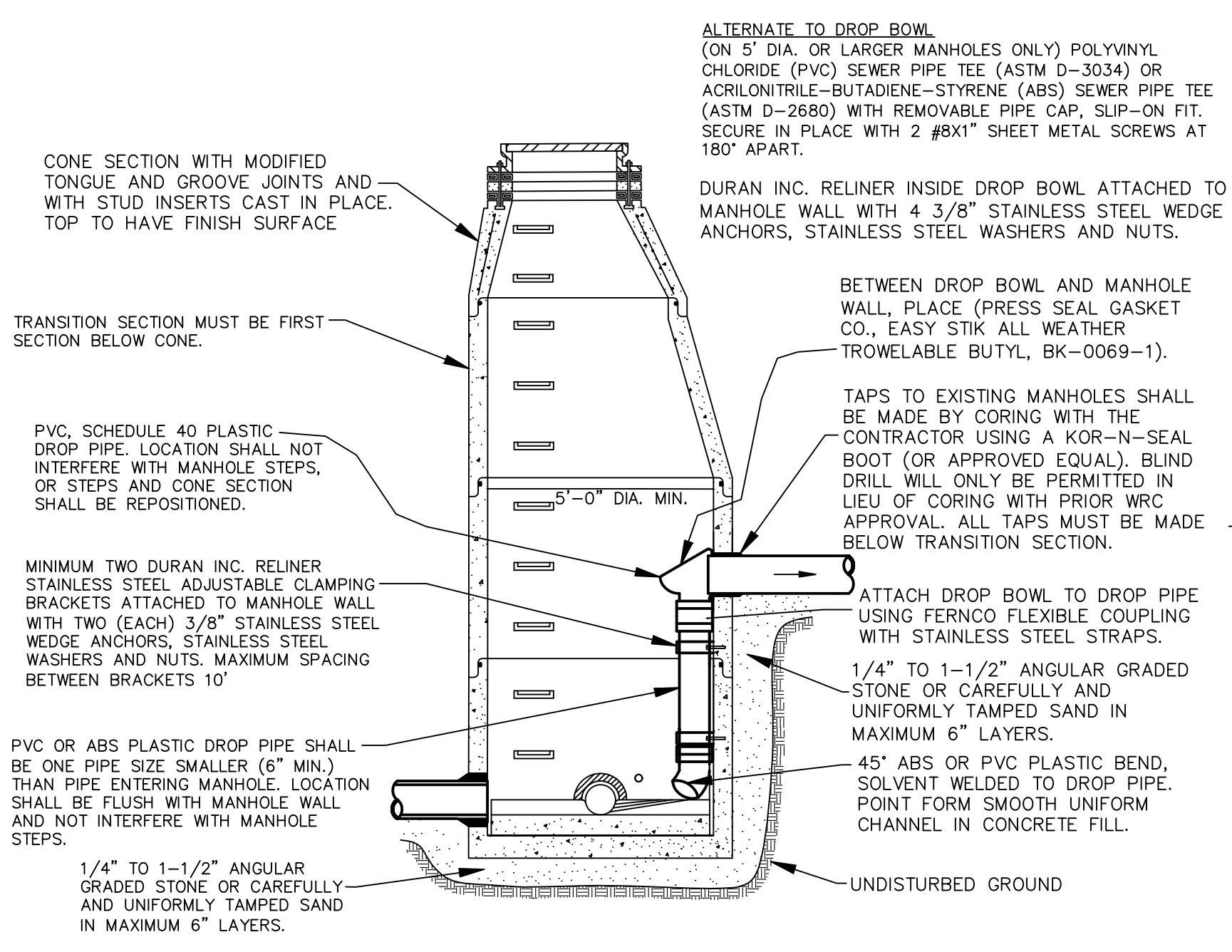
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ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48328-1907

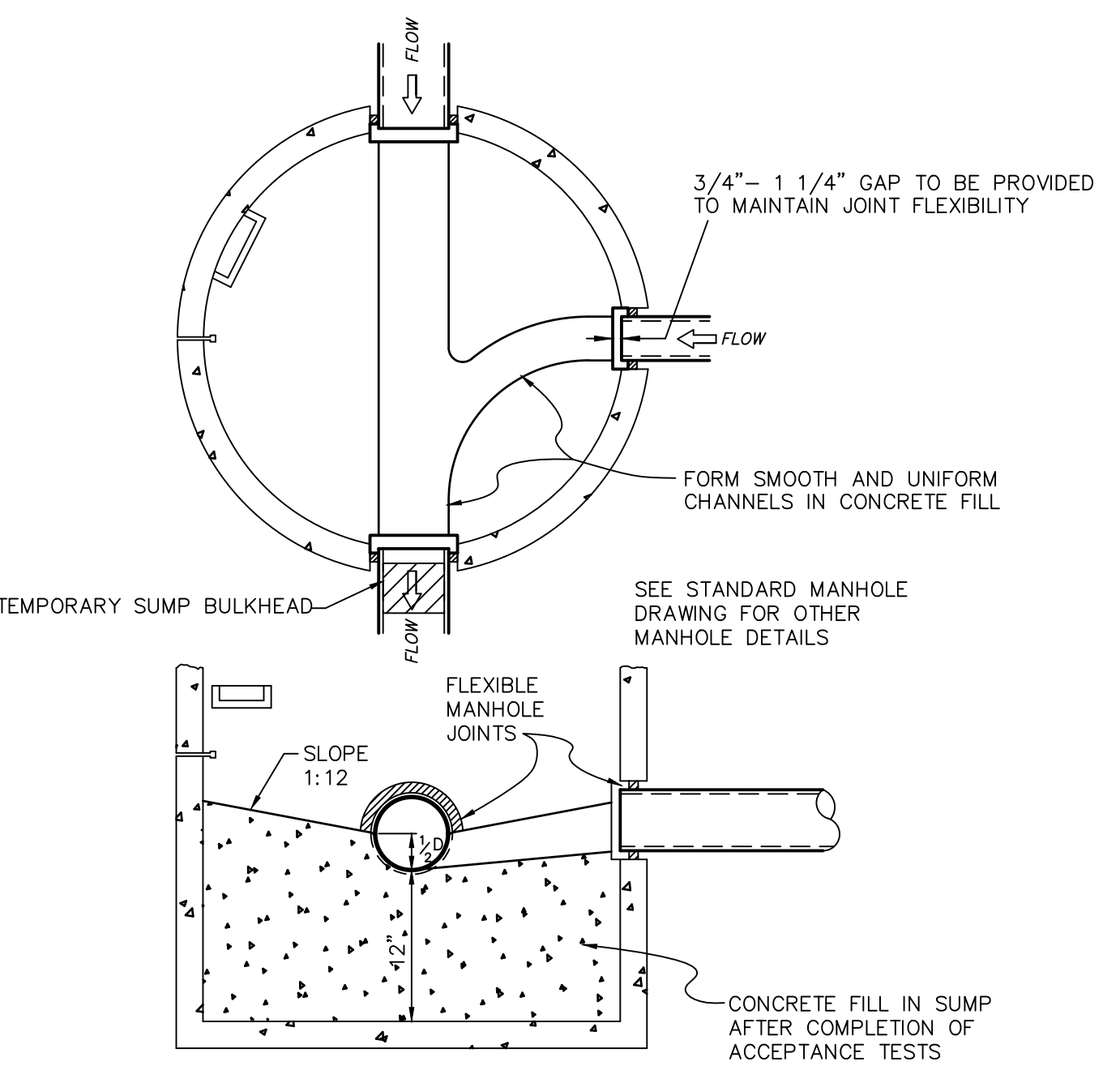
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SANITARY SEWER CONSTRUCTION NOTES

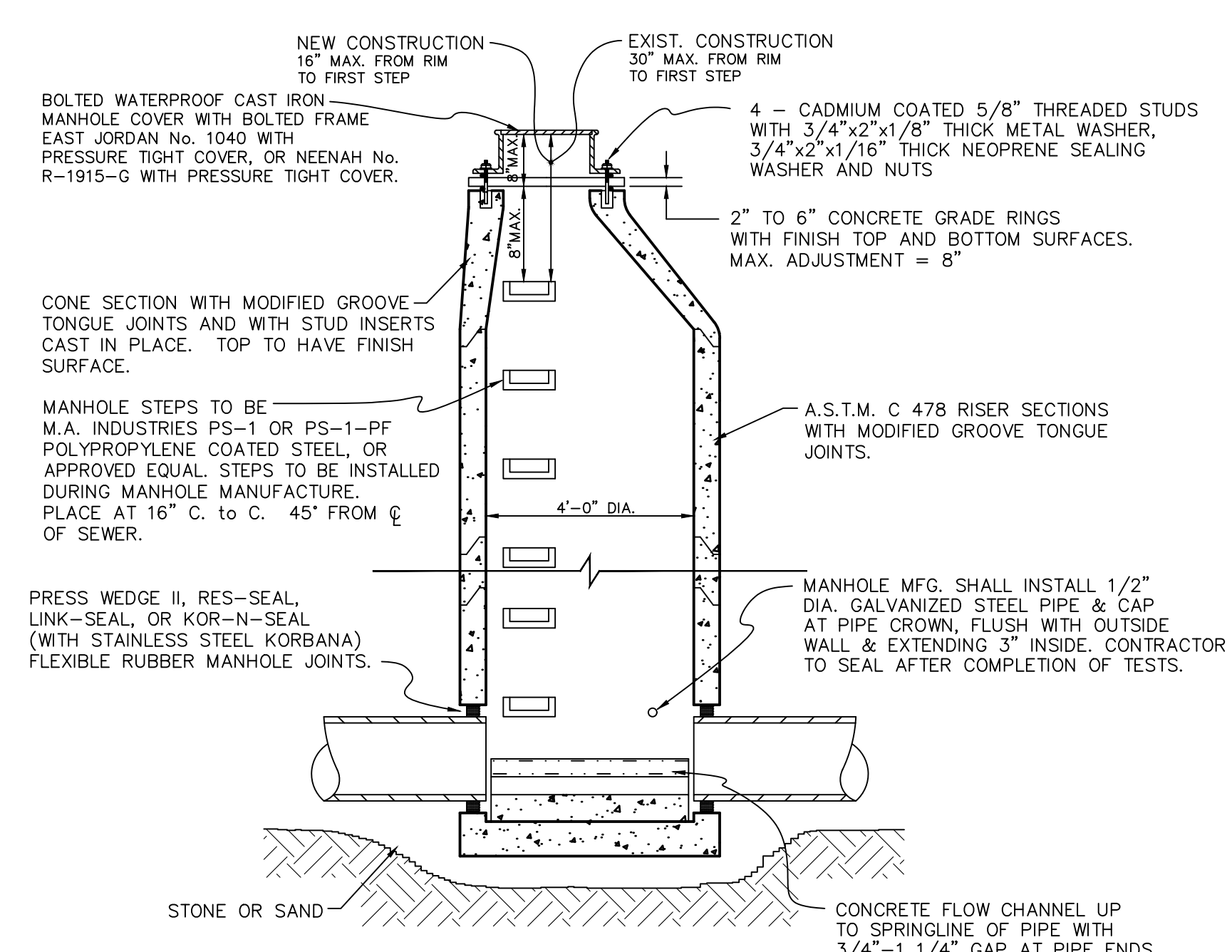
- All construction shall conform to the current standards and specifications of the local unit of government and the Oakland County Water Resources Commissioner (OCWRC). All sanitary sewer construction shall have full time inspection supervised by a professional engineer provided by or caused to be provided by the local unit of government.
- At all connections to Oakland County Water Resources Commissioner's sewers or extensions, and before start of construction, the Contractor must obtain a Sewer Inspection Permit issued by the OCWRC. Gravity sewer permit charges are \$250.00 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."



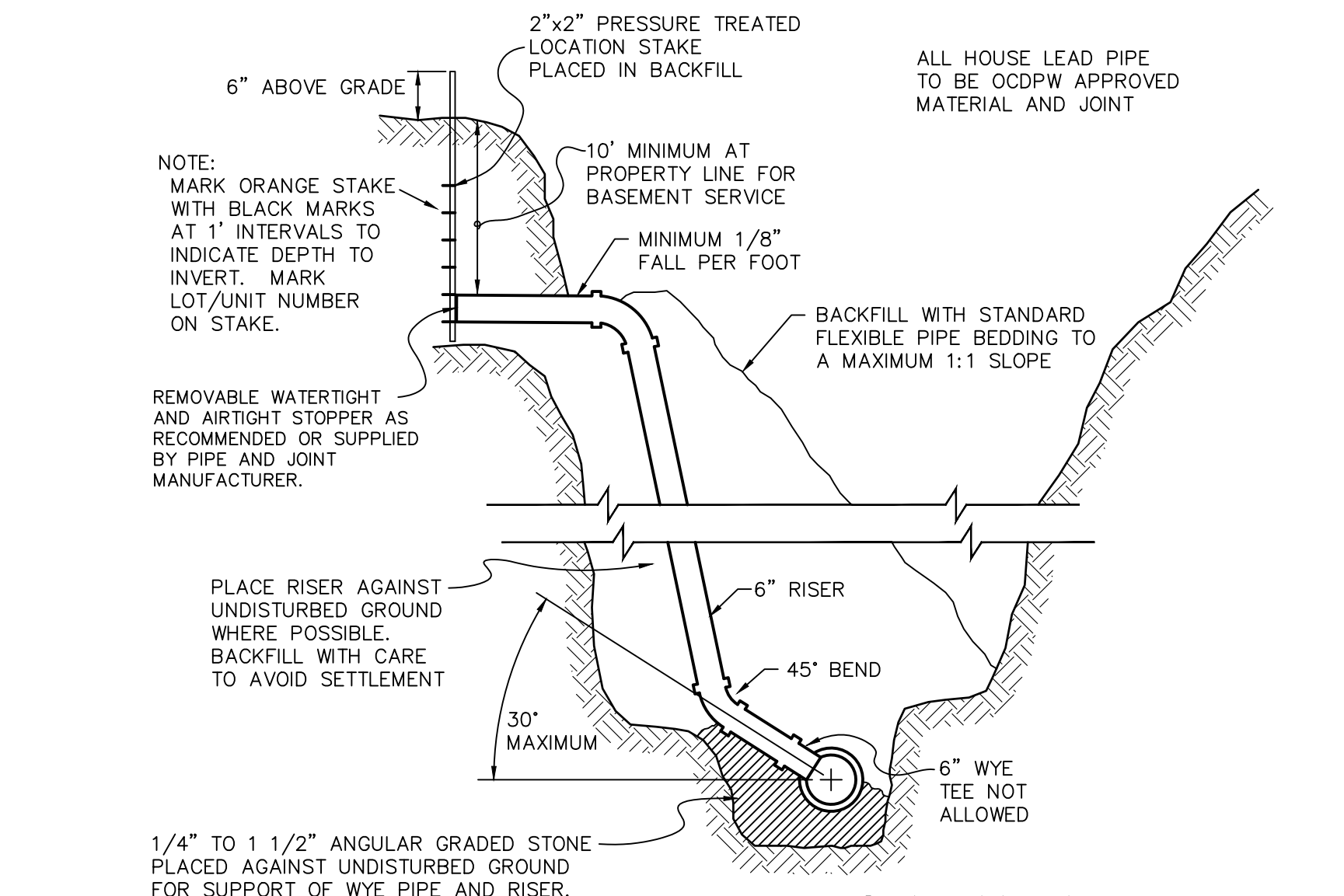
INTERIOR DROP CONNECTION



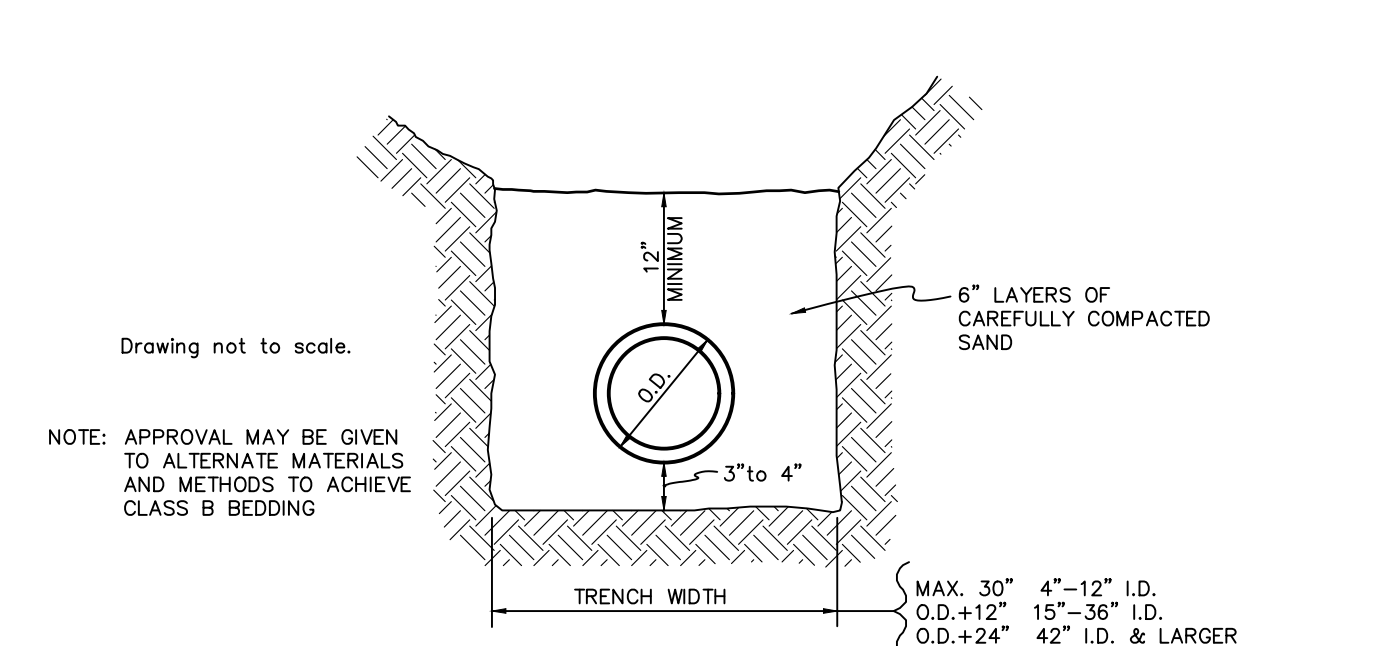
SUMP MANHOLE FOR TESTING, CLEANING, AND DEWATERING



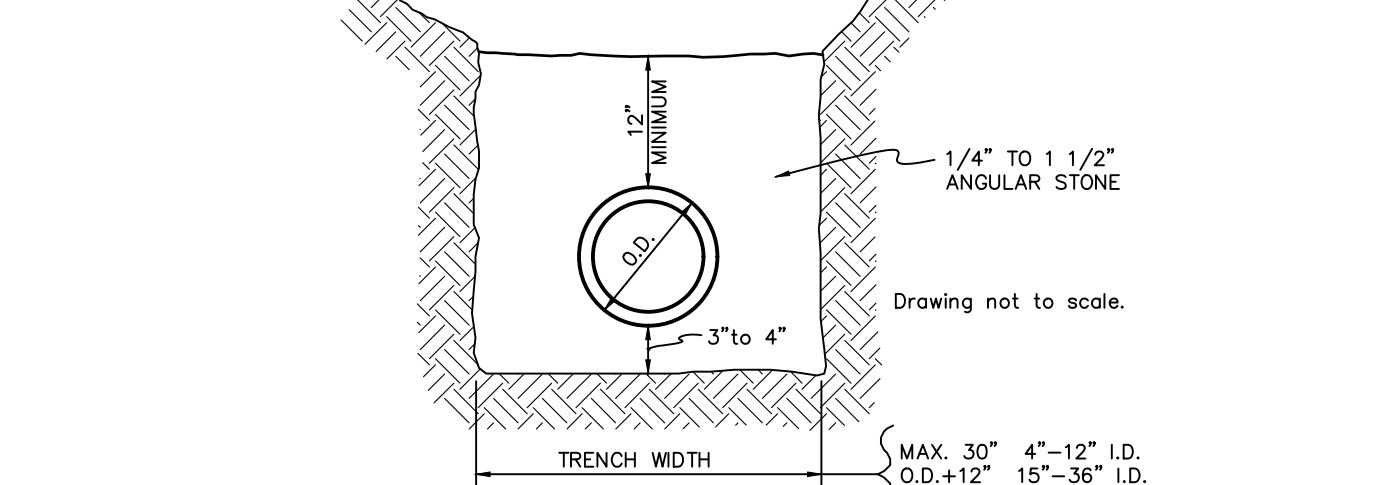
STANDARD MANHOLE ON 8" THROUGH 24" DIAMETER SEWERS



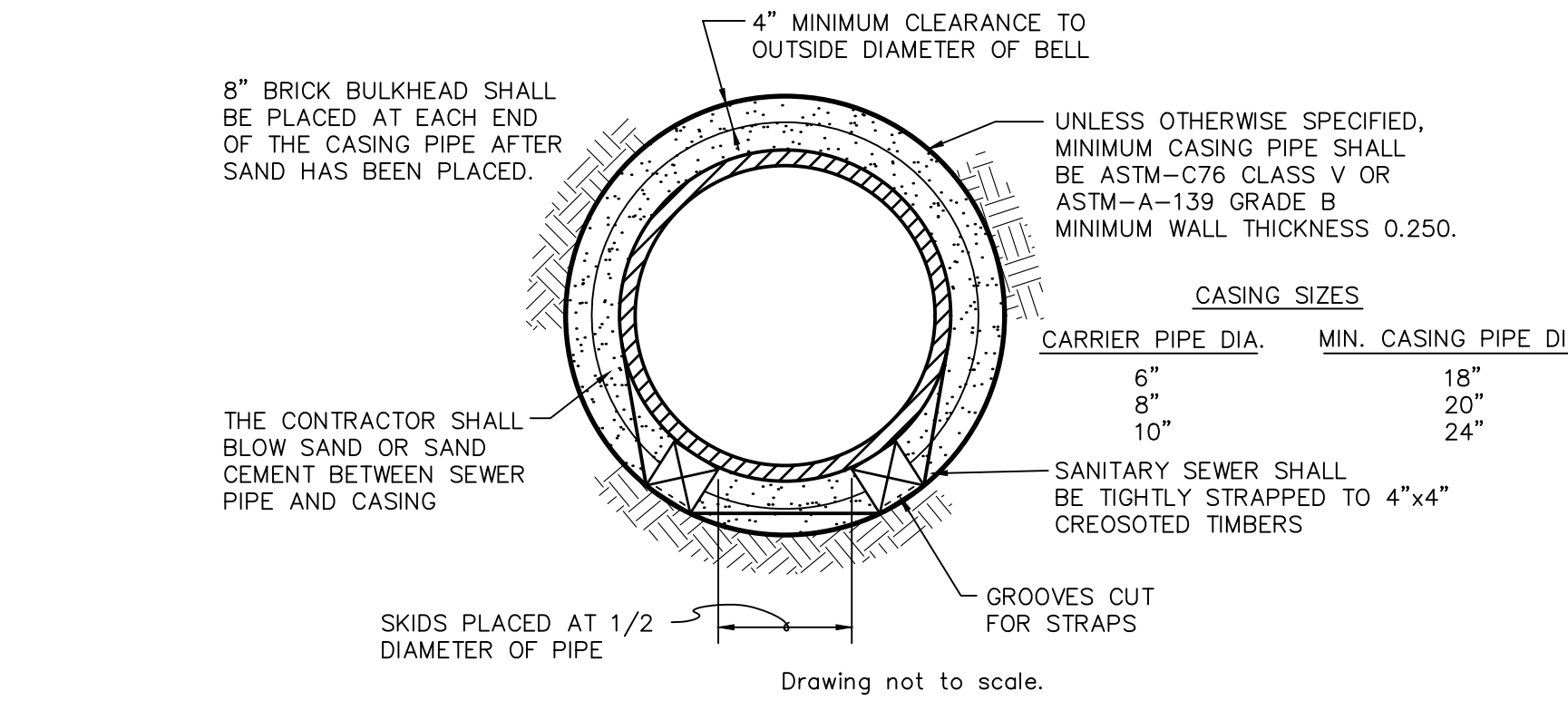
HOUSE/BUILDING LEAD DETAIL



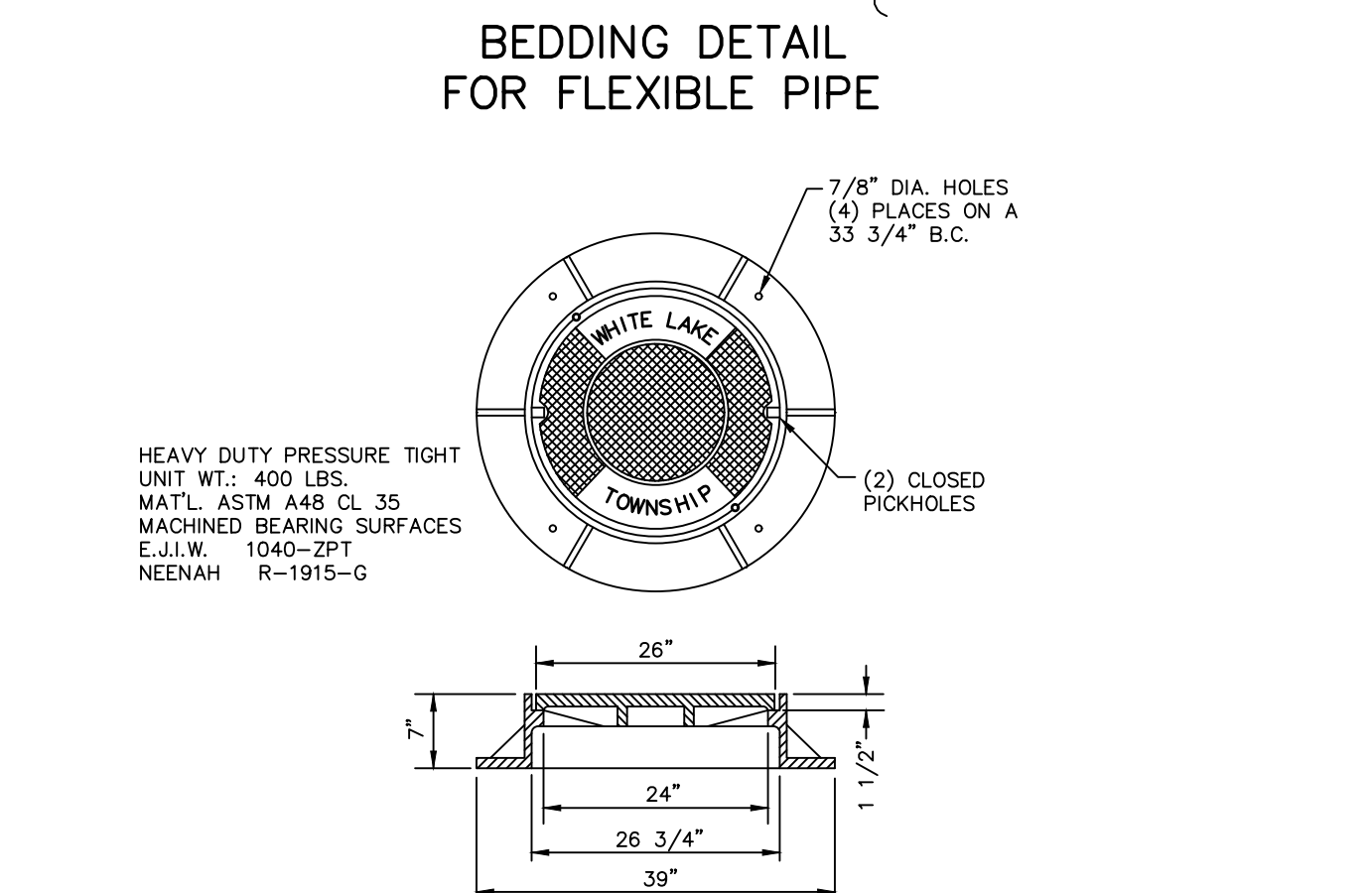
BEDDING DETAIL FOR RIGID PIPE (CLASS B)



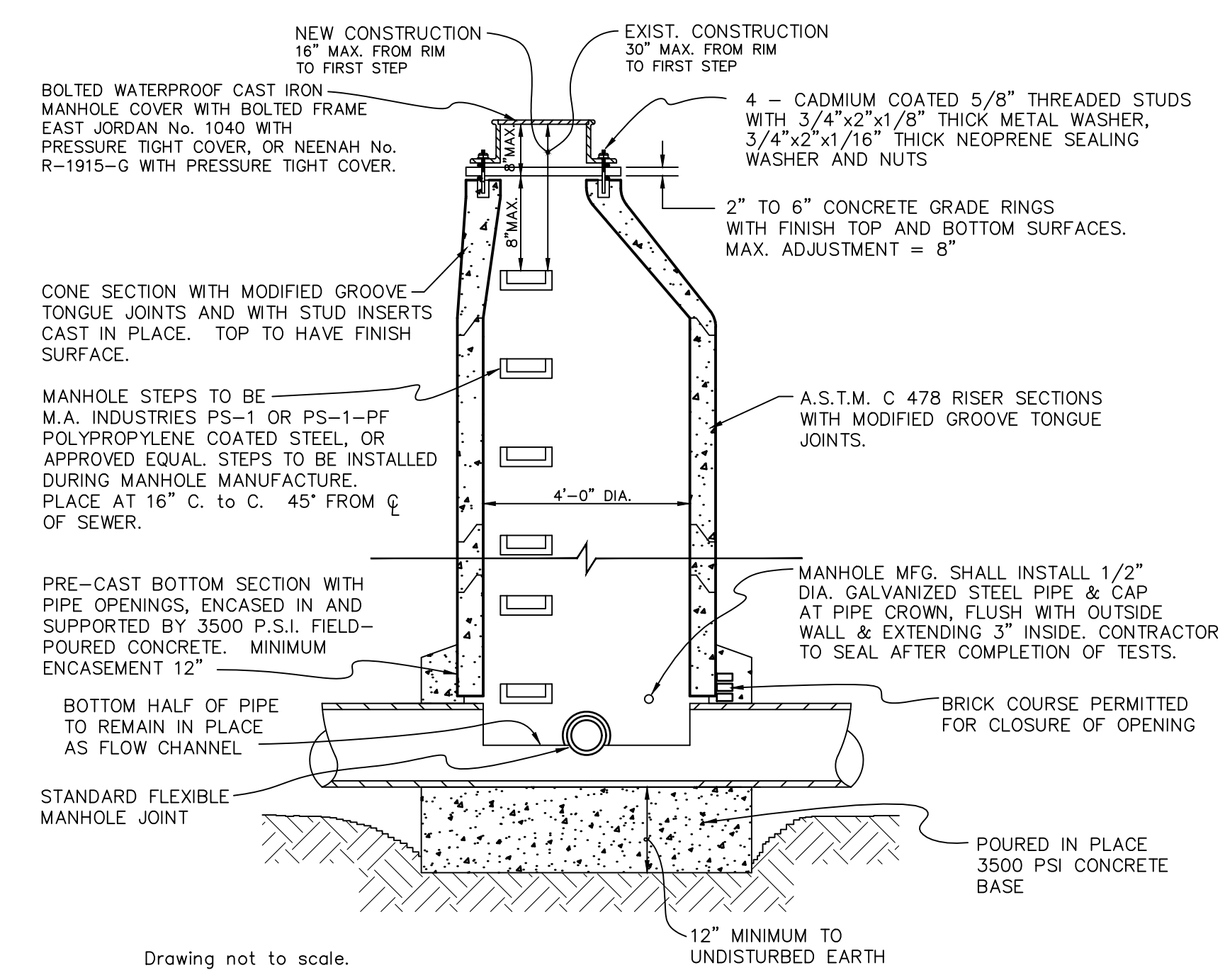
BEDDING DETAIL FOR FLEXIBLE PIPE



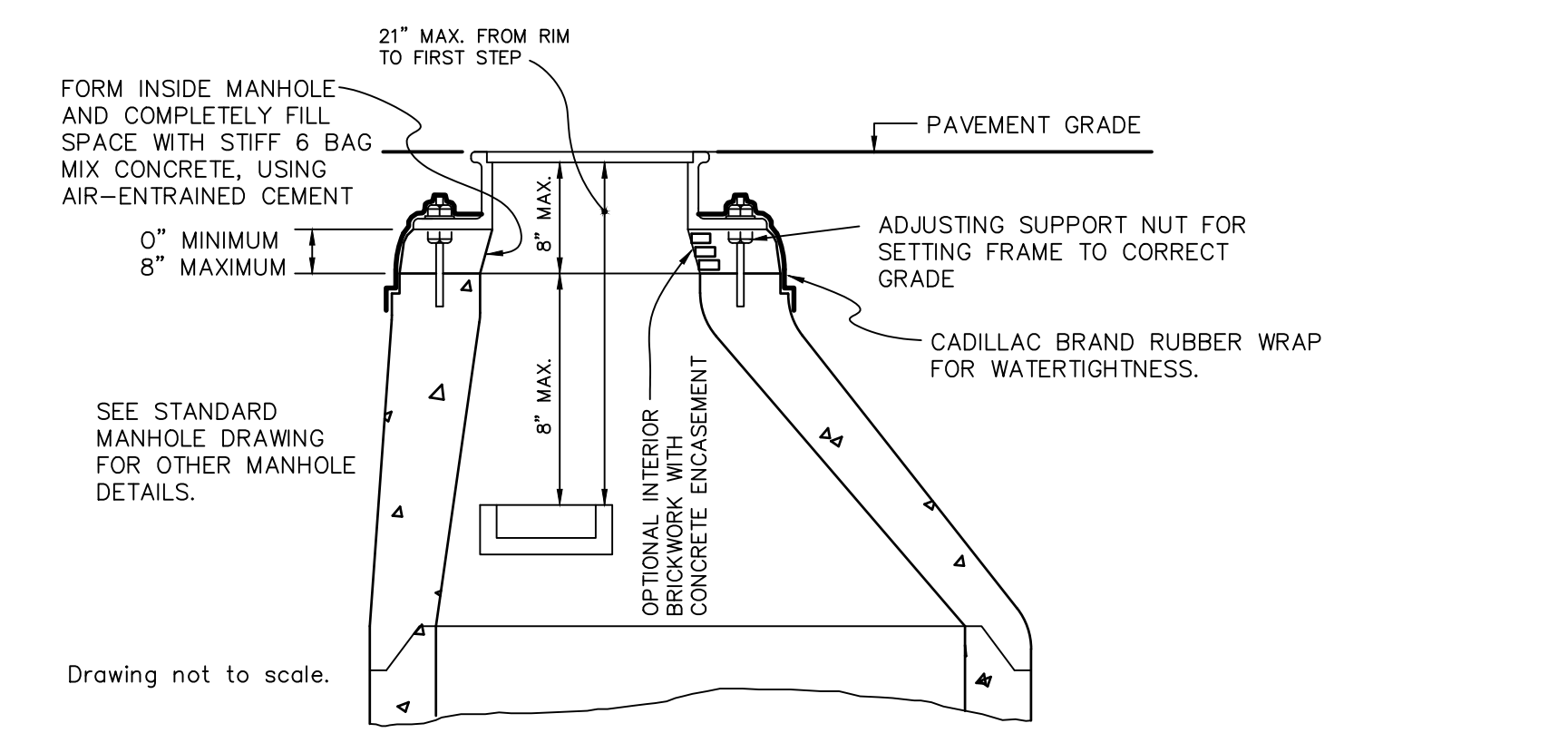
PIPE BARREL SUPPORT FOR SEWER



MANHOLE COVER & FRAME



SKETCH OF MINIMUM MANHOLE REQUIREMENTS ON MANHOLES CONSTRUCTED OVER EXISTING SEWERS



OPTIONAL CONSTRUCTION DETAILS

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						

Johnson & Anderson

4494 Elizabeth Lake Road Waterford, Michigan 48328 tel (248) 681-7800 fax (248) 681-2660

1060 W. Norton Avenue, Suite 7 Muskegon, Michigan 49441 tel (231) 780-3100 fax (231) 780-3115

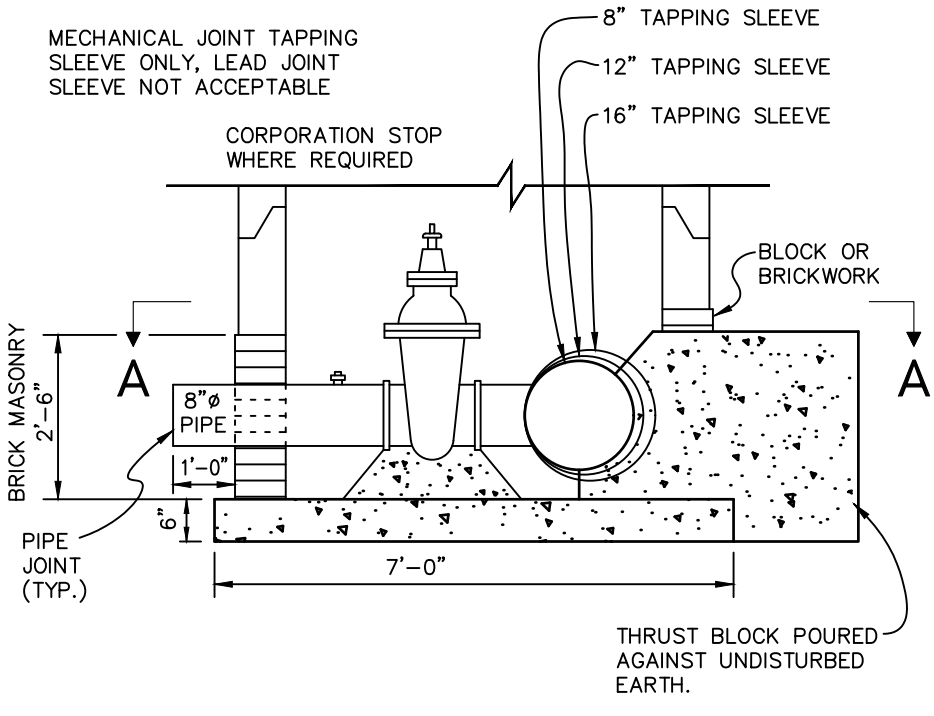
2291 Water Street, Suite 6 Port Huron, Michigan 48060 tel (810) 987-7820 fax (810) 987-7895

White Lake Township

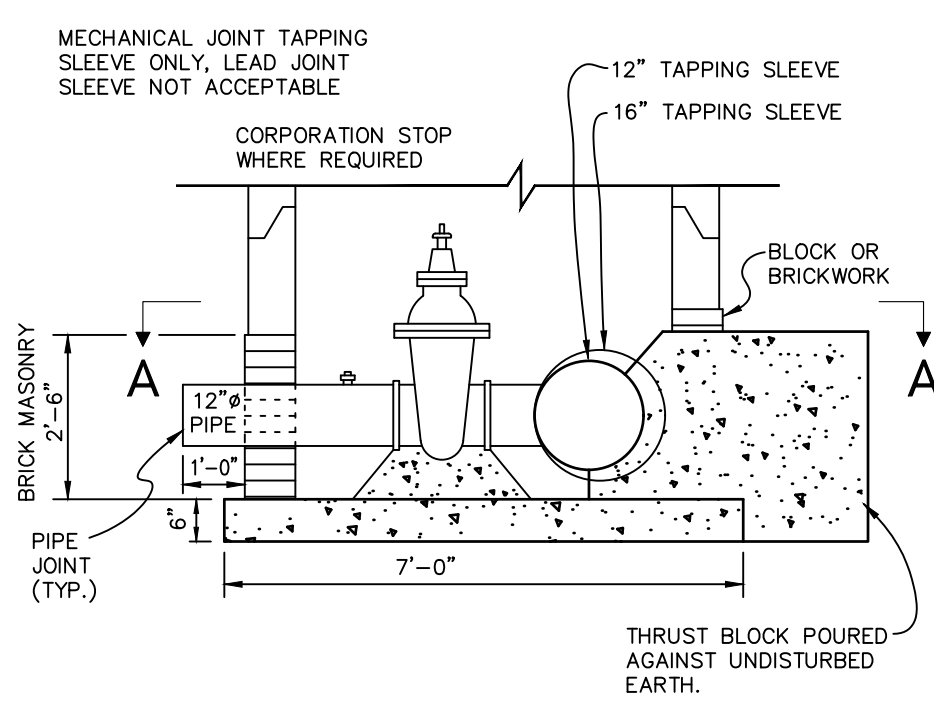
7525 Highland Road (M-59) White Lake, Michigan 48383 248-698-3300

SANITARY SEWER STANDARD DETAILS

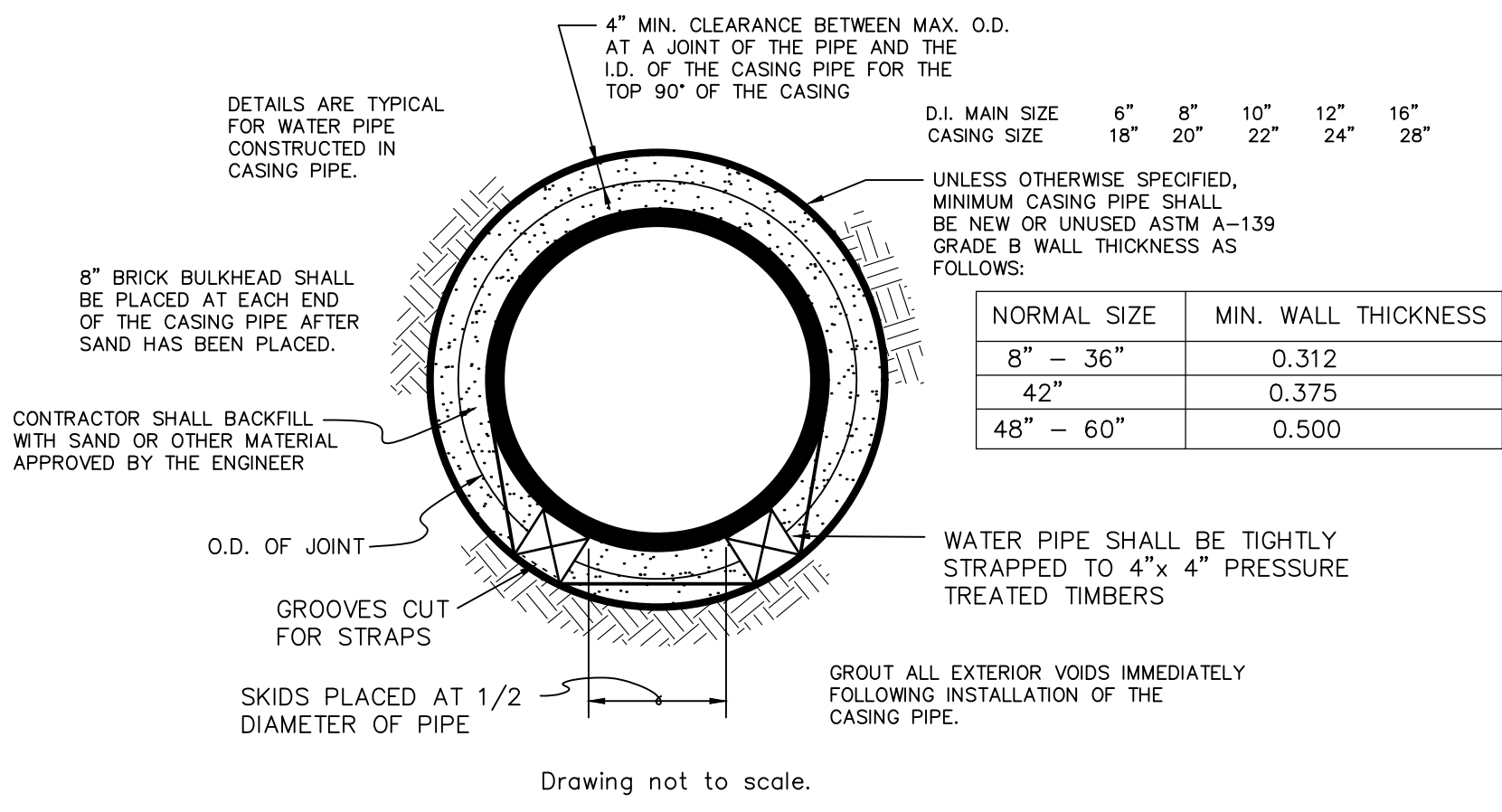
JOB NO. DATE ISSUED 09/11/97 SHEET NO.



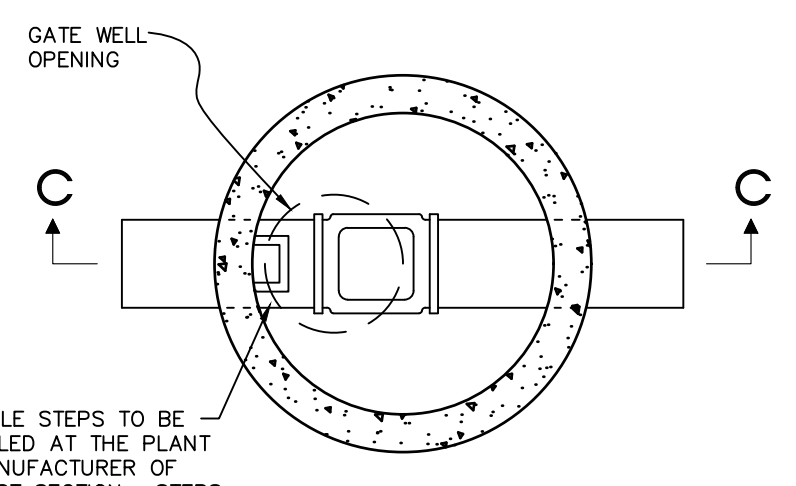
16" X 8", 12" X 8", 8" X 8" TAPPING SLEEVE, VALVE & WELL (B-B)



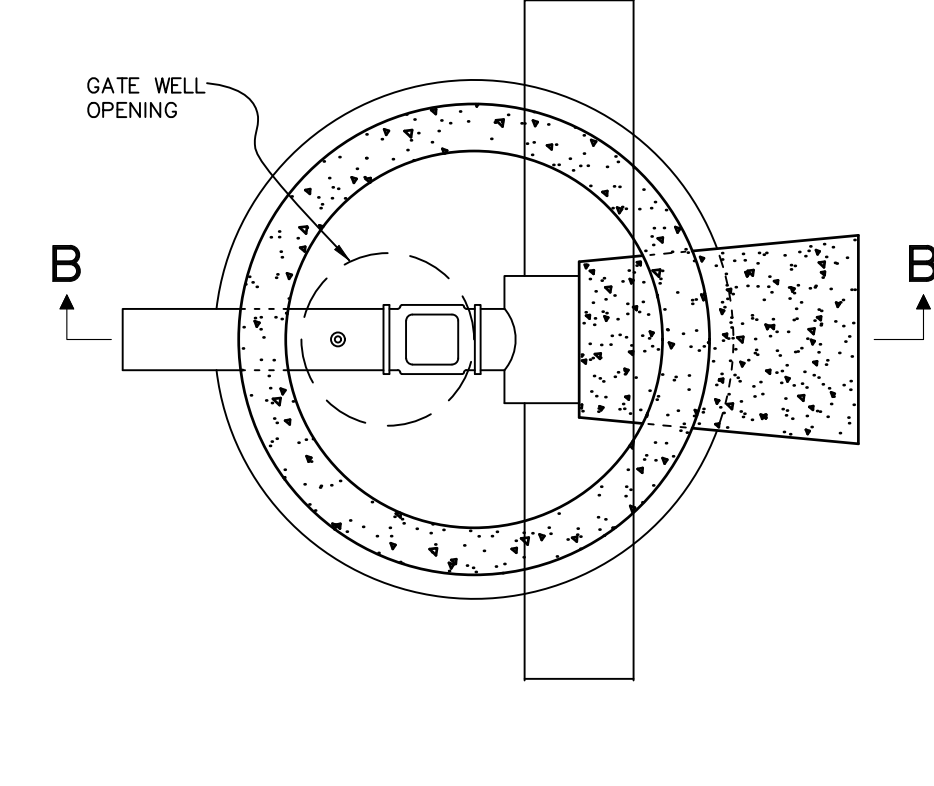
16" X 12", 12" X 12" TAPPING SLEEVE, VALVE & WELL (B-B)



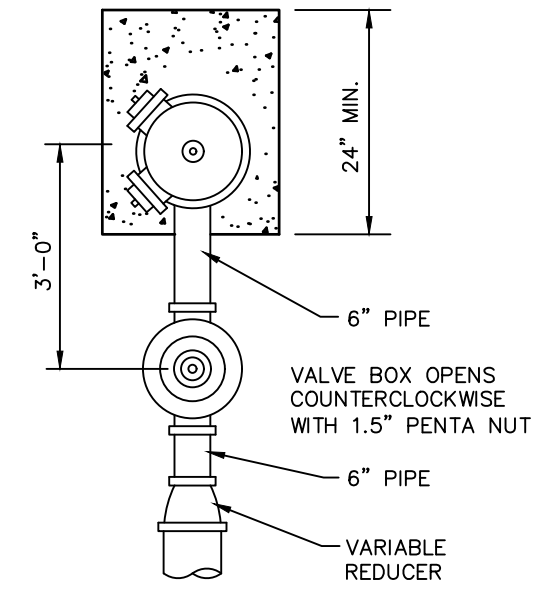
PIPE BARREL SUPPORT FOR WATER MAIN CONSTRUCTED IN CASING



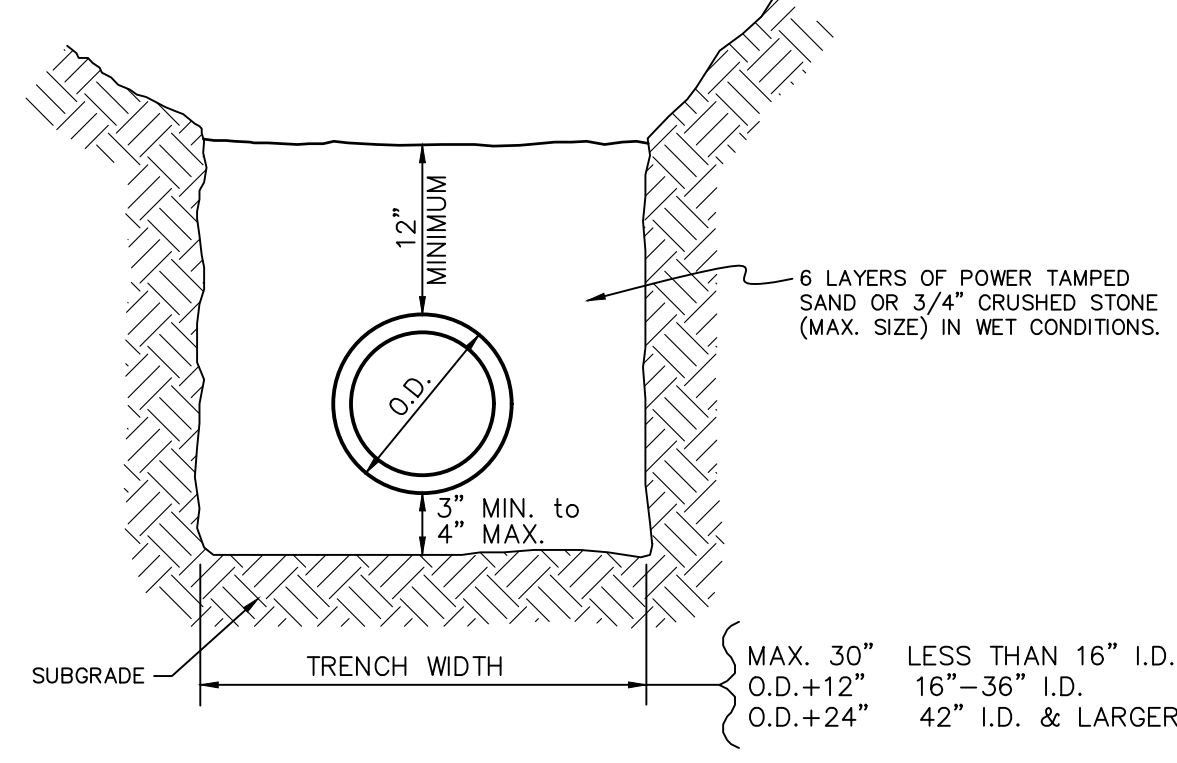
PLAN GATE WELL - TYPICAL (D-D)



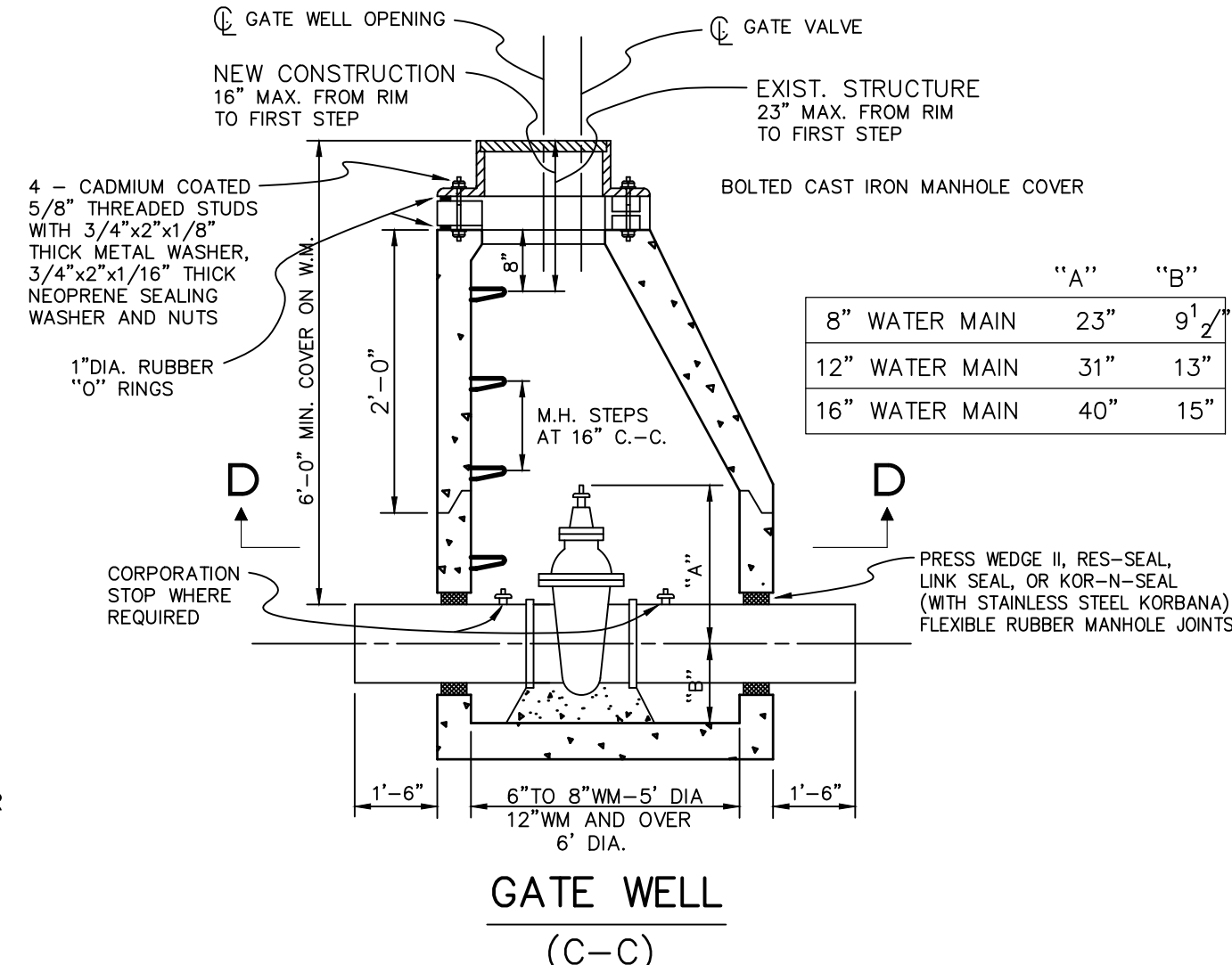
PLAN TAPPING SLEEVE, VALVE & WELL - TYPICAL (A-A)



DETAIL OF HYDRANT SETTINGS

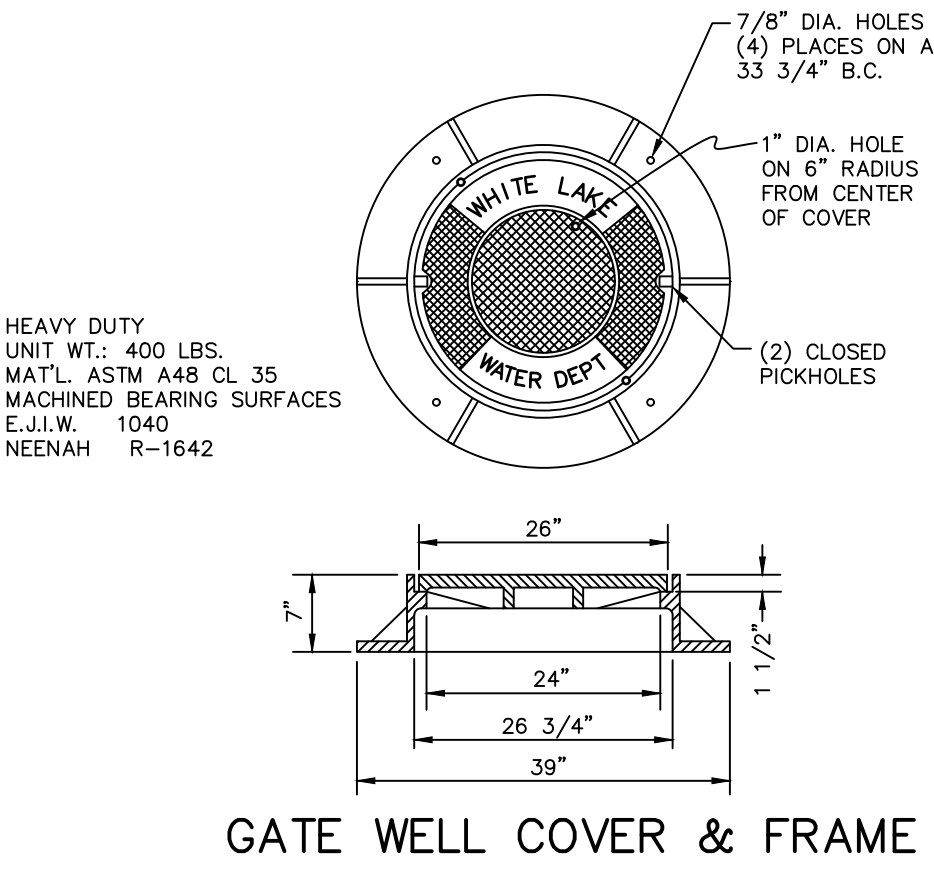


STANDARD BEDDING FOR WATER PIPE

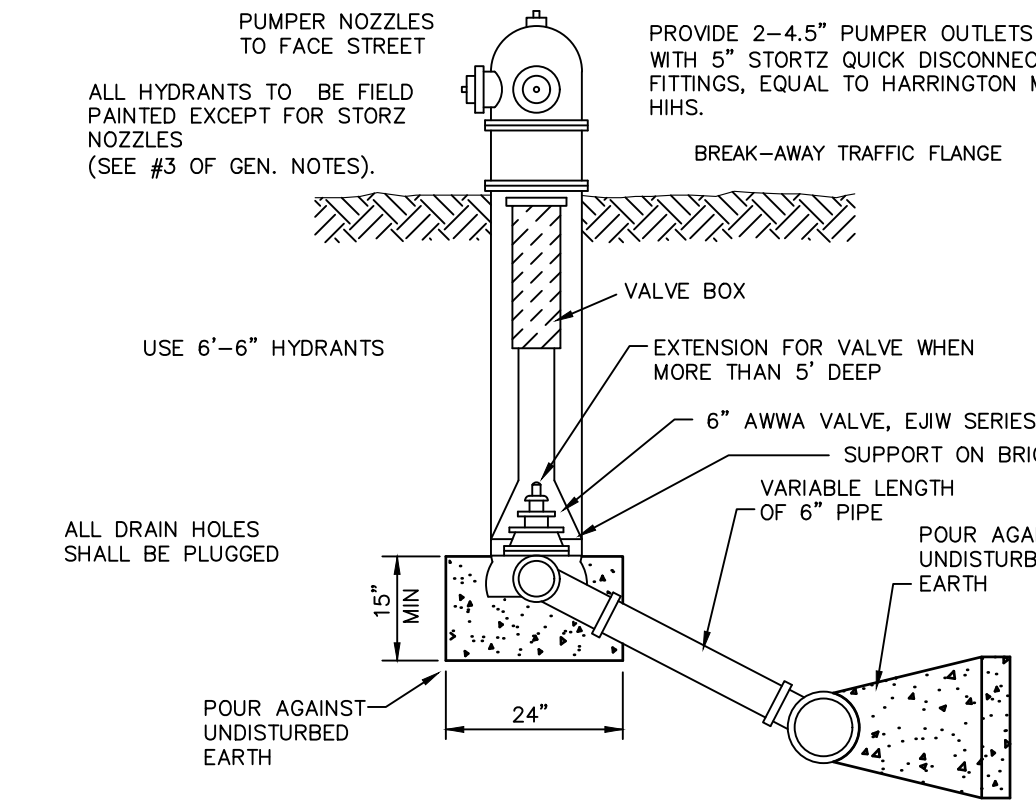


GATE WELL (C-C)

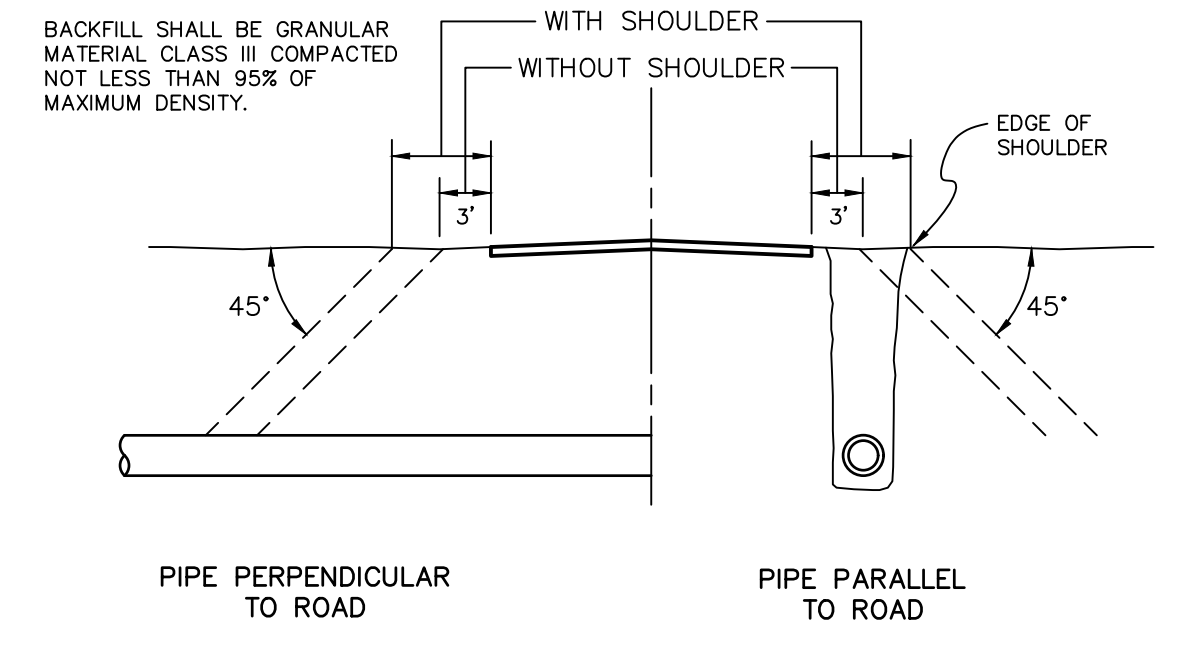
- WATER MAIN NOTES
- All construction procedures and materials used on this project shall conform to White Lake Township current standards and specifications.
 - All hydrants shall be East Jordan Iron Works 5BR-250 traffic model. Self-draining hydrants shall not be used. Valve shall have 1-1/2" pentagon nut and shall open counter-clockwise. Provide two 4.5" Storz quick connect nozzles (Harrington Integral Hydrant Storz, Model HHS) as manufactured by Harrington, Inc. of Erie, PA.
 - All hydrants shall be field painted with a heavy coat of bright safety red polyurethane or alkyd glass enamel, except for the Storz fittings and caps, which shall be left unpainted.
 - Johnson and Anderson, Inc. field personnel will affix to the fixed collar of each Storz connection 1" wide 3M Scotch reflective tape, color coded per NFPA 291 guidelines flow capacity.
 - All water mains shall be ductile iron pipe Class 54, cement lined with push on joints. Mechanical joints allowed only for tapping sleeves, hydrants & hydrant valves. Only Cor-Blue bolts shall be used for assembling mechanical joints. All bands, tees, valves and hydrant tees shall have a poured concrete thrust block as detailed on this sheet. Joints which have thrust blocks bearing on soil of questionable stability shall be fully restrained utilizing Tyler swivel ells and adapters or a system approved by the Township Engineer. HDPE pipe for directional boring, if approved by the Township Engineer, shall meet all of the requirements of the MDEQ and shall be DR9 (200 psi), and shall have two #8 tracer wires, terminated in the nearest gate well at the highest step.
 - Tapping sleeve shall be mechanical joint or approved equal. Ductile iron or Stainless steel are allowed.
 - Specifications shall include direction of operation of all valves. All valves shall be counter clockwise open.
 - All necessary easements shall be provided in the name of White Lake Township before acceptance of the water distribution system.
 - The design engineer shall furnish White Lake Township with one reproducible sets of "As-Built" water main plans or an AutoCAD file upon completion of the job.
 - All required cross-connection devices shall be installed as required by the local plumbing inspector and in accordance with the standards of the Michigan Department of Public Health.
 - Gate well frame and cover shall be as follows: East Jordan heavy manhole cover, base flange type #1040 or Neenah Foundry heavy duty #1642 Manhole frame, solid lid cover shall be non-racking and marked "White Lake Water Department"
 - Gate valves shall be AWWA approved and of a double disc or resilient wedge design with push on joints, 16" gate valves may be mechanical joint provided Cor-Blue bolts are used. All gate valves with operating nuts greater than 5" below ground surface shall be provided with an extension stem. The length of the extension shall be such that it will be within 5' of the ground surface when an extension is used it shall be held in place by an extension stem guide suitably fastened to the wall of the gate well.
 - 1" corporation stops are to be placed on the main at each side of each main line gate valve and at such other locations as may be required by the engineer.
 - All pipe and fittings shall be subjected to a hydro-static pressure test of 150 PSI for a 2 hour duration; Township Engineer must be present. Maximum segment 2000 feet except that longer segments may be tested with allowable leakage based on 2000 feet.
 - 2 consecutive safe bacteria samples shall be taken from the water system approx. 24 hours apart at points established by the Township Engineer. Samples shall be taken by the Township Engineer.
 - Filling, flushing and sampling of water main can only be performed with a "Jumper" Line, the jumper shall be equipped with an approved RPZ type of backflow preventer.
 - Adjustments on gate wells shall be limited to 23" maximum from top of rim to first step in accordance with MIOSHA Rule 341.
 - All new water service lines shall have a minimum nominal size of 1". Services from 1" to 2" may be type K copper tubing or plastic DR-9 (200 PSI rated) meeting ASTM D2237-03 (Standard Specification for Polyethylene (PE) plastic tubing). ASTM Designation and pressure rating shall be stamped on the pipe by the manufacturer. Plastic pipe shall also meet AWWA C-301 Specifications. All sizes shall relate to the copper tubing outside diameter standard size (CTS). Copper pipe joints shall be flared. Fittings shall adapt to the plastic pipe with compression to iron pipe thread adapter. Plastic pipes shall be either compression style with a steel insert or may be fusion welded in the larger sizes.
 - Plastic water service pipes shall be traced with two #10 copper tracer wires or two #12 copper coated steel or stainless steel wires insulated with a minimum of 30 mils of polyethylene insulation. The tracer wires shall be terminated to supply line so as to be locatable at the building and the curb box without digging.
 - Water services sizes 3" and greater shall be Class 54 cement lined ductile iron with push on joints or HDPE DR-9 (200 PSI rated) with fusion welded joints and fittings, DIPS (Ductile Iron Pipe Size).
 - A stop box shall be installed at the property or easement line and shall be equivalent to an A.Y. McDonald Mfg. 6100 flare regular pattern ball valve. The curb box shall have a 1" riser pipe with an Erie 2-hole pattern cover equivalent to A.Y. McDonald Mfg. 5601L. Stop box shall be protected with a 2'x4' painted blue extending 4 feet above ground.
 - Standard pipe cover shall be 6'-0".
 - Air release manholes shall consist of a standard 5' diameter gate well style structure with a ValMatic Model 25C air release valve mounted on a 1" corporation stop. Air release shall be equipped with the vacuum check option. A 1/2" diameter galvanized pipe or discharge shall be extended to within 12" of the top of the structure. A goose-neck trap shall be installed at the top of the riser to prevent debris & water from entering the valve.



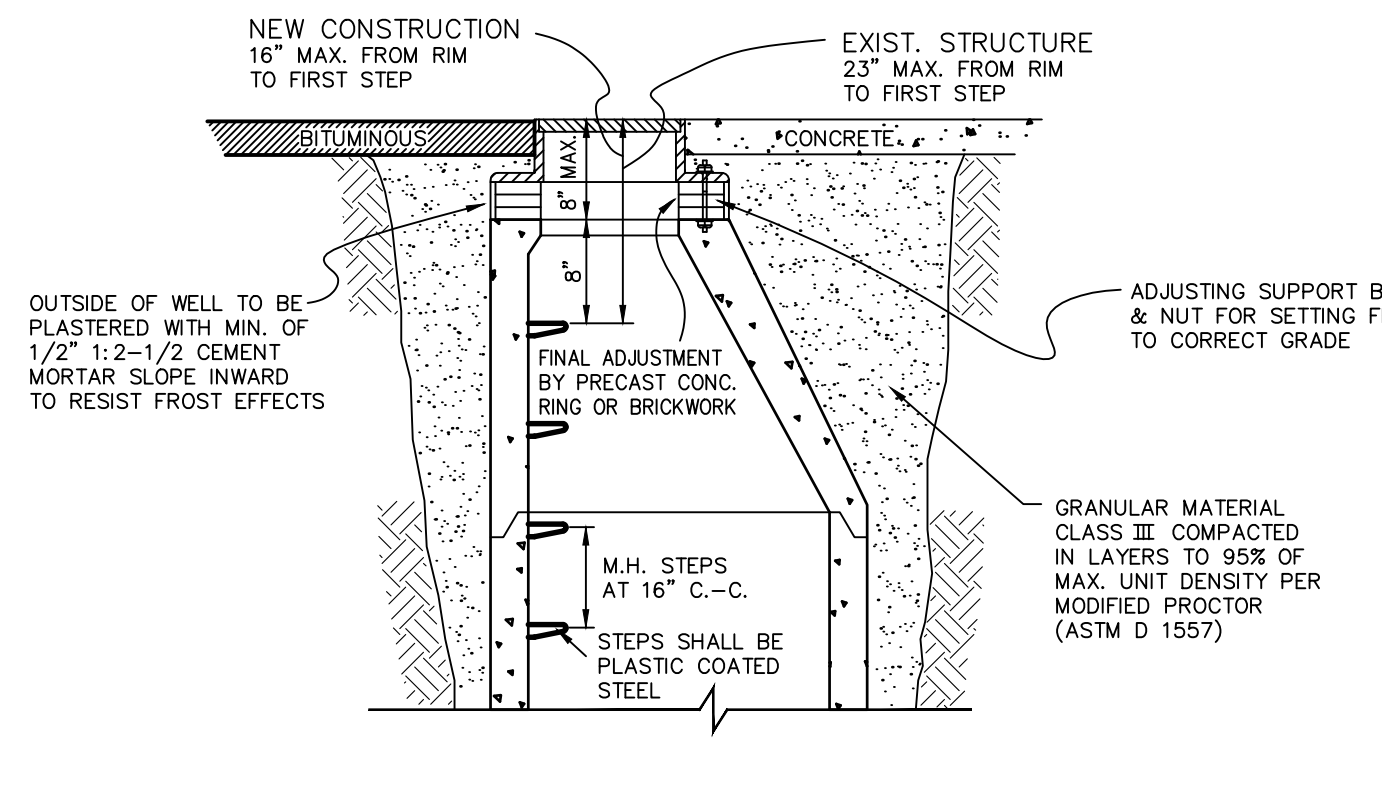
GATE WELL COVER & FRAME



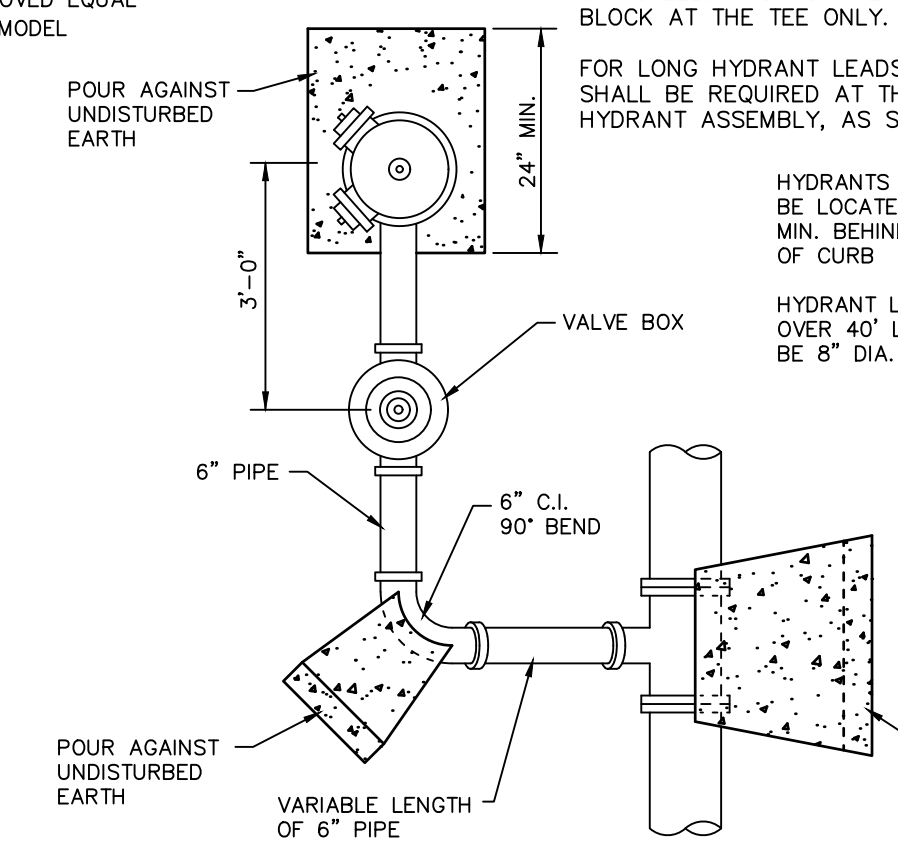
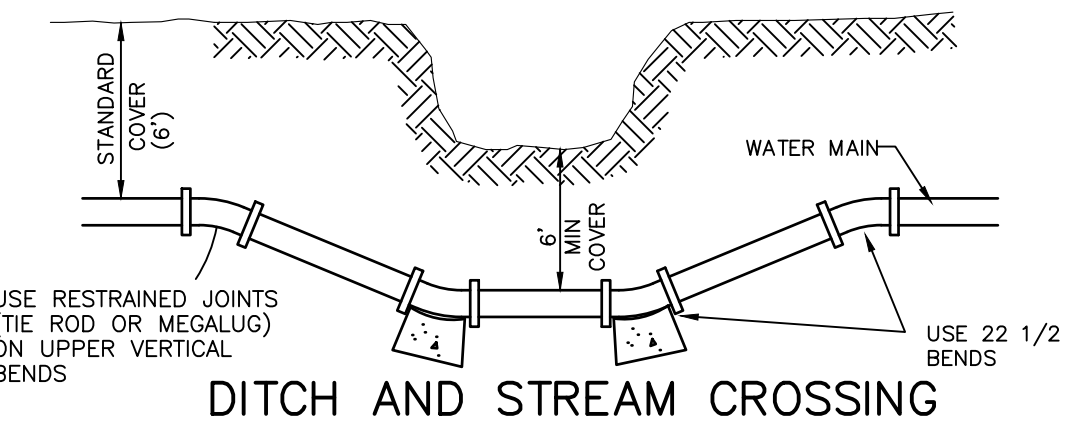
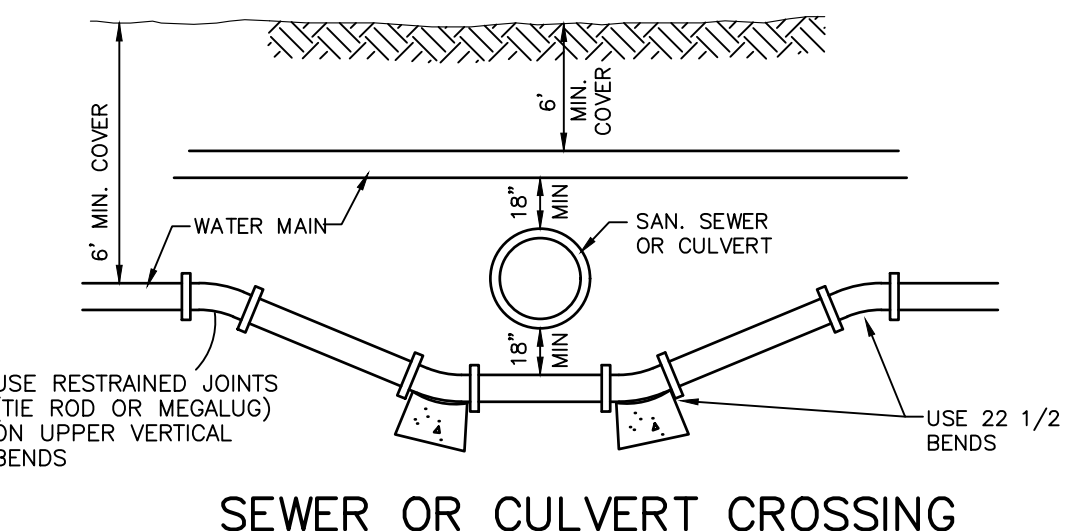
DETAIL OF HYDRANT SETTINGS



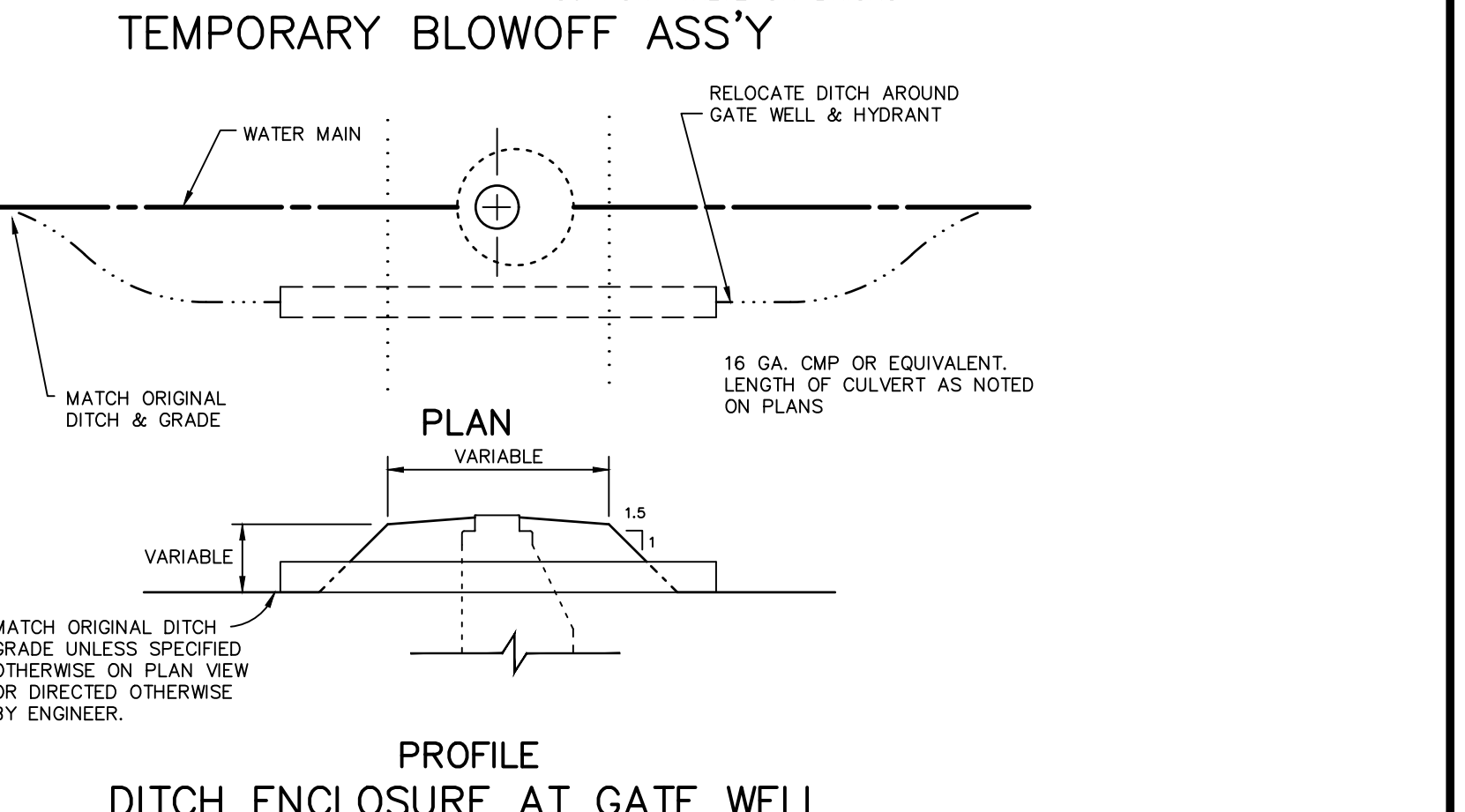
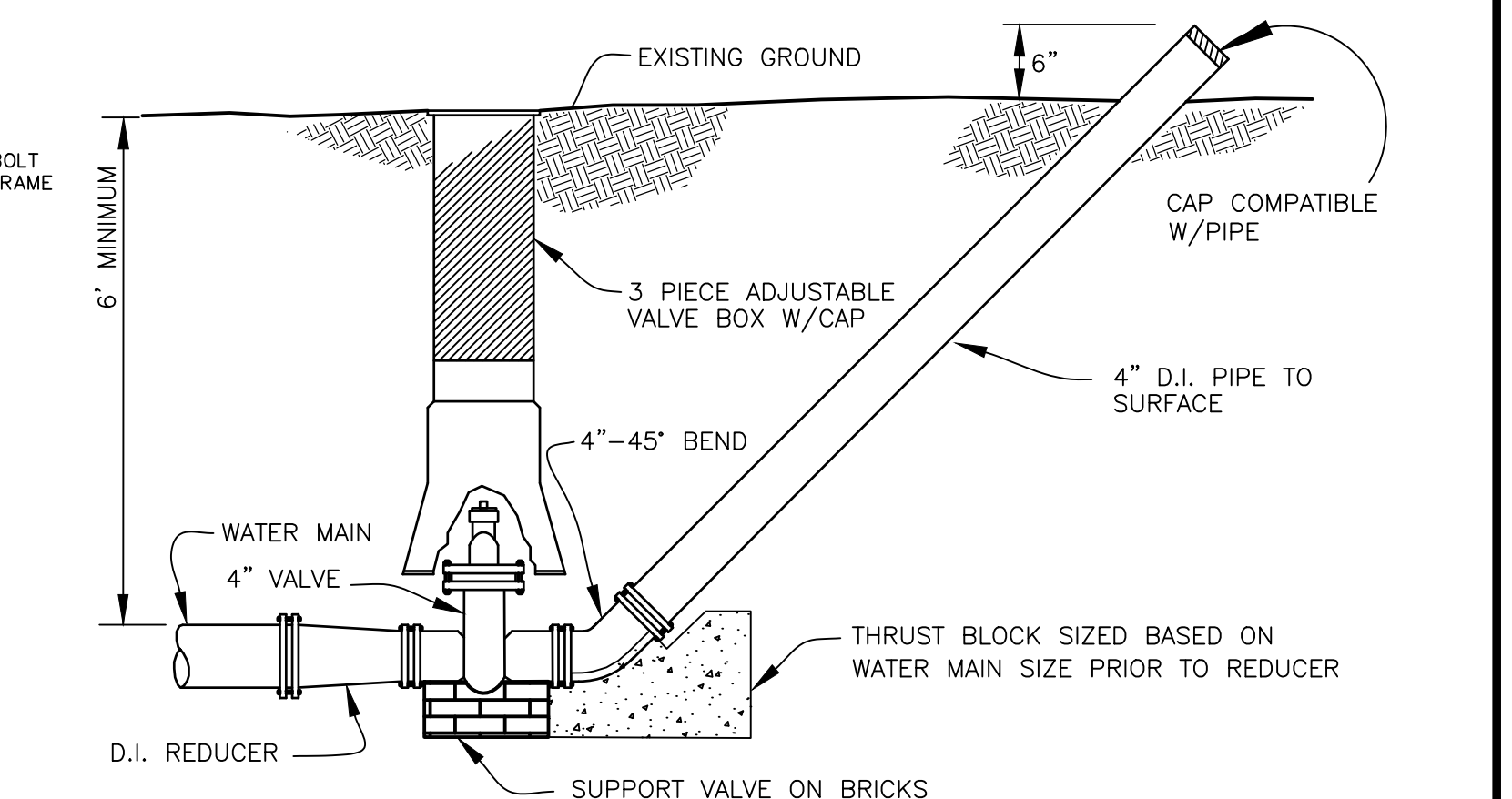
BACKFILL IN THE AREA OF STREETS, ALLEYS, SIDEWALKS, DRIVES & PARKING AREAS



GATE WELL TOPS WITHIN PAVEMENT AREAS



THRUST BLOCK DETAILS



DRAWN: CAD
DESIGN: OA
CHECKED: -

REVISIONS	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
1	GENERAL	REVISION TO CAD	12/29/95	GW & NUT SIZE	07/23/98	CLARIFY HYD. SPEC	02/07/01	REV. HYD., THRUST, AIR REL.	03/29/04
2	ADD NOTE	17	11/04/97	PIPE COVER & FLANGE TAPE	05/12/99	5-BR HYD, WS STAKE	02/27/02	HDPE, HYD, VALVES	07/18/05
3	REVISE	HYD. & THRUSTING	05/18/98	ADD BLOWOFF	07/06/99	ADD NOTE 19	07/23/03	UPDATED TITLE BLOCK	04/30/13

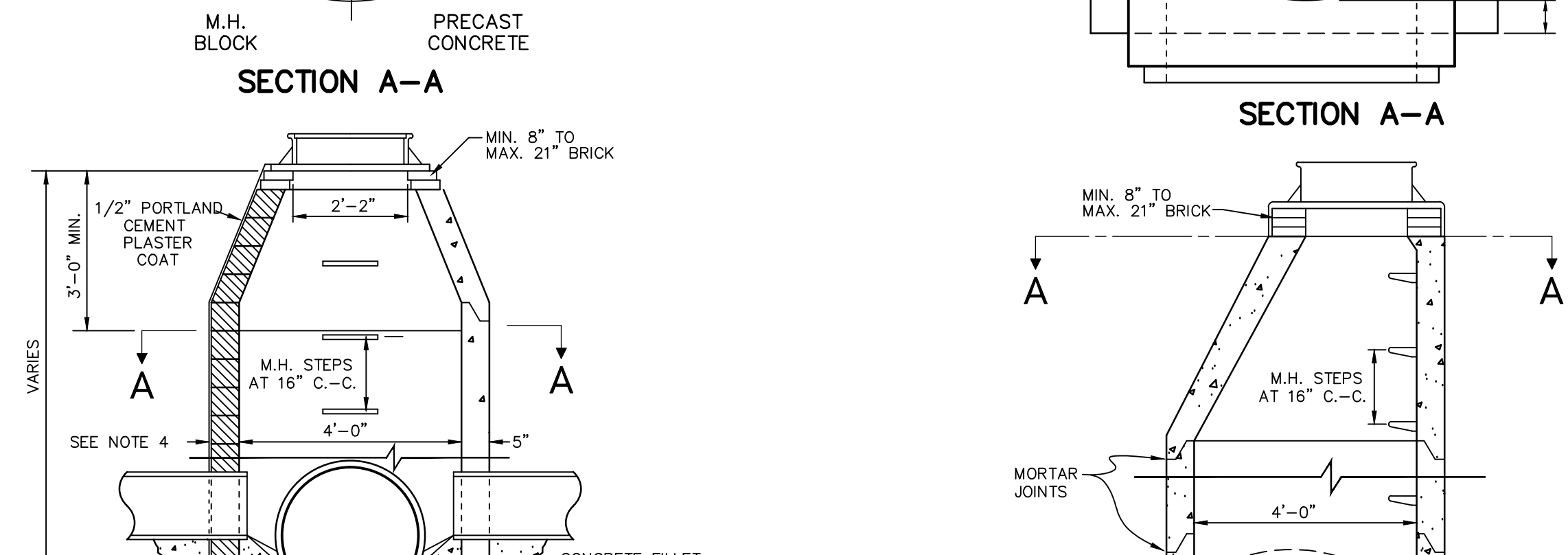
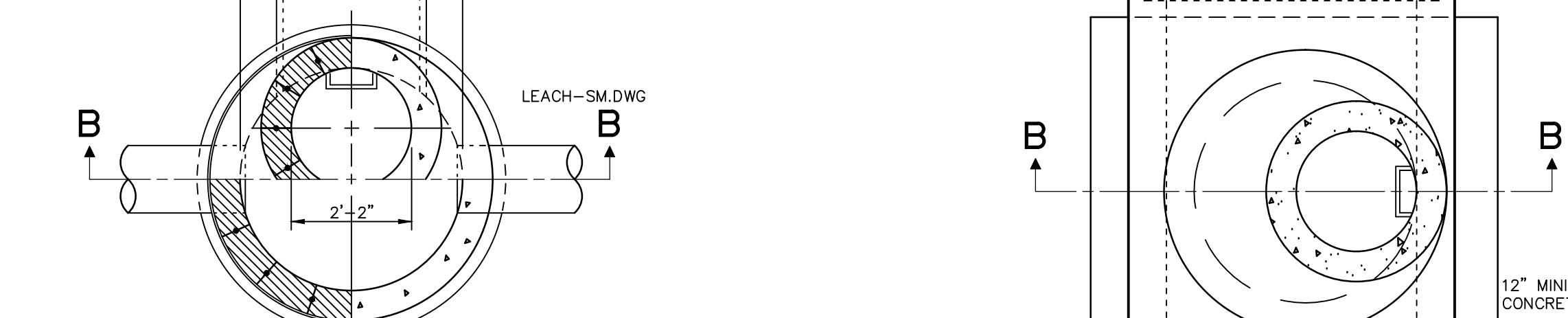
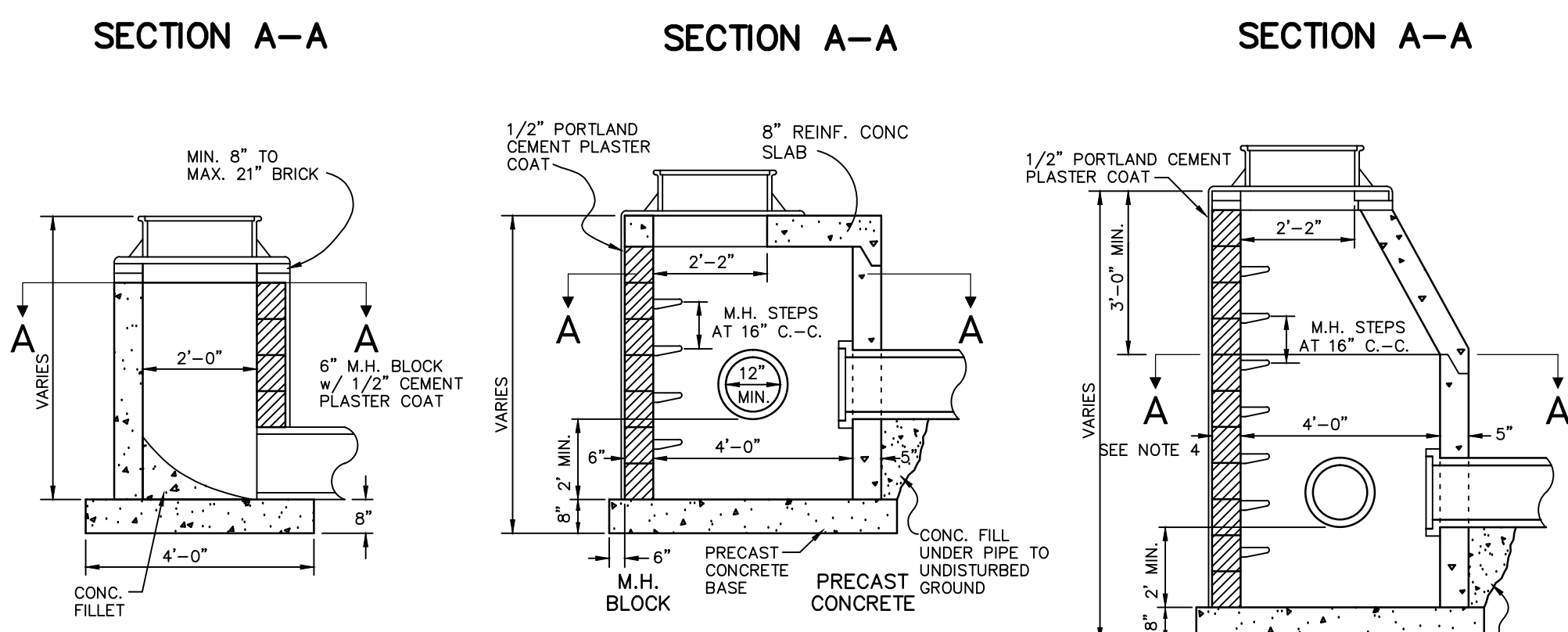
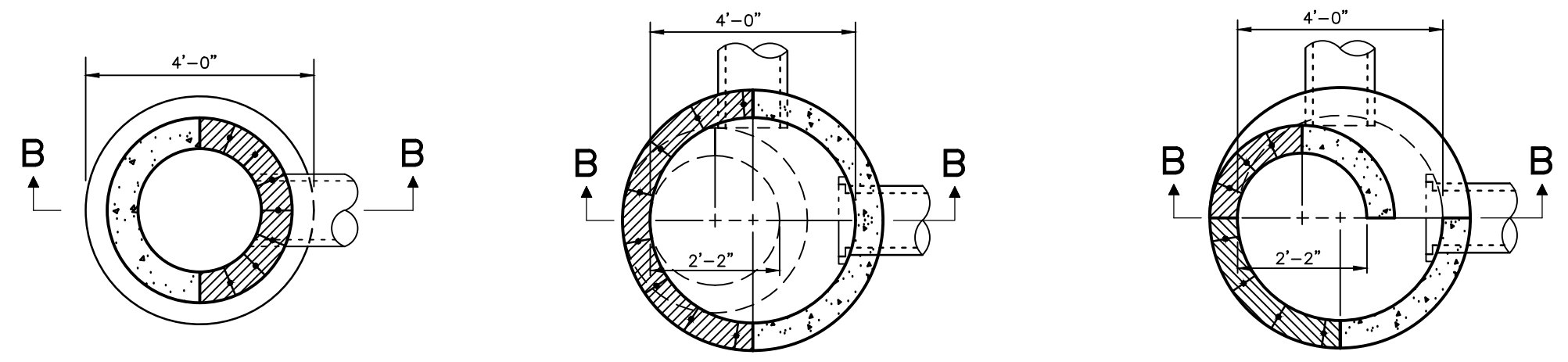
Johnson & Anderson
 4494 Elizabeth Lake Road Waterford, Michigan 48328
 1060 W. Norton Avenue, Suite 7 Muskegon, Michigan 49441
 2291 Water Street, Suite 6 Port Huron, Michigan 48060
 (248) 881-7800 fax (248) 881-2680 (231) 780-3100 fax (231) 780-3115 (810) 987-7800 fax (810) 987-7895

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

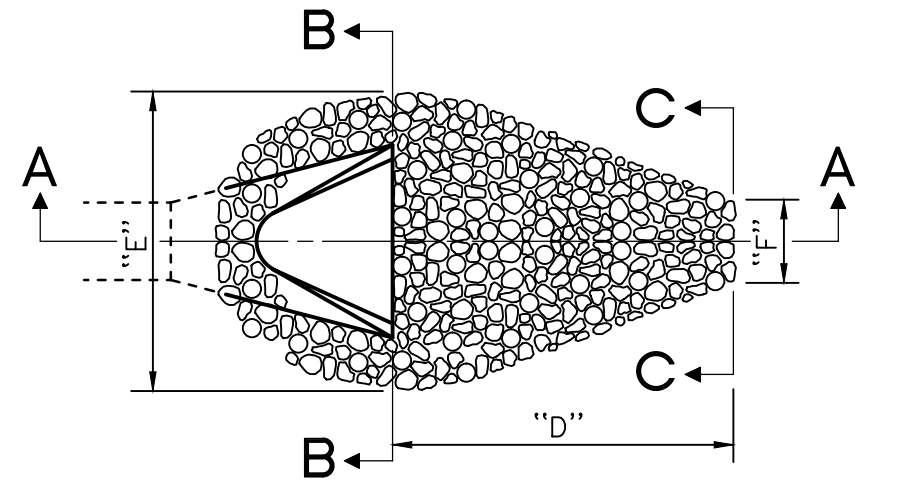
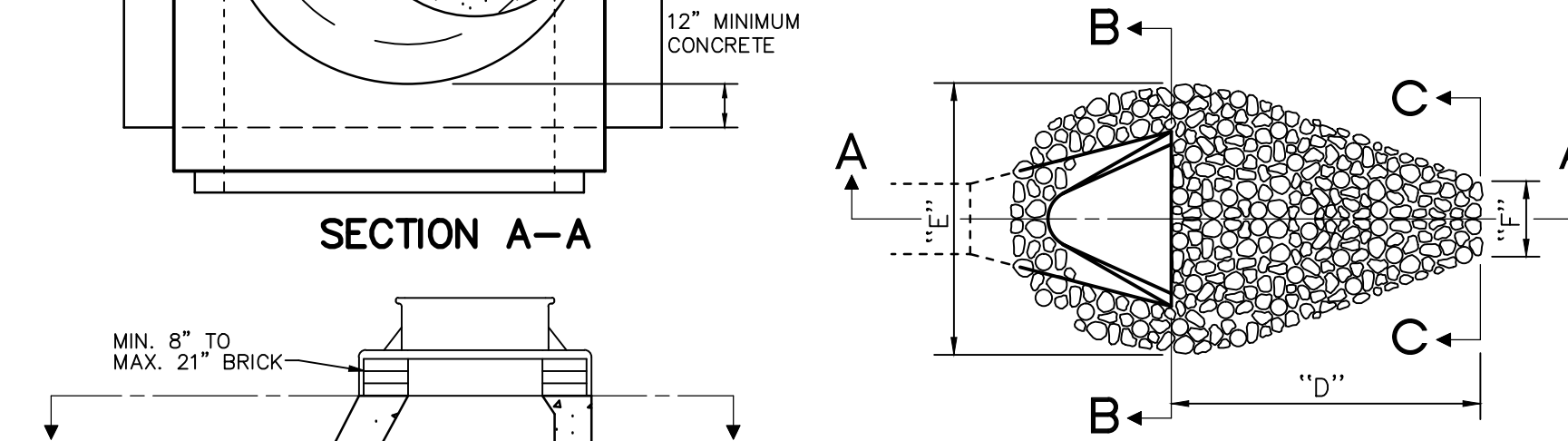
WATER MAIN STANDARD DETAILS

VERT. -
SCALE: HORZ. AS NOTED

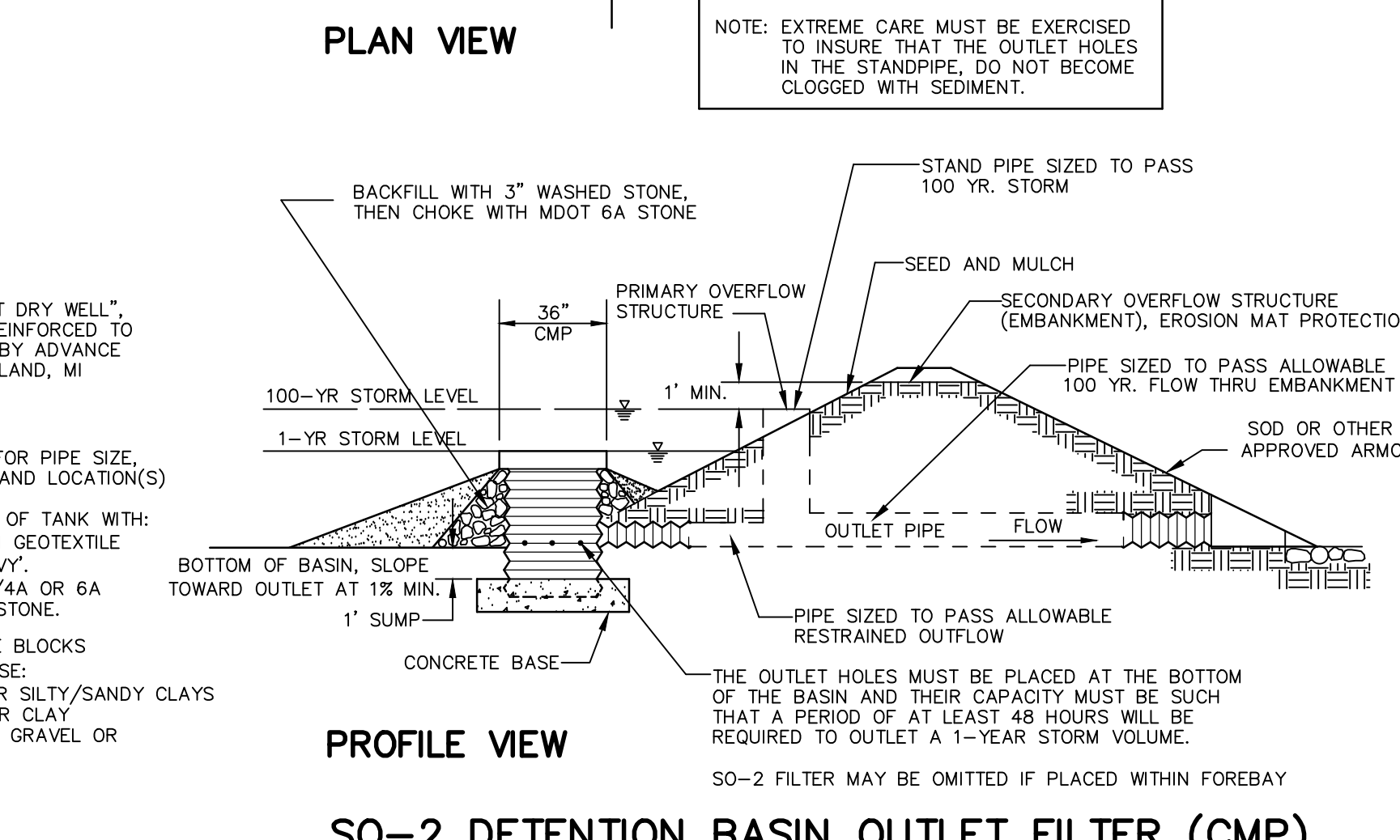
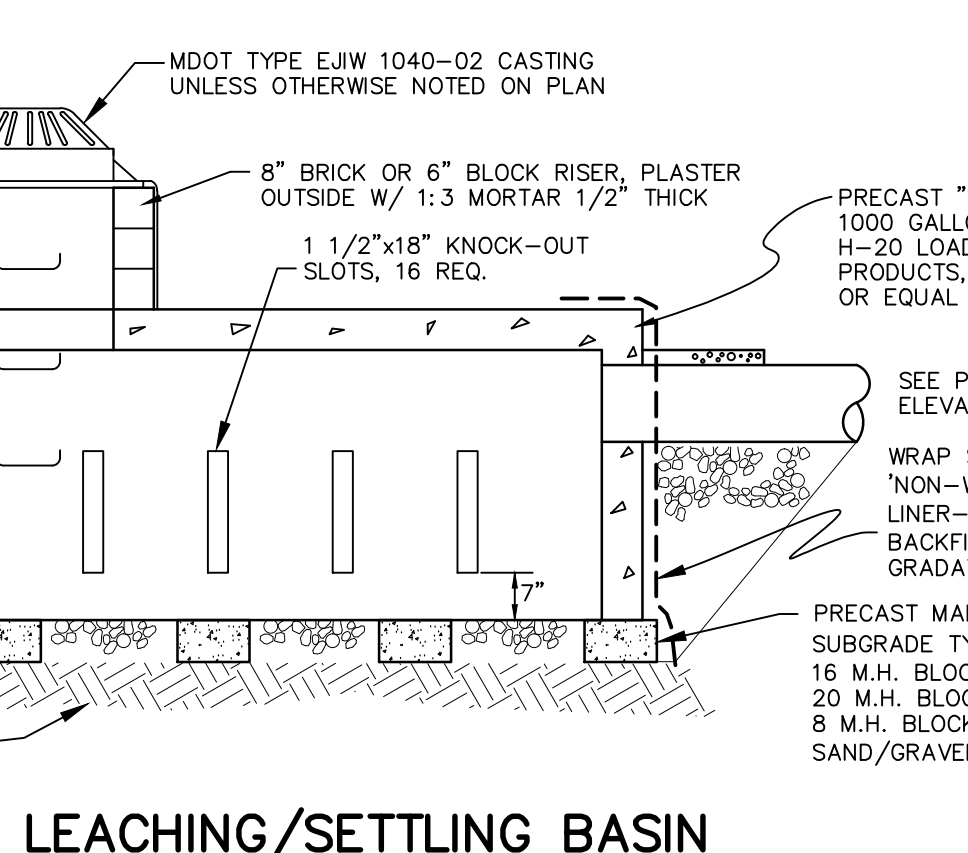
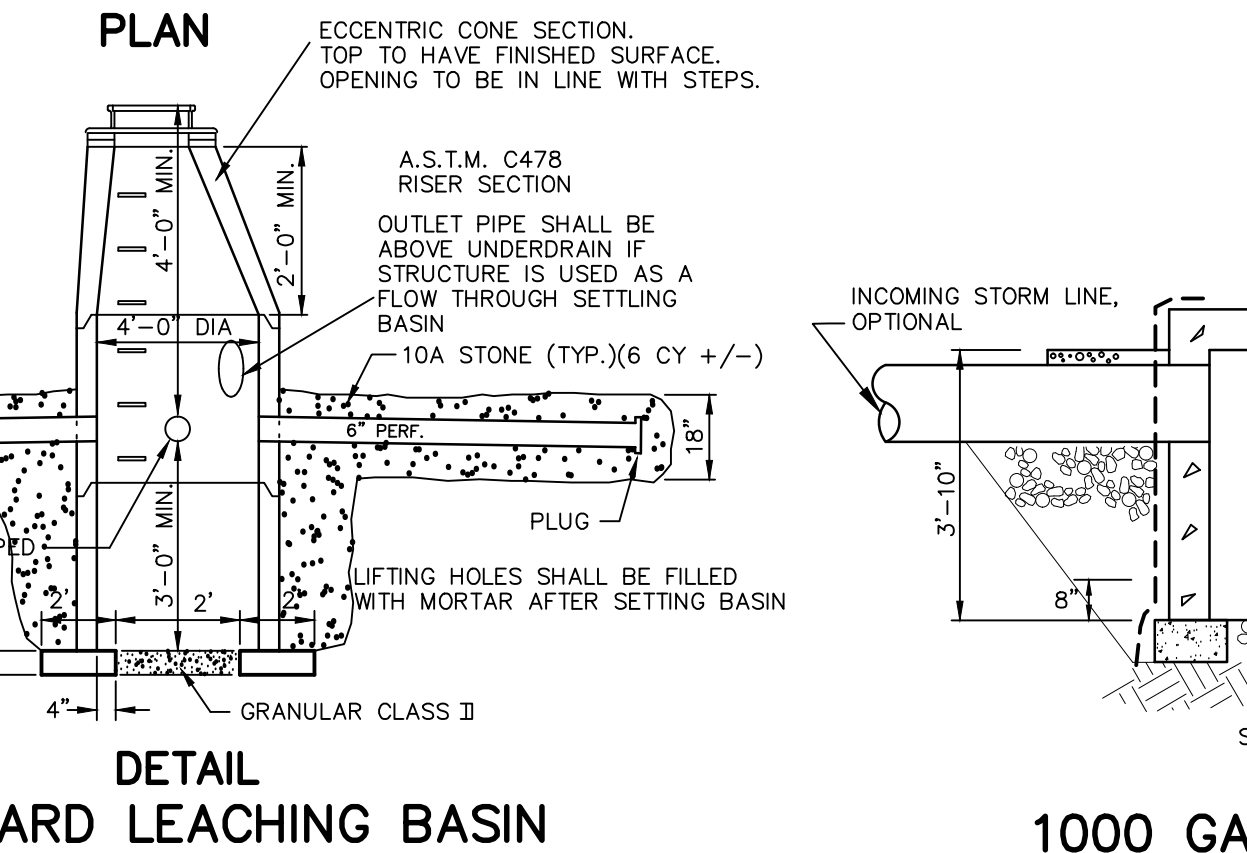
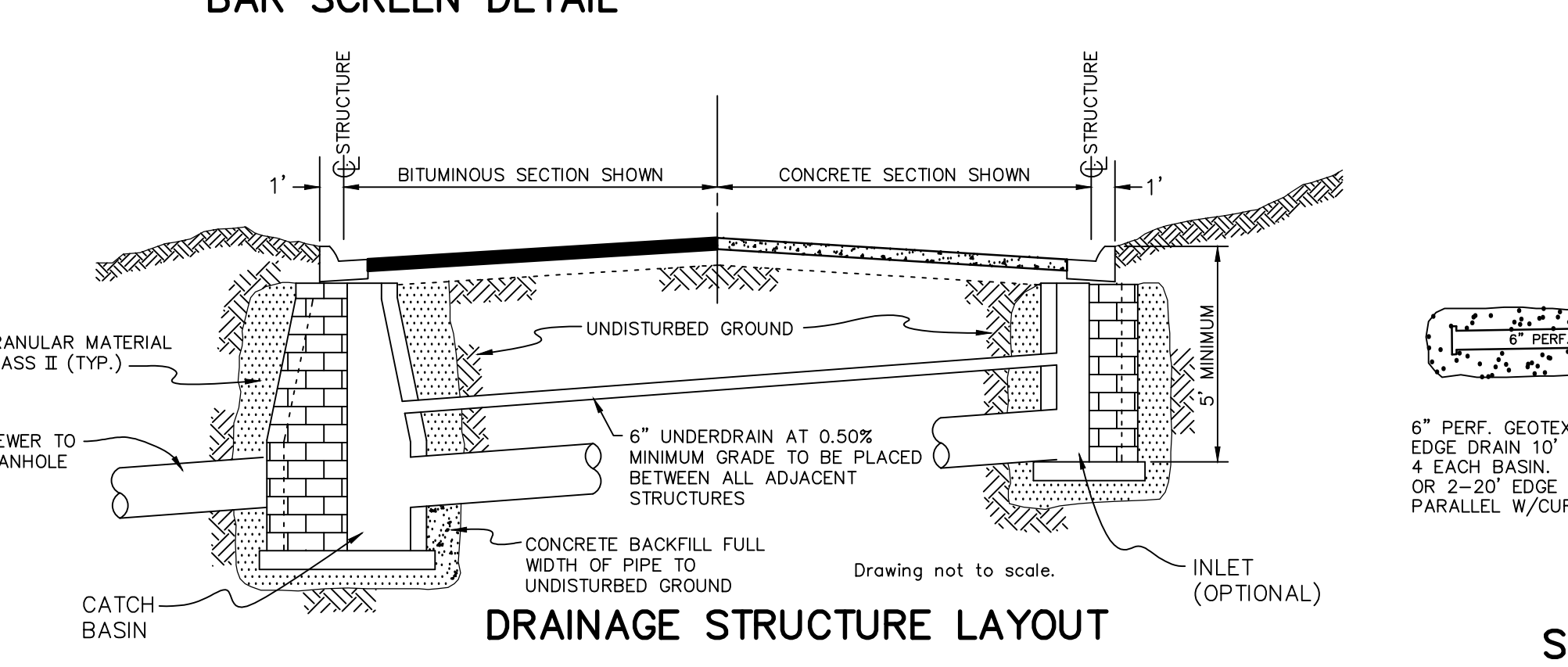
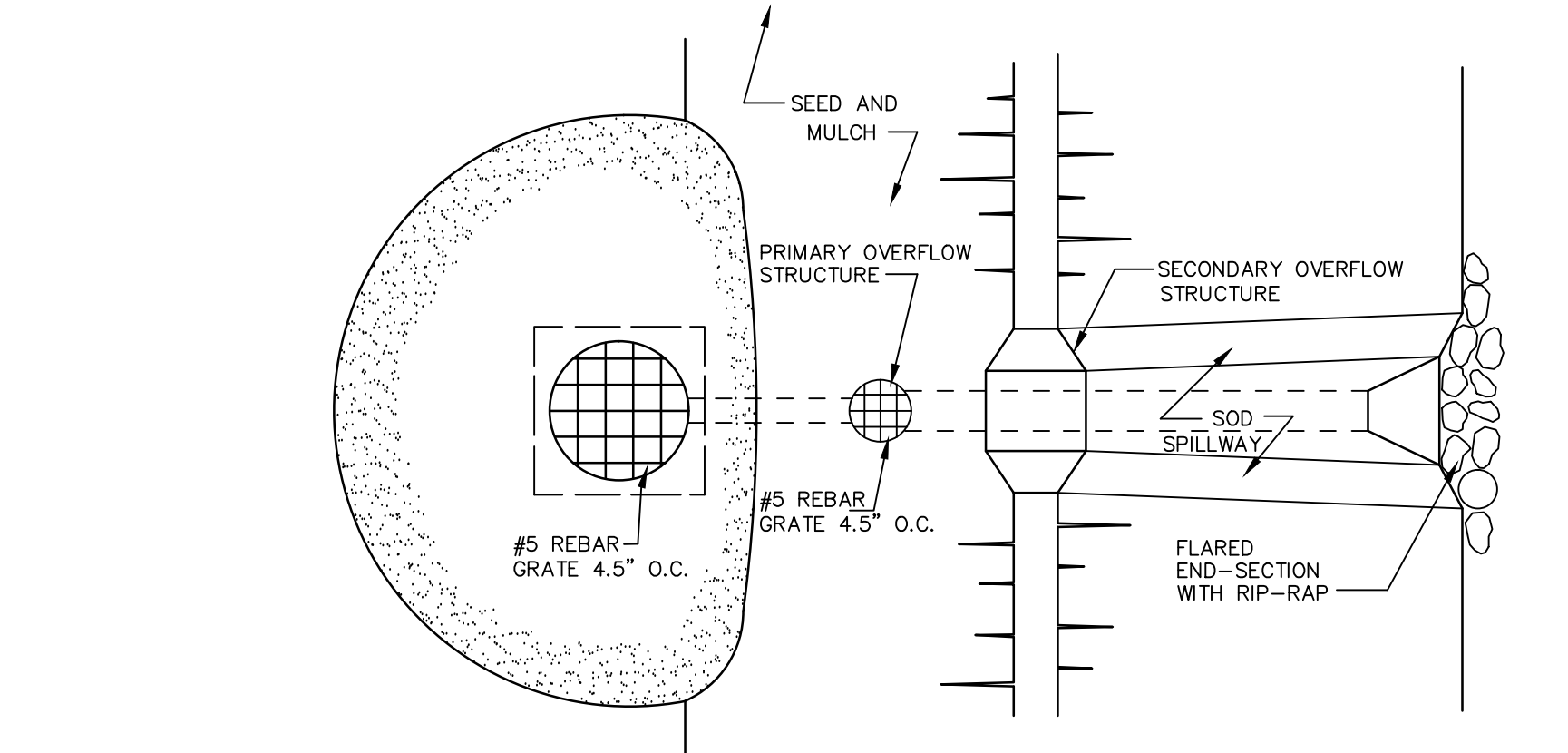
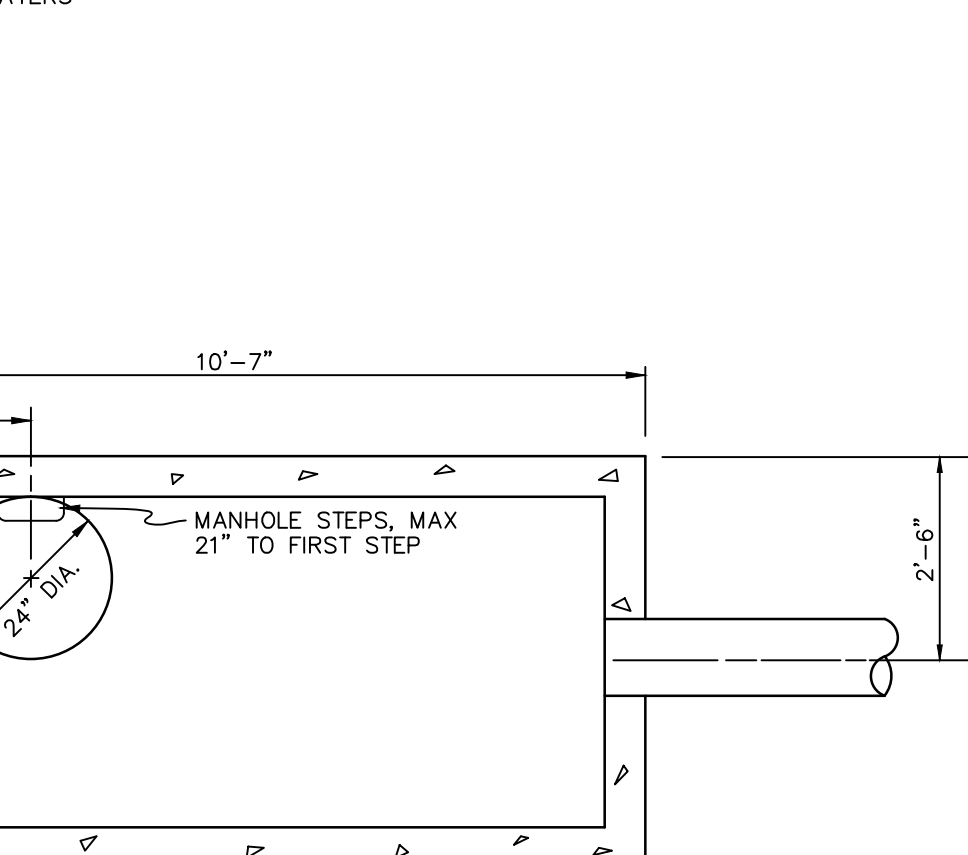
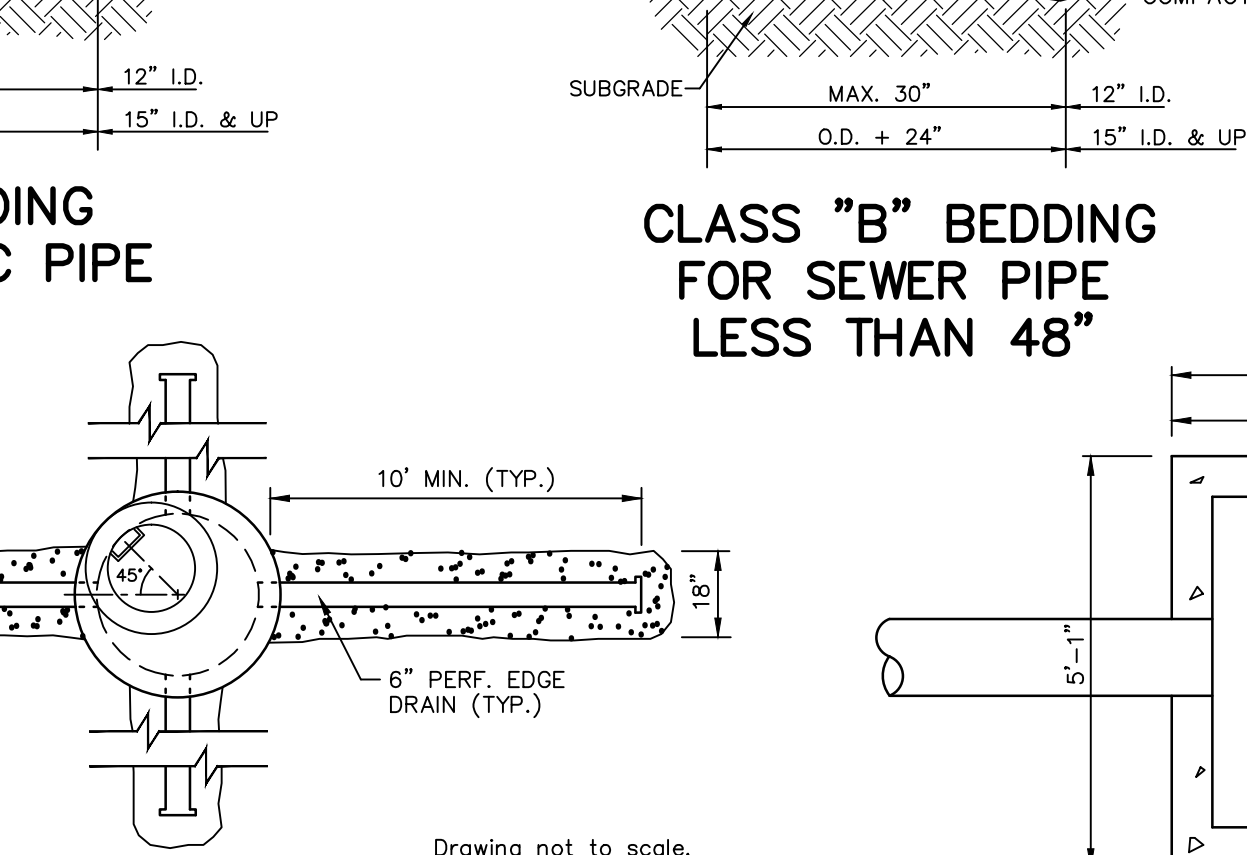
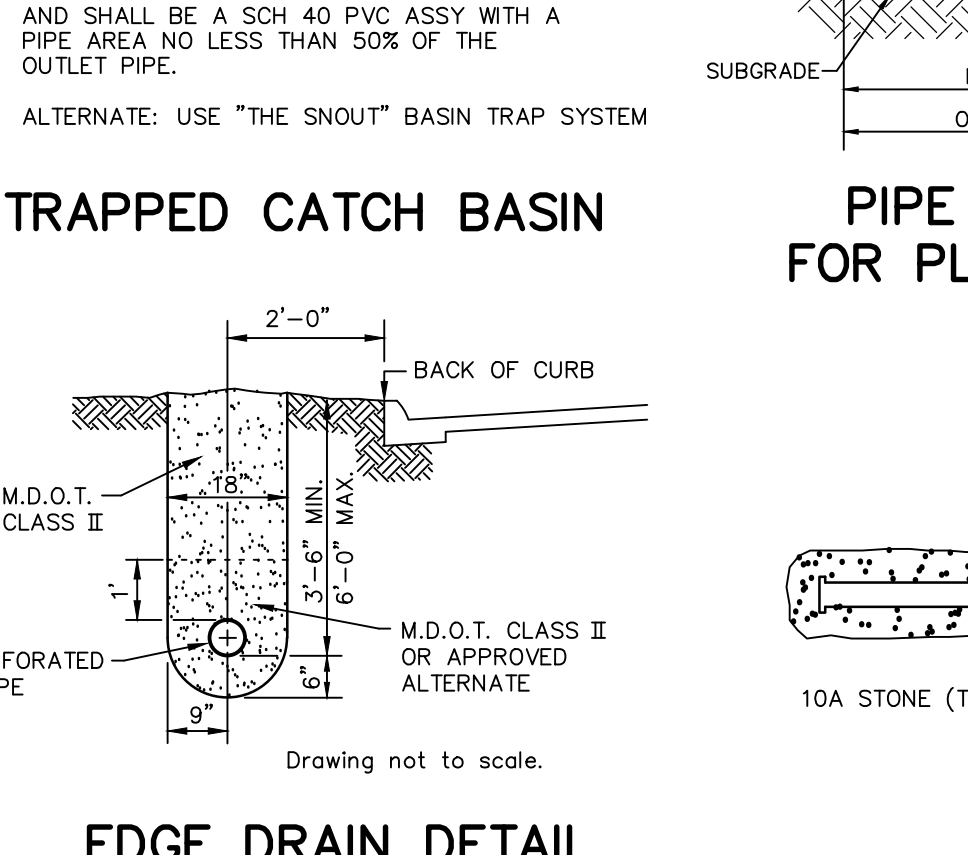
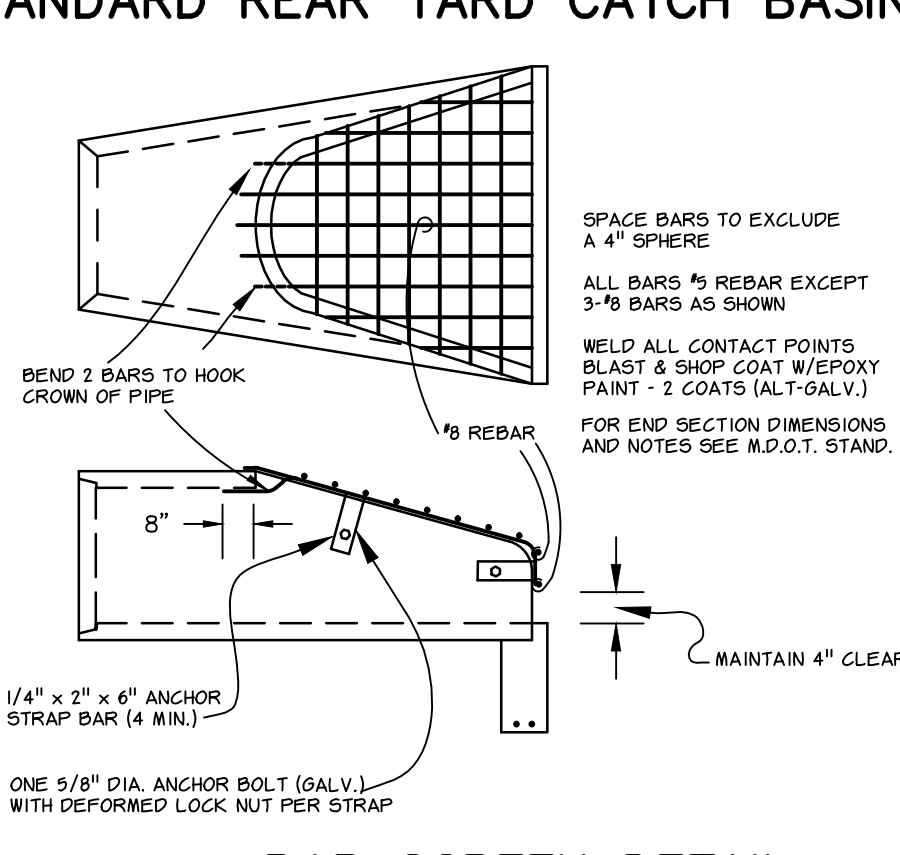
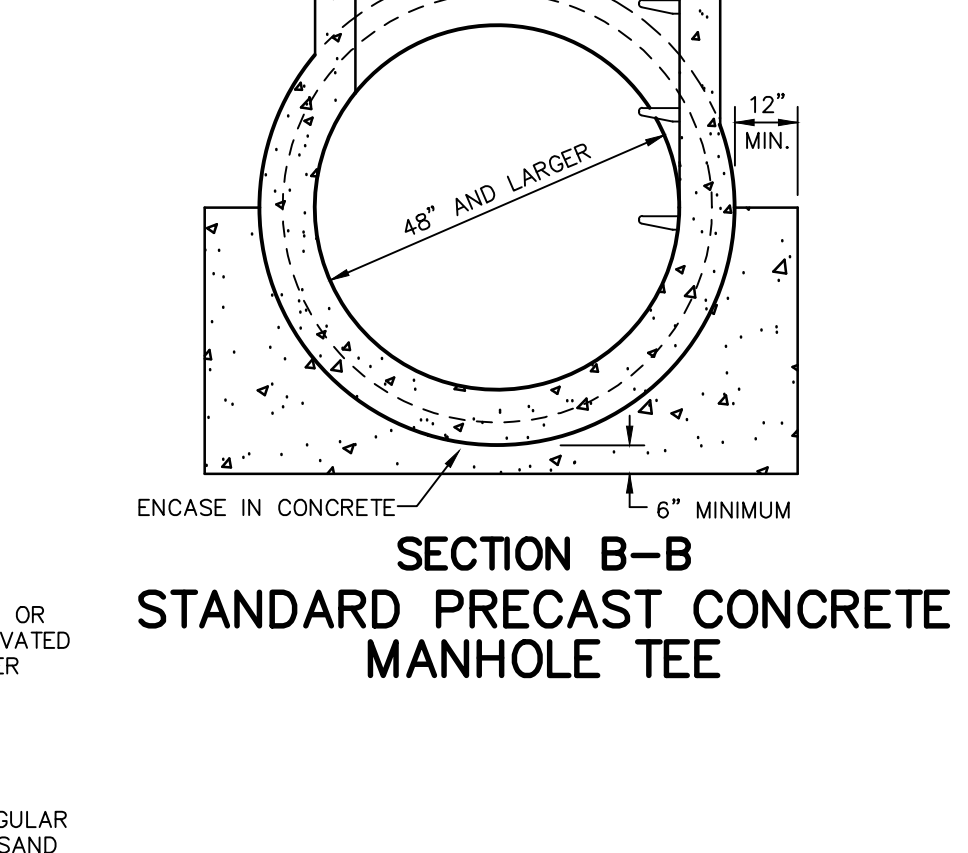
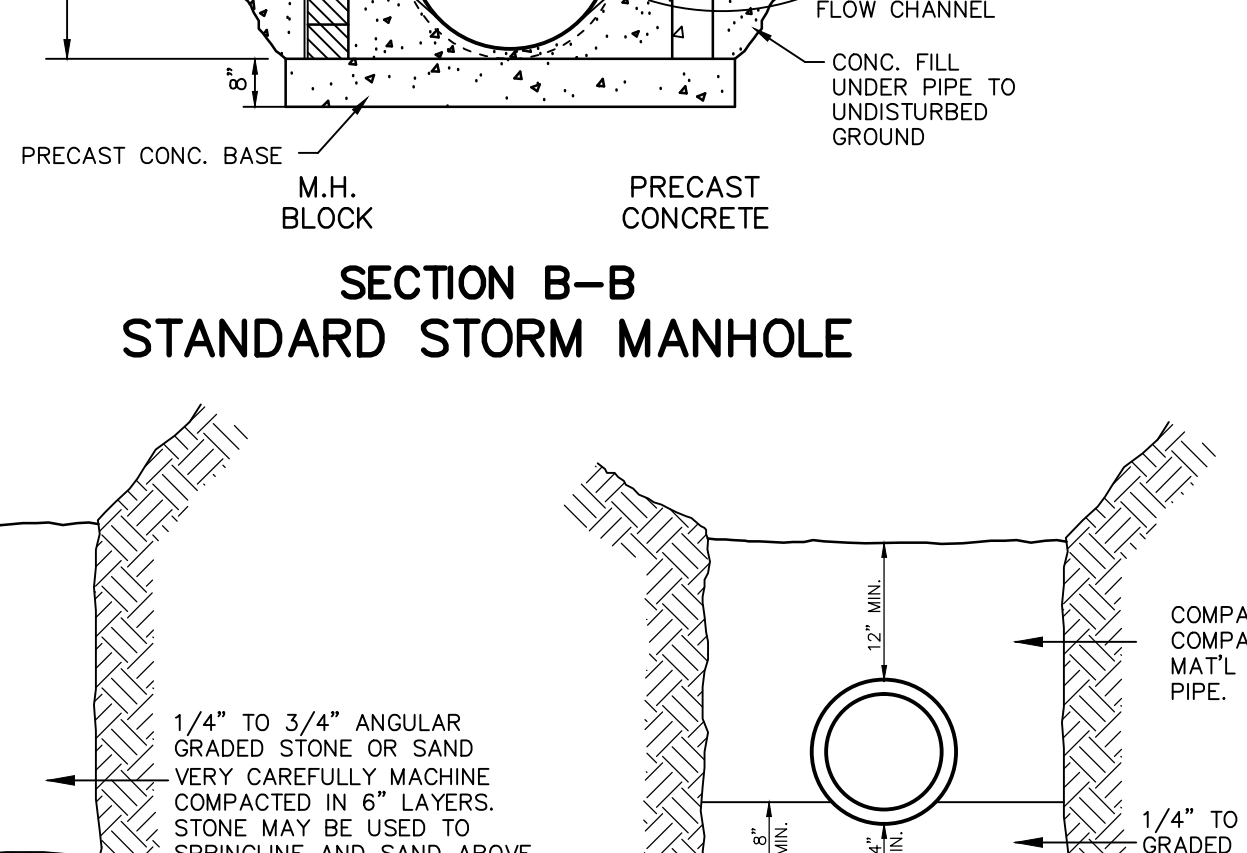
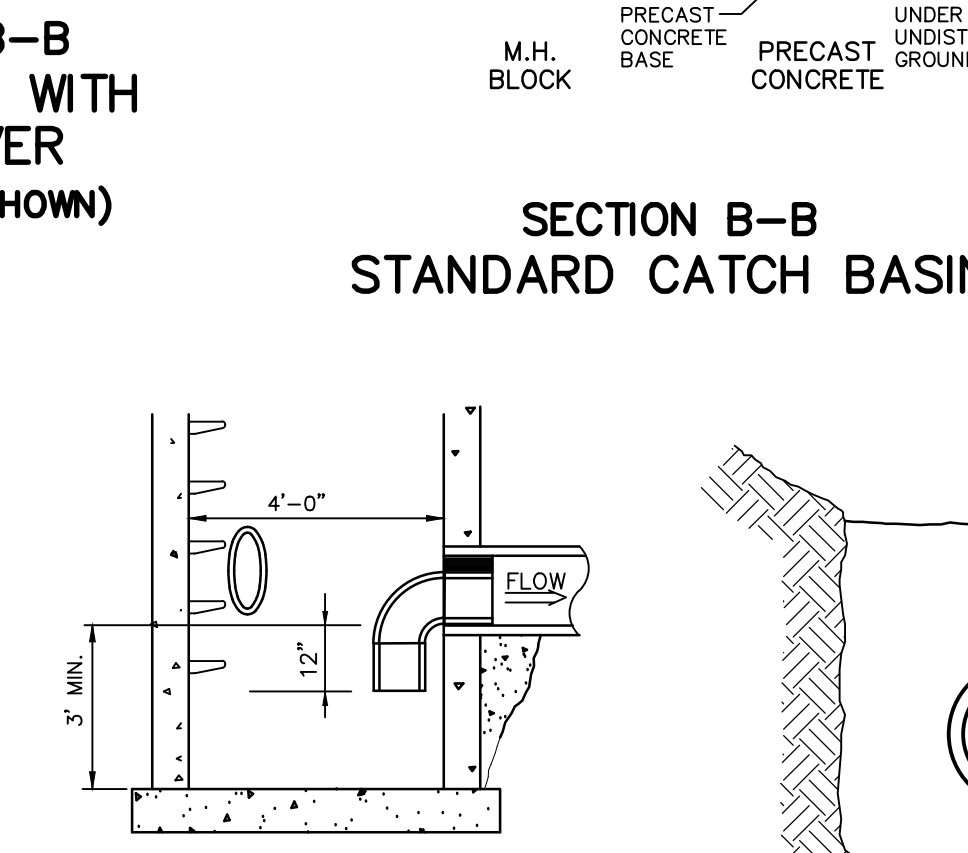
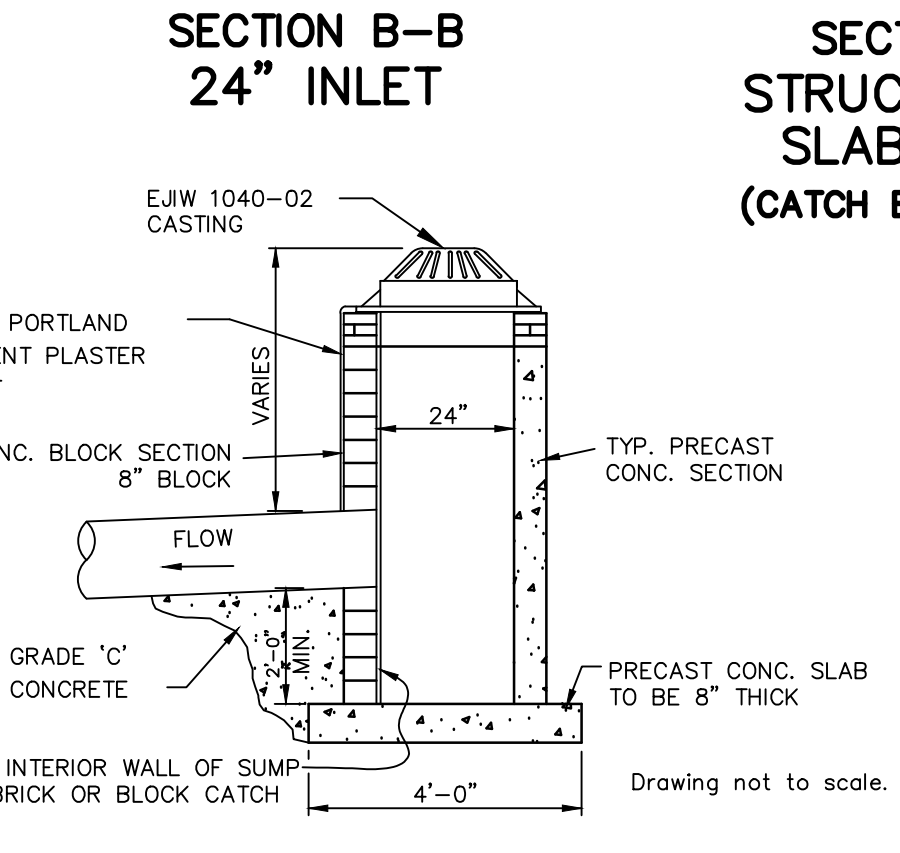
JOB NO.
DATE ISSUED
SHEET NO.



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'-0"	4
21"	5'-6"	8'-0"	4'-0"	5
24"	6'-0"	8'-6"	4'-6"	6
27"	6'-6"	9'-0"	5'-0"	7
30"	7'-0"	9'-6"	5'-6"	8
33"	7'-6"	10'-3"	5'-6"	9
36"	8'-0"	10'-9"	6'-0"	10
42"	9'-0"	11'-9"	6'-6"	12
48"	10'-0"	13'-0"	7'-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 MIOSHA REQUIREMENTS. NO MORE THAN 21" FROM RIM TO FIRST STEP. MAX. 16" O.C. STEPS SHALL BE CAST POLYPROPYLENE REINFORCED WITH A 1/2" STEEL ROD.
 - WALL THICKNESS OF BLOCK STRUCTURES SHALL BE:
DEPTH THICKNESS
0-8' 8"
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
 - THE CONTRACTOR SHALL CONTACT MISS DG 72 HOURS BEFORE CONSTRUCTION AT (800) 482-7171 TO LOCATE EXISTING UNDERGROUND UTILITIES.
 - PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL HAVE IN HIS POSSESSION A CURRENT SOIL EROSION CONTROL PERMIT AS ISSUED BY WHITE LAKE TOWNSHIP.
 - A 2' DEEP SUMP SHALL BE USED IN ANY STRUCTURE SUBJECT TO A WATER DROP GREATER THAN 2.0' FROM AN INLET PIPE.
 - ALLOWABLE STORM SEWER PIPE TYPES:
-12" AND UP: RCP ASTM C-76 MIN CLASS 3, MIN CLASS 4 UNDER TRAFFIC AREAS, RUBBER JOINT
-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 ROC STANDARD

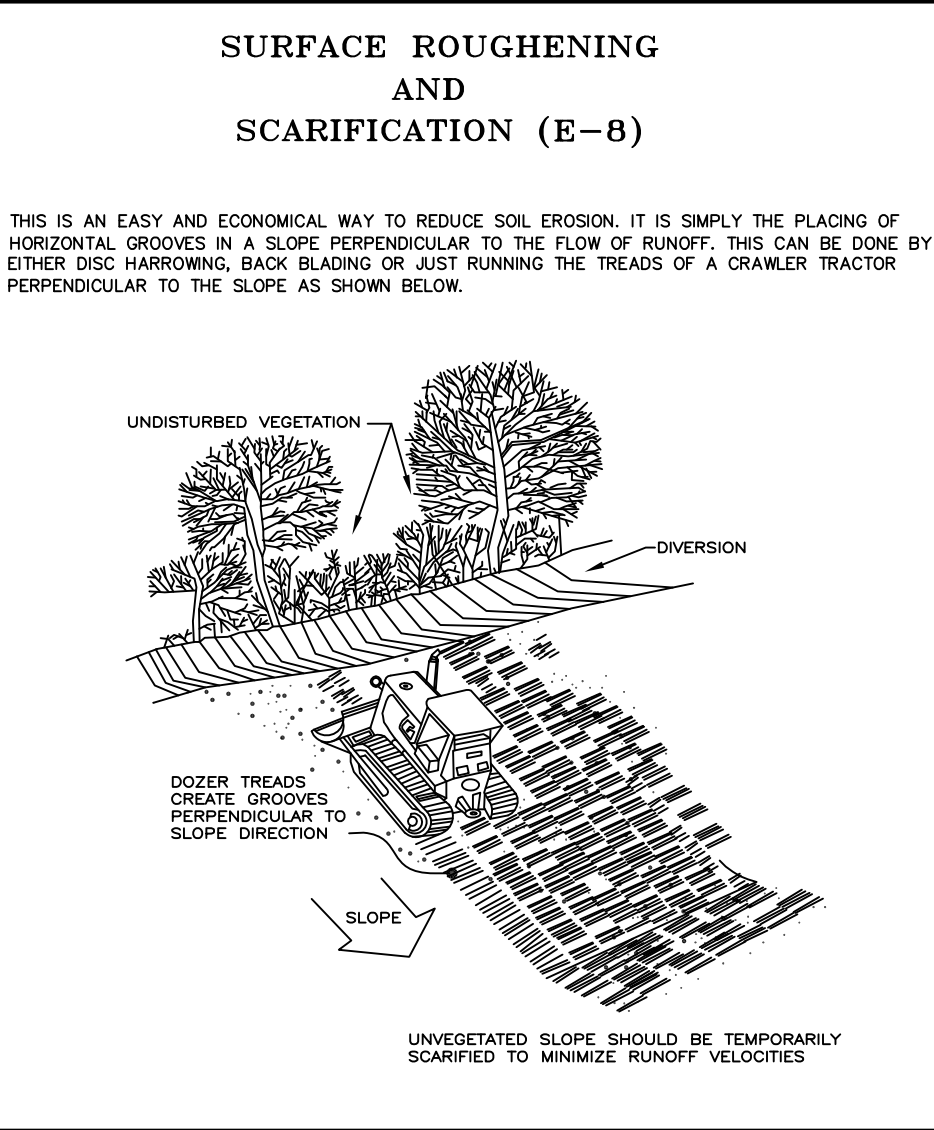
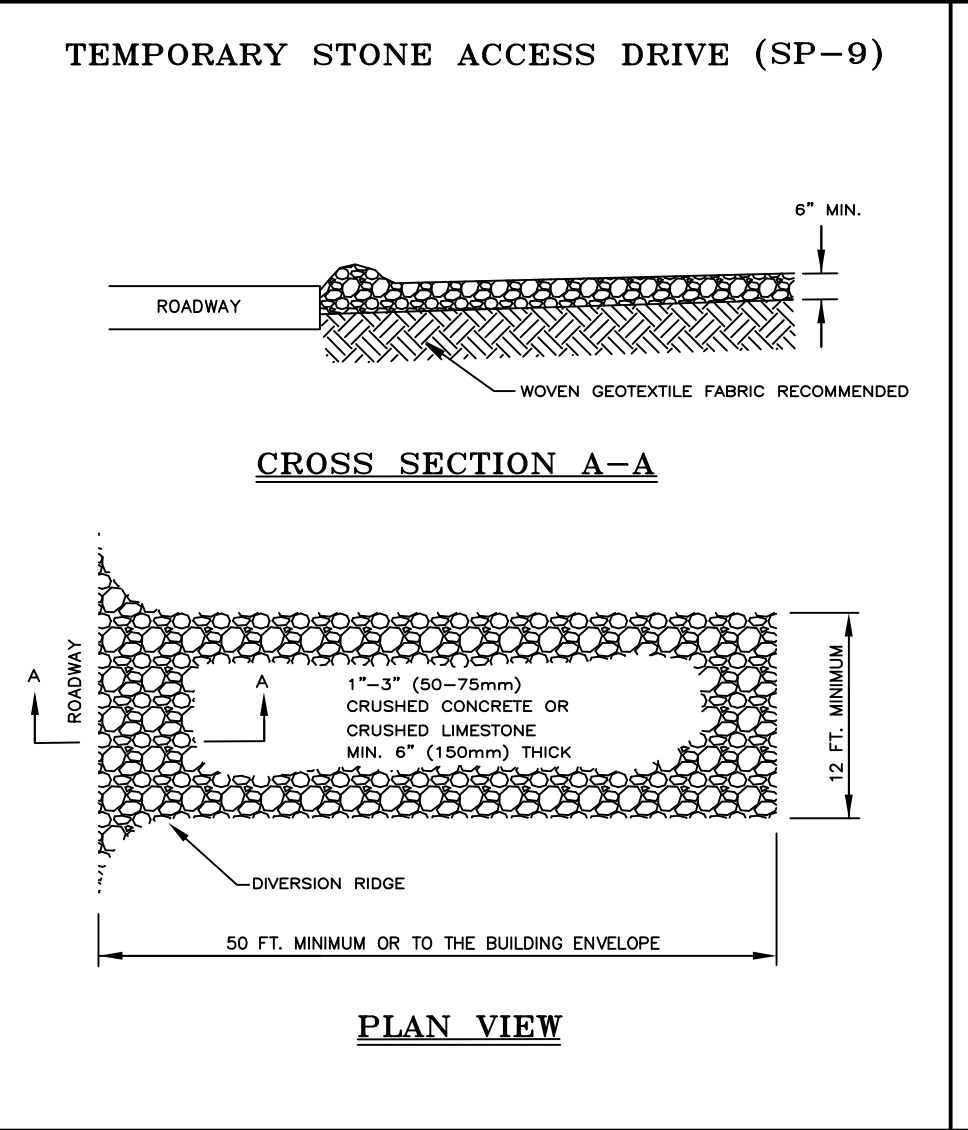
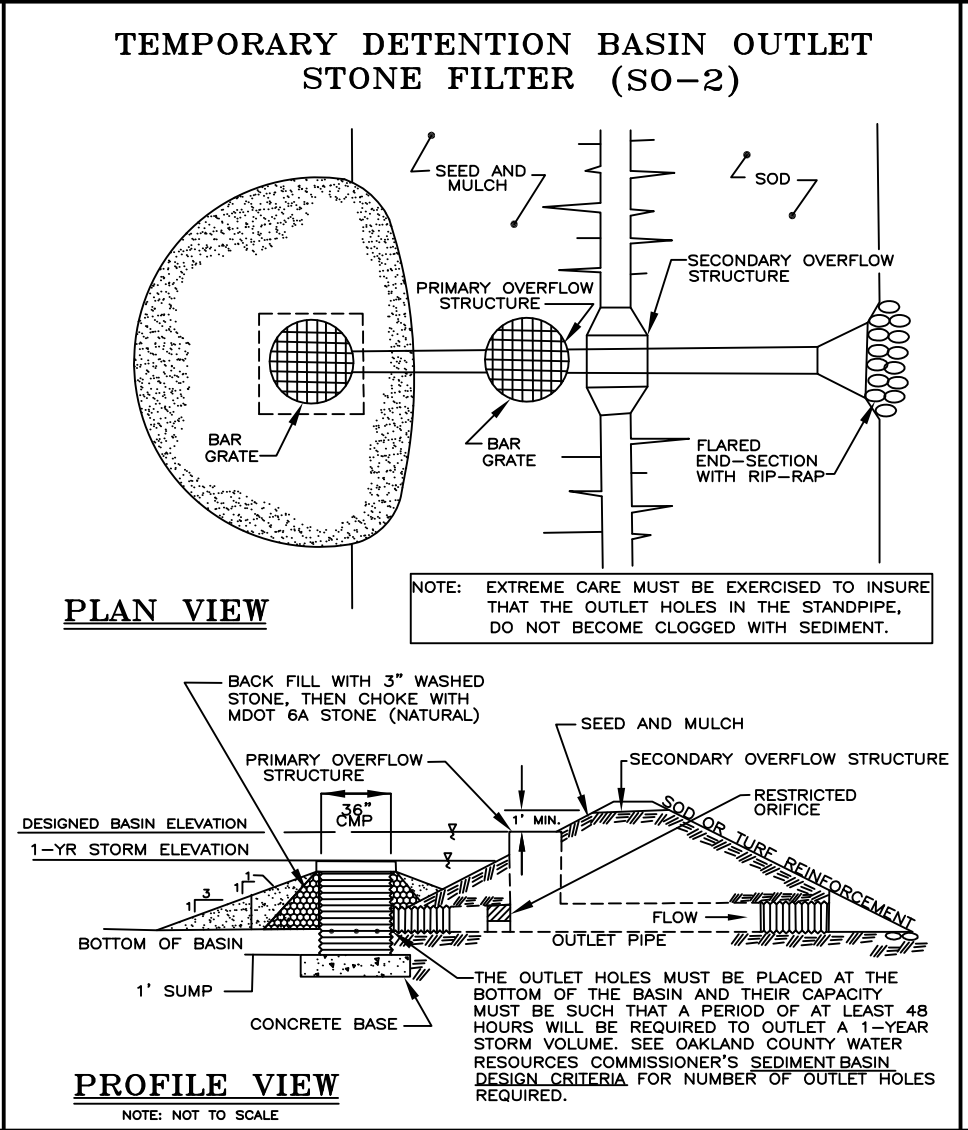
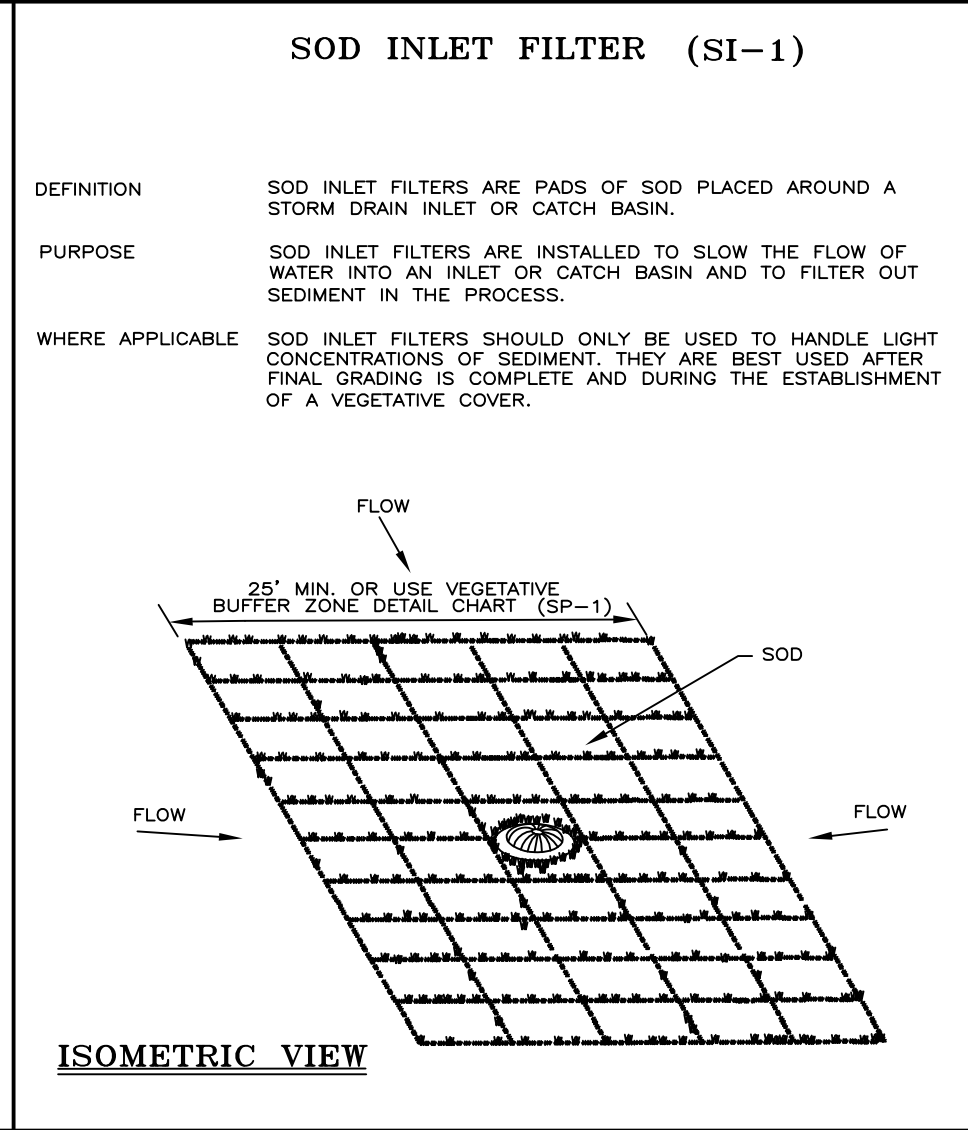
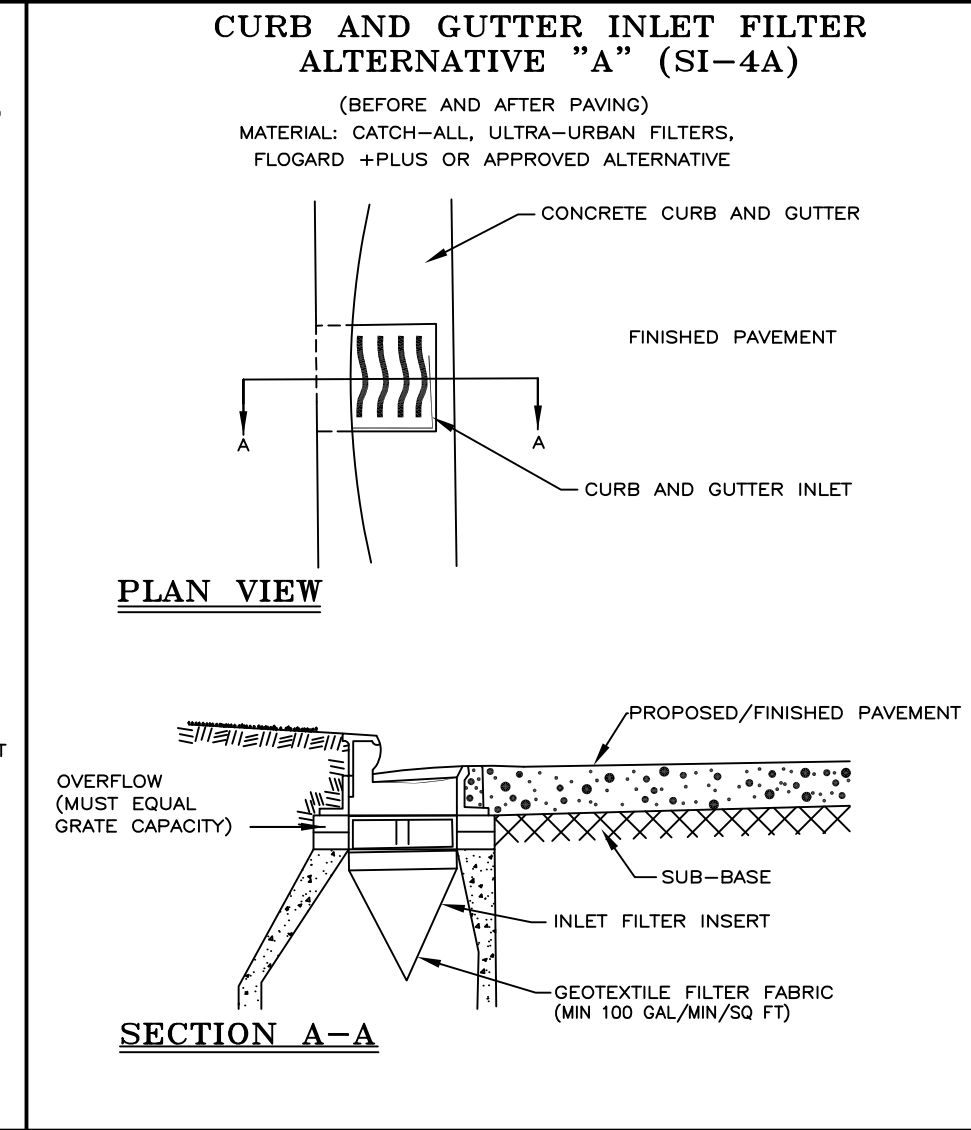
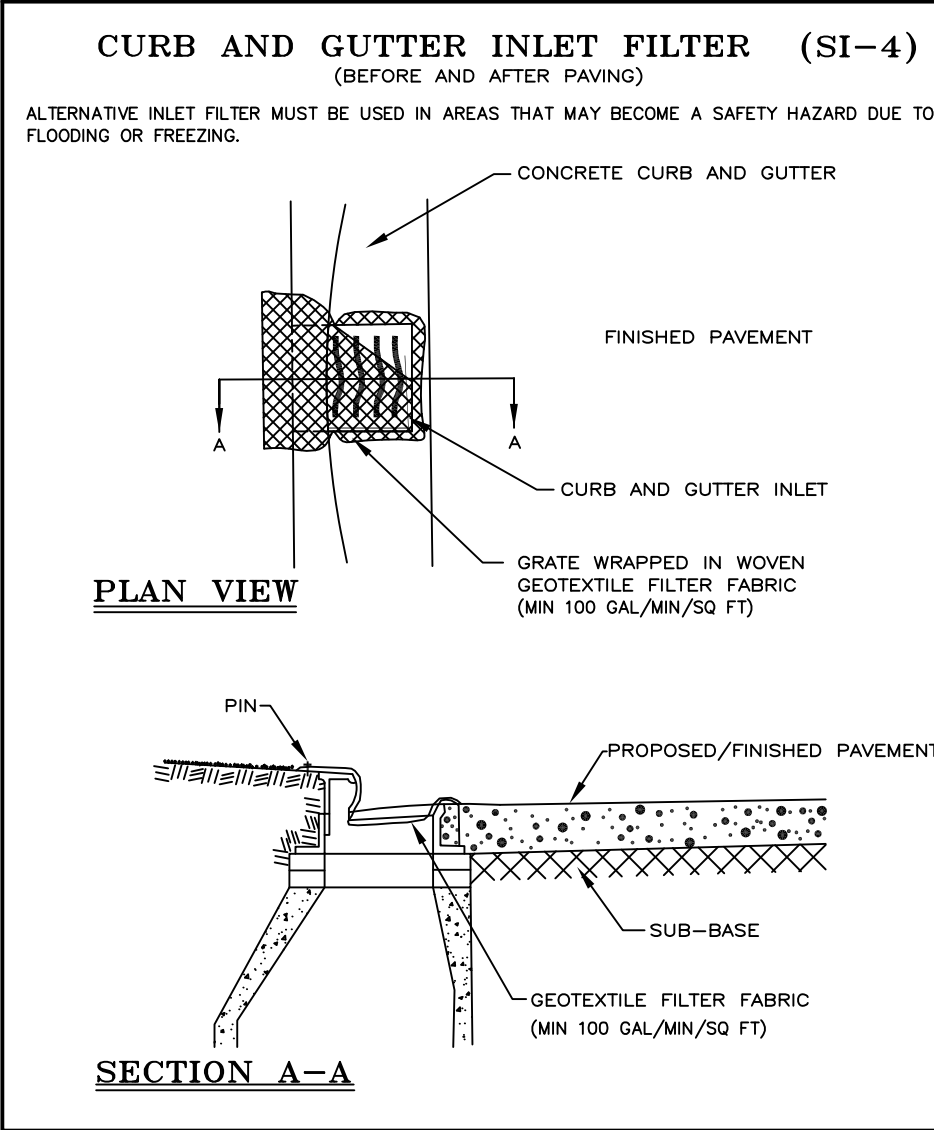
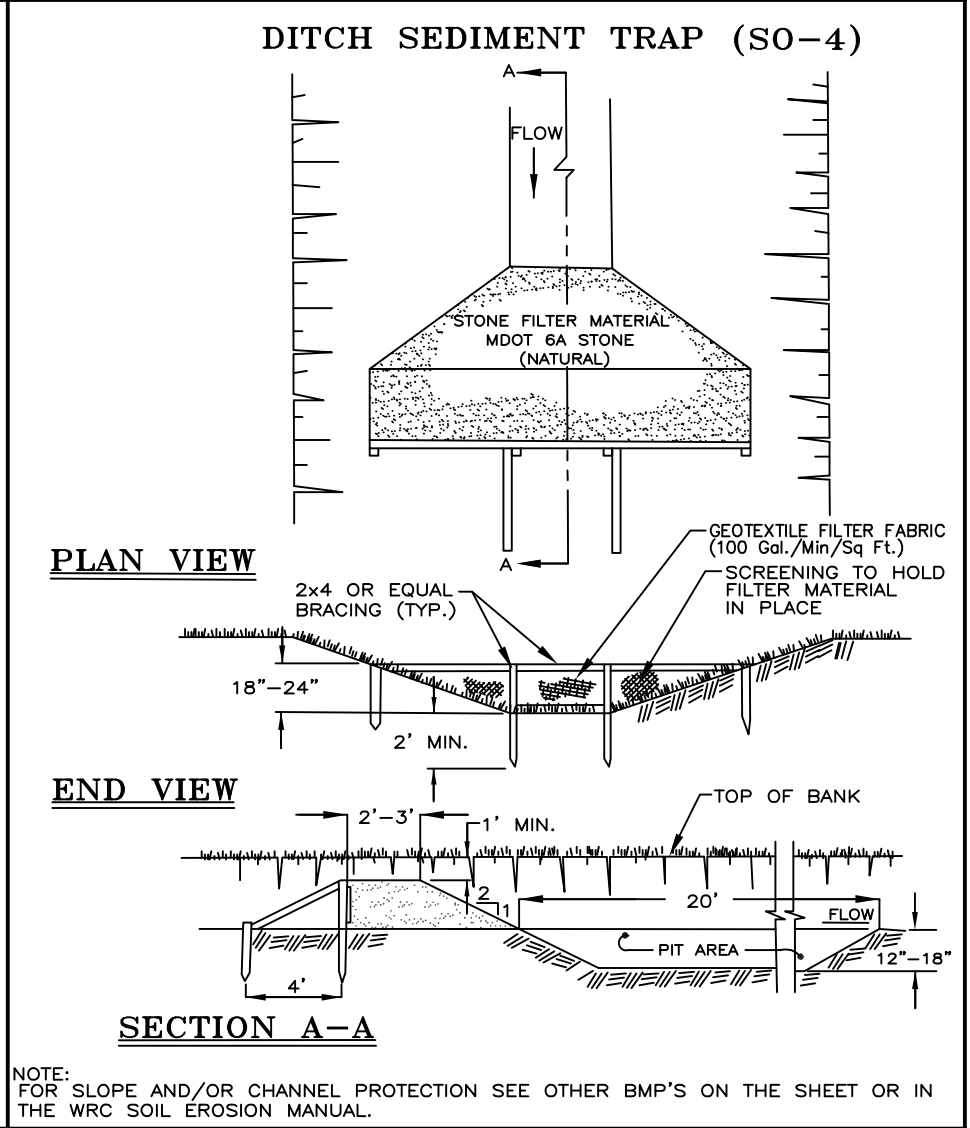
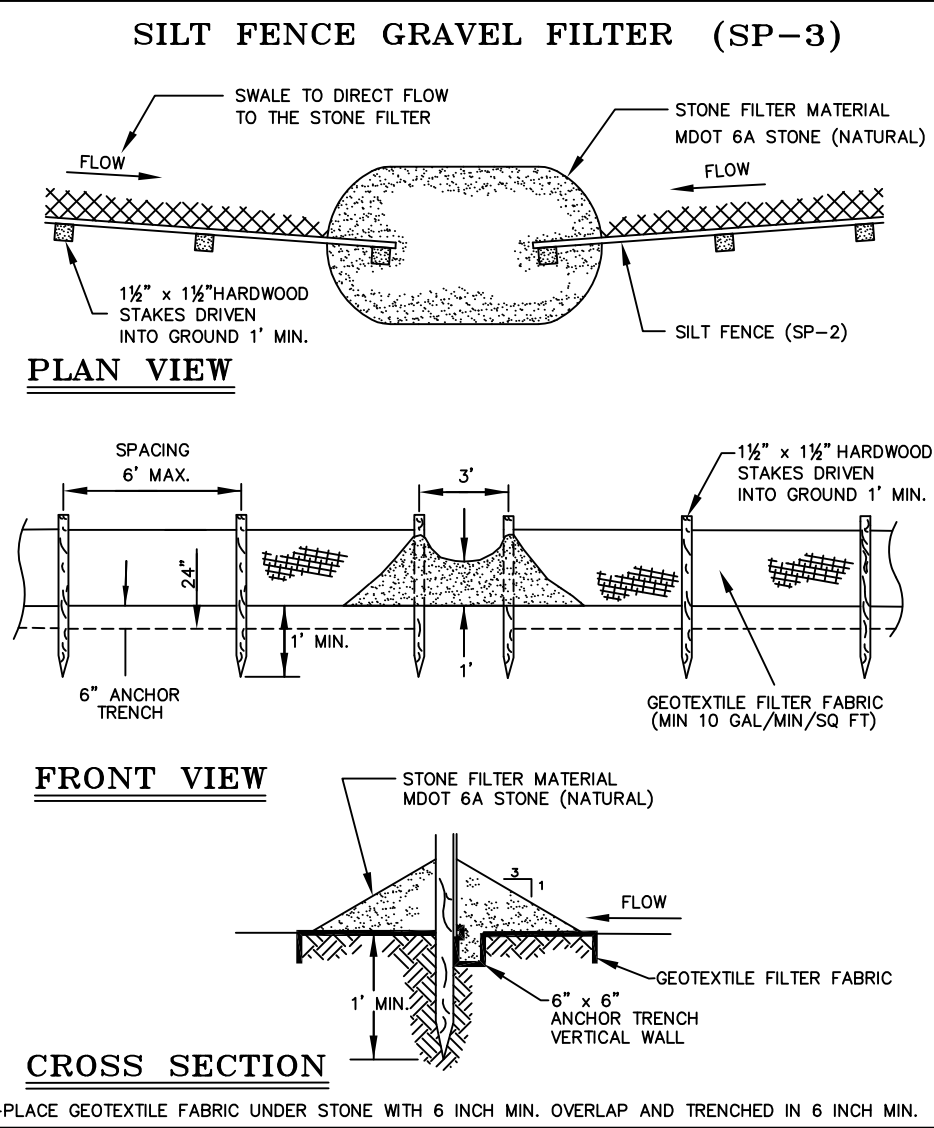
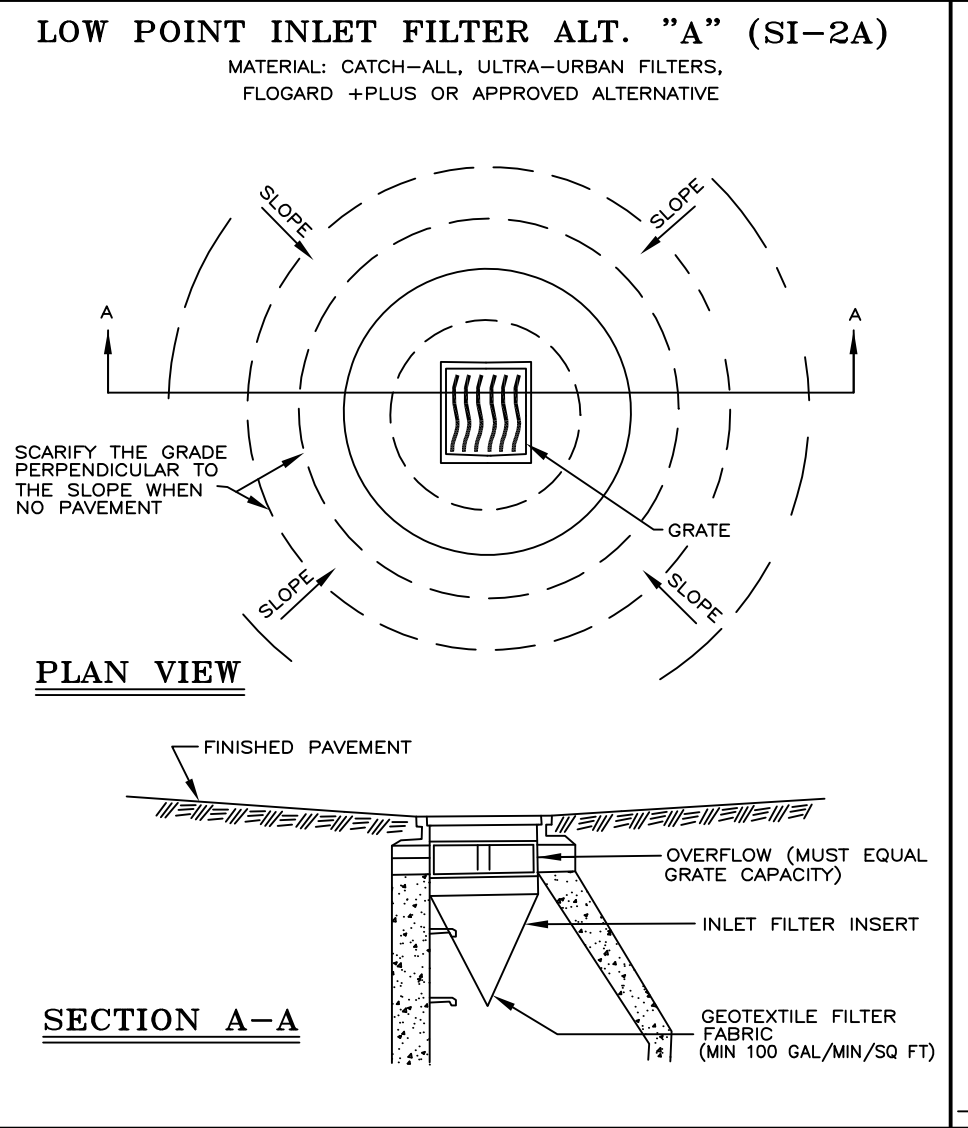
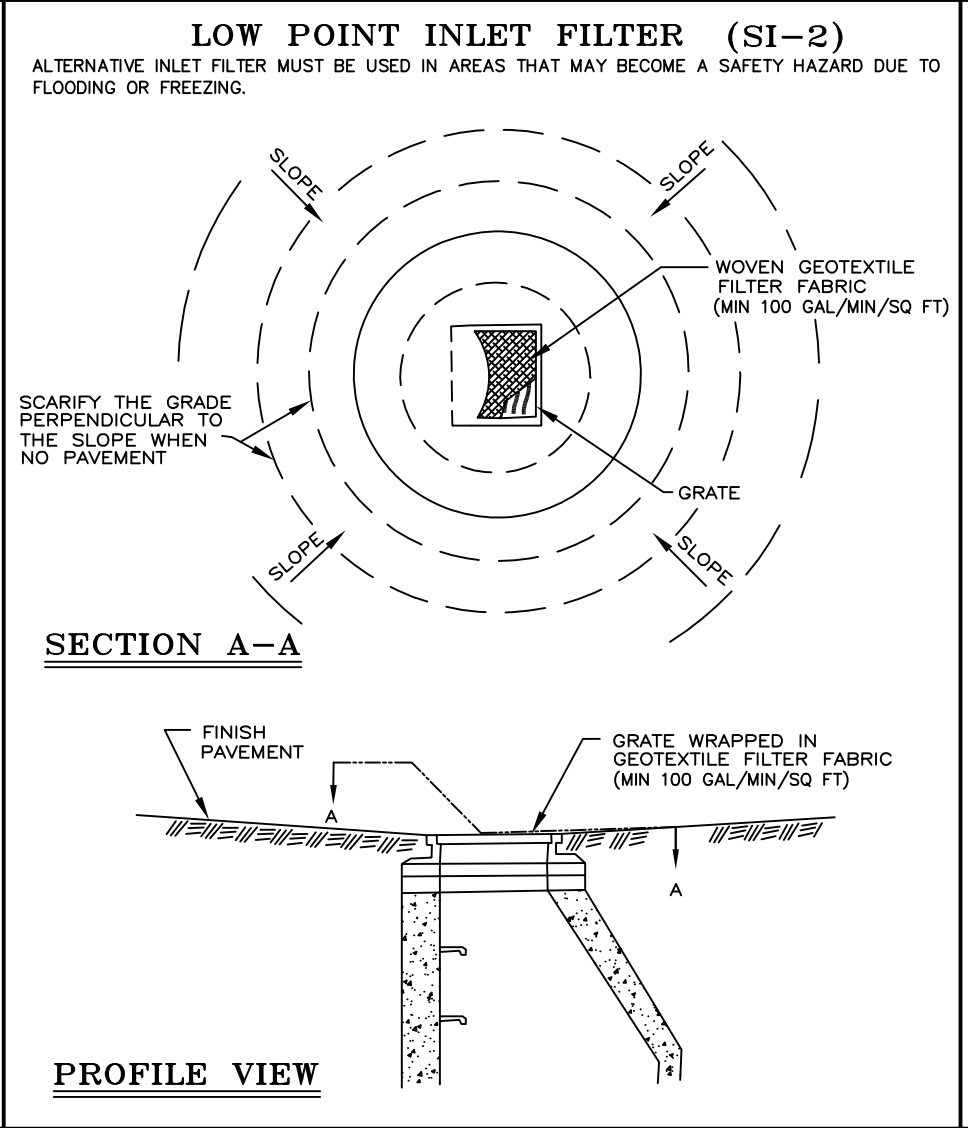
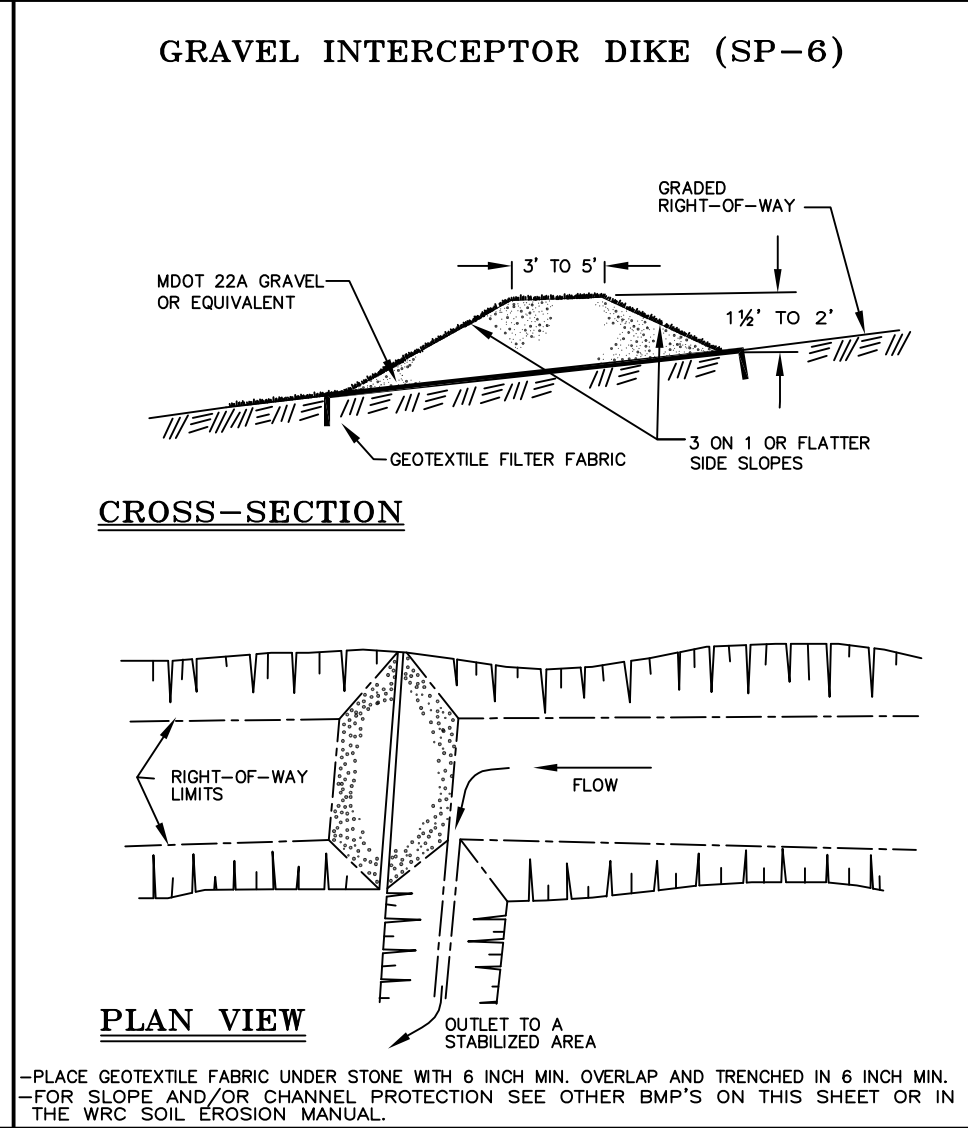
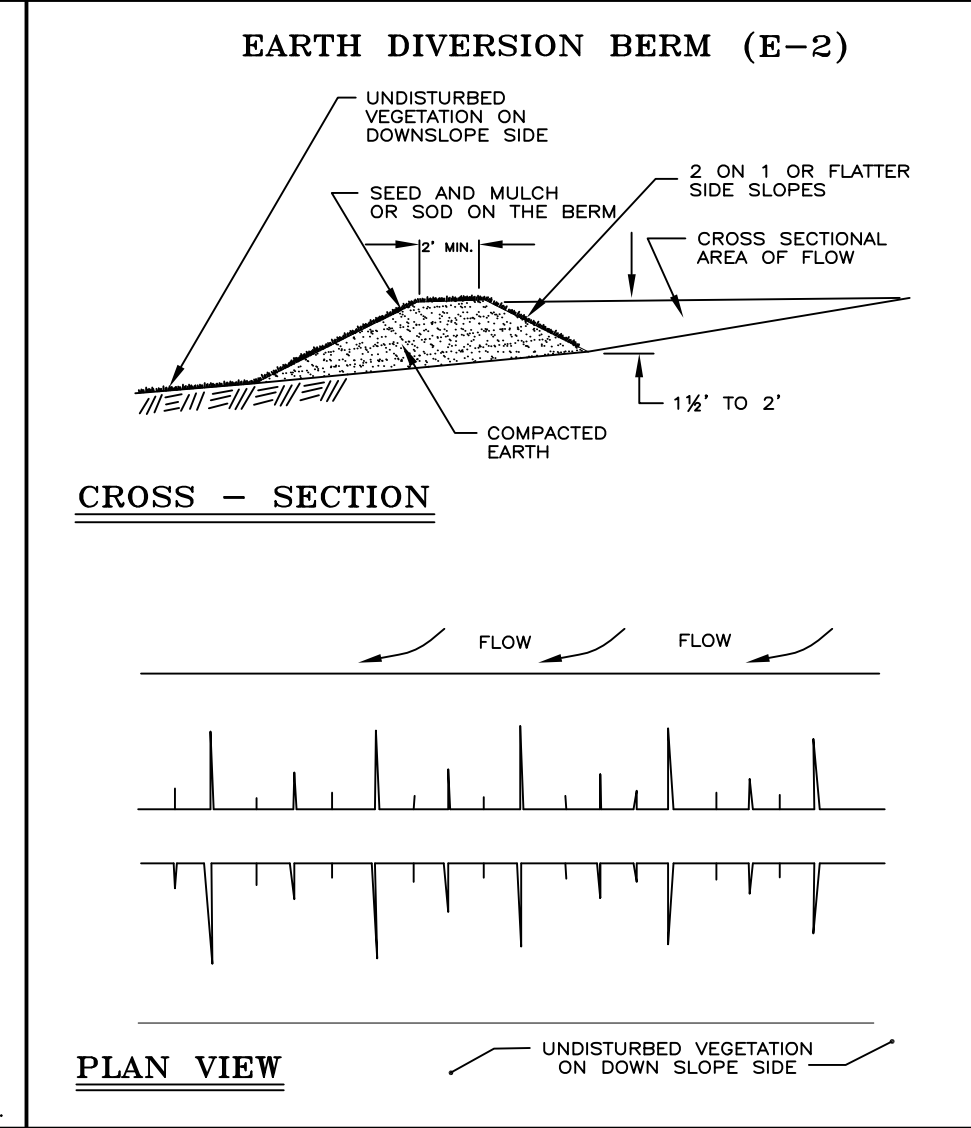
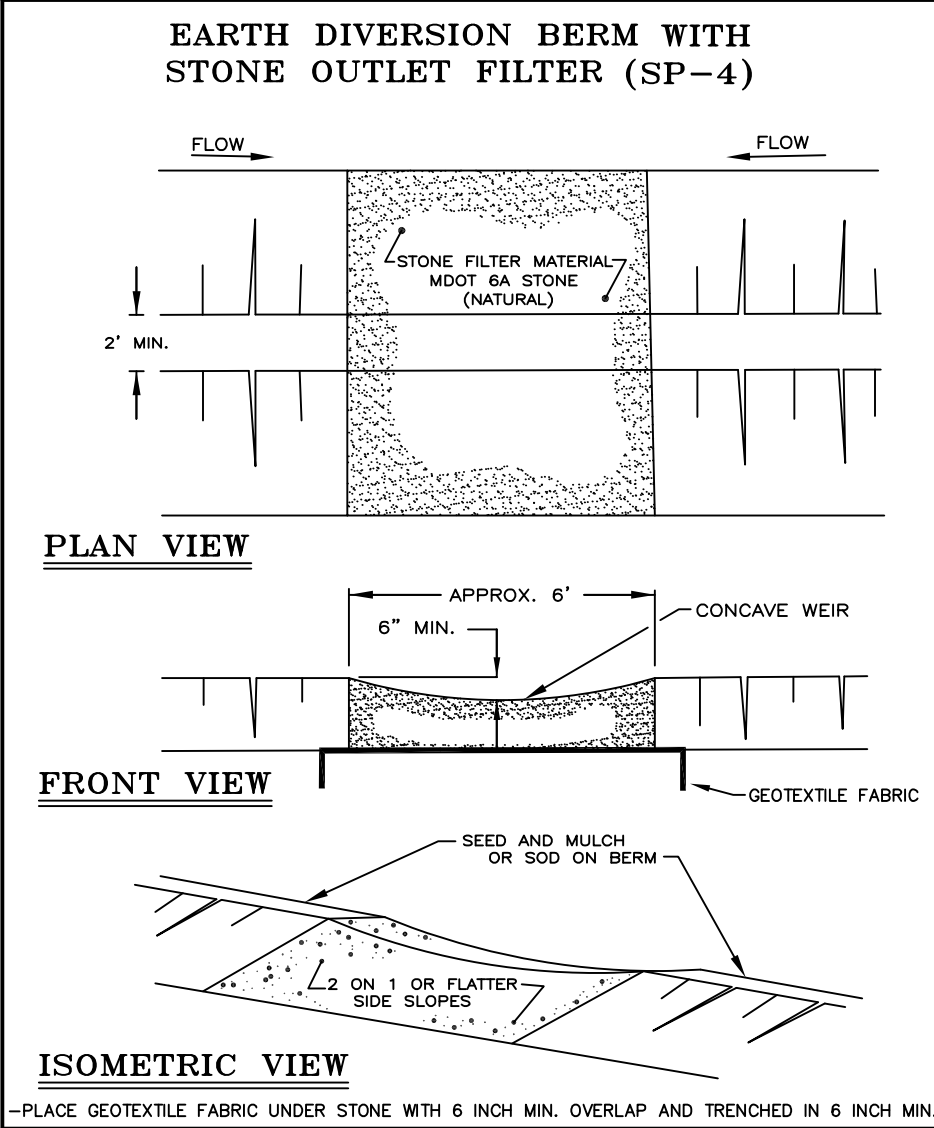
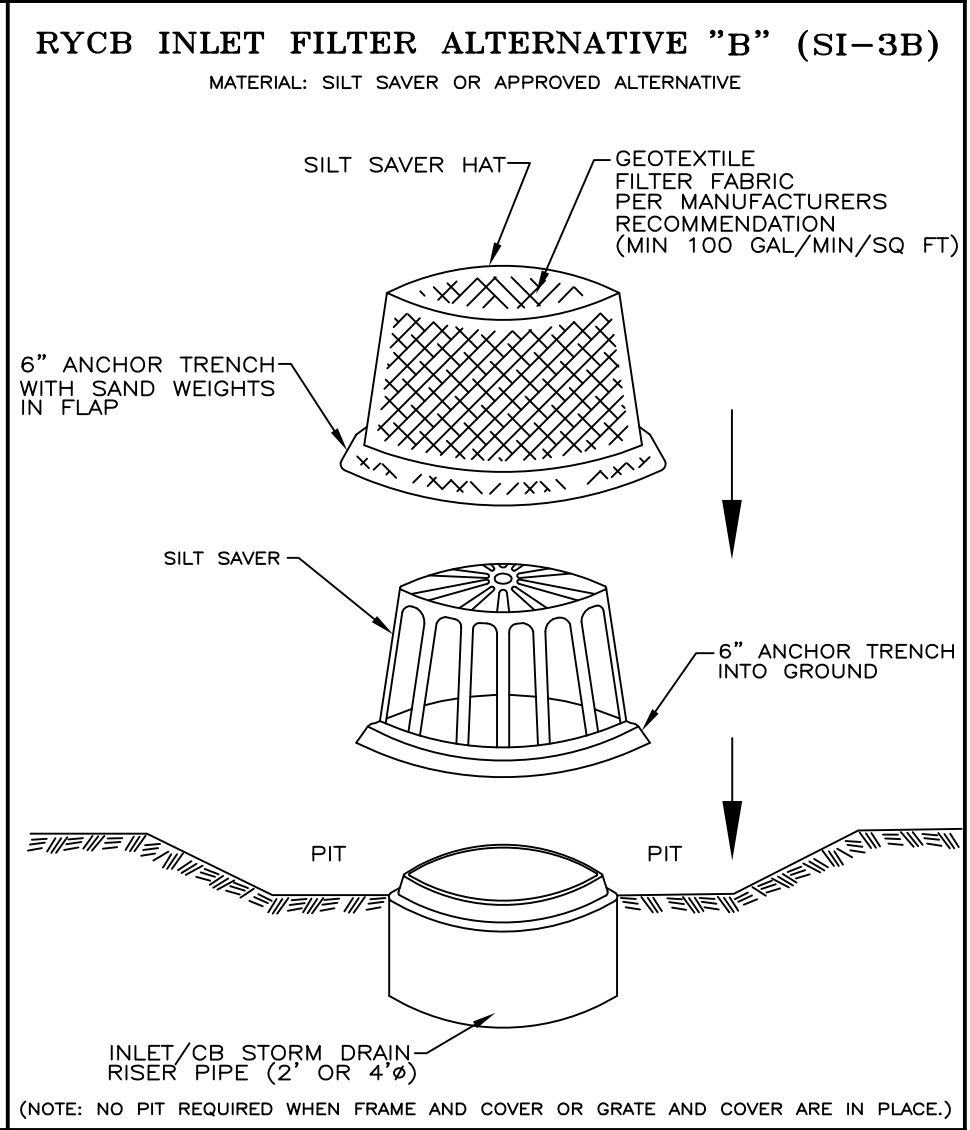
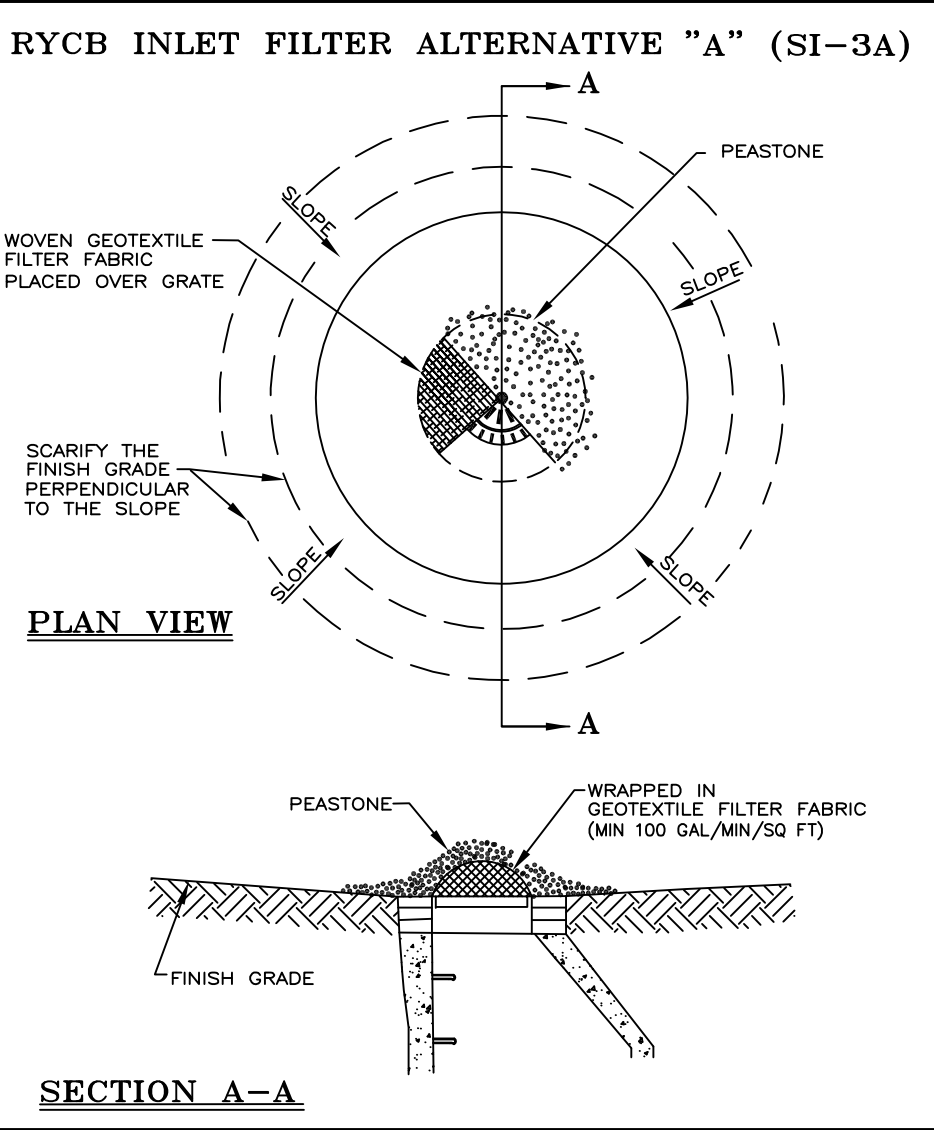
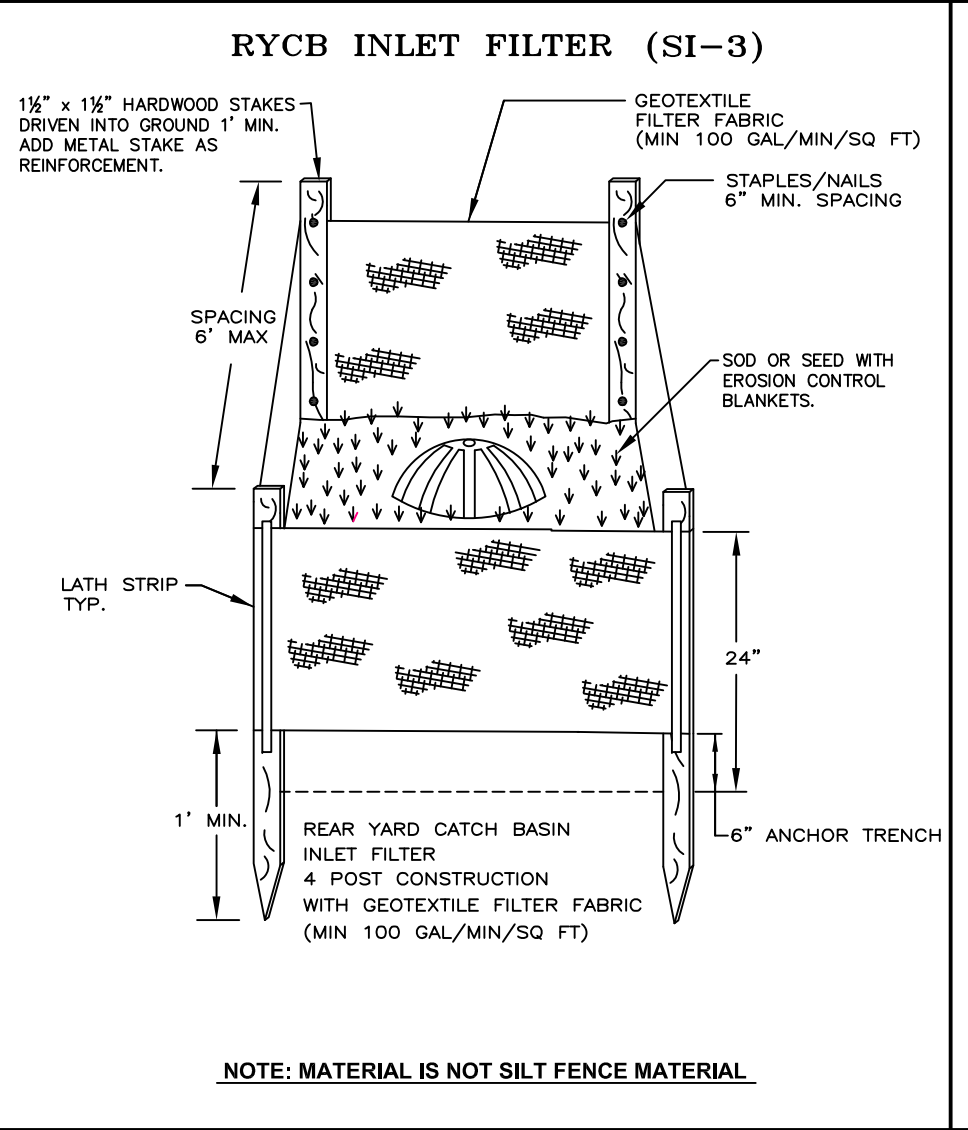
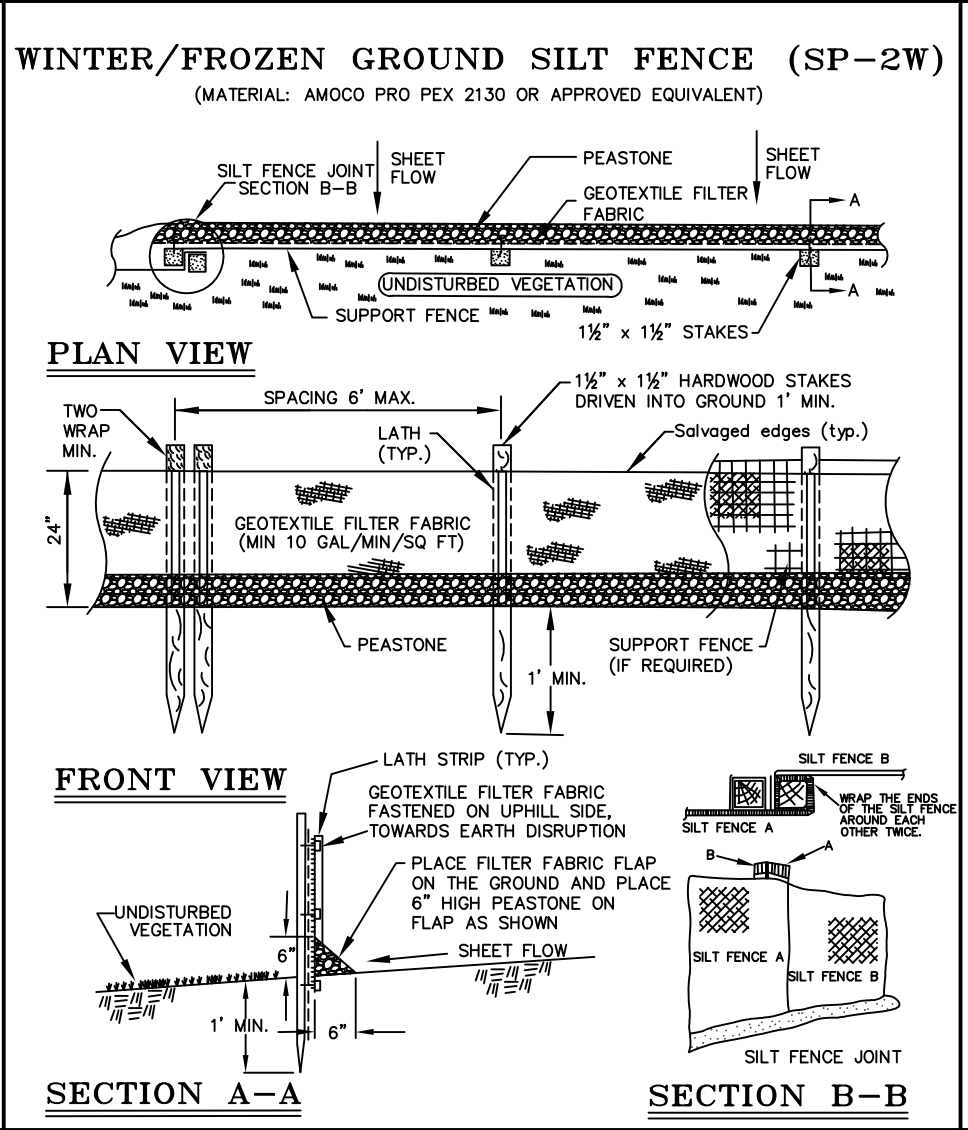
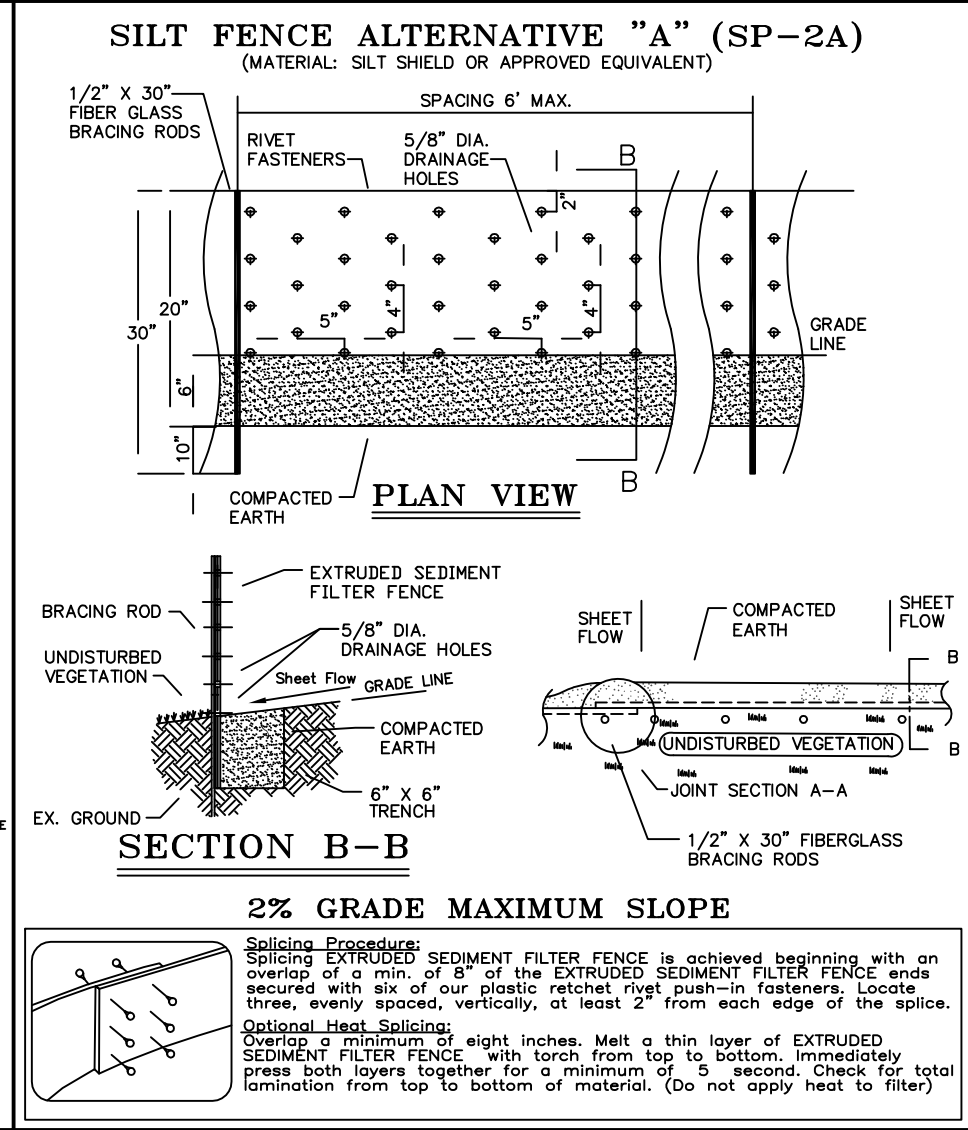
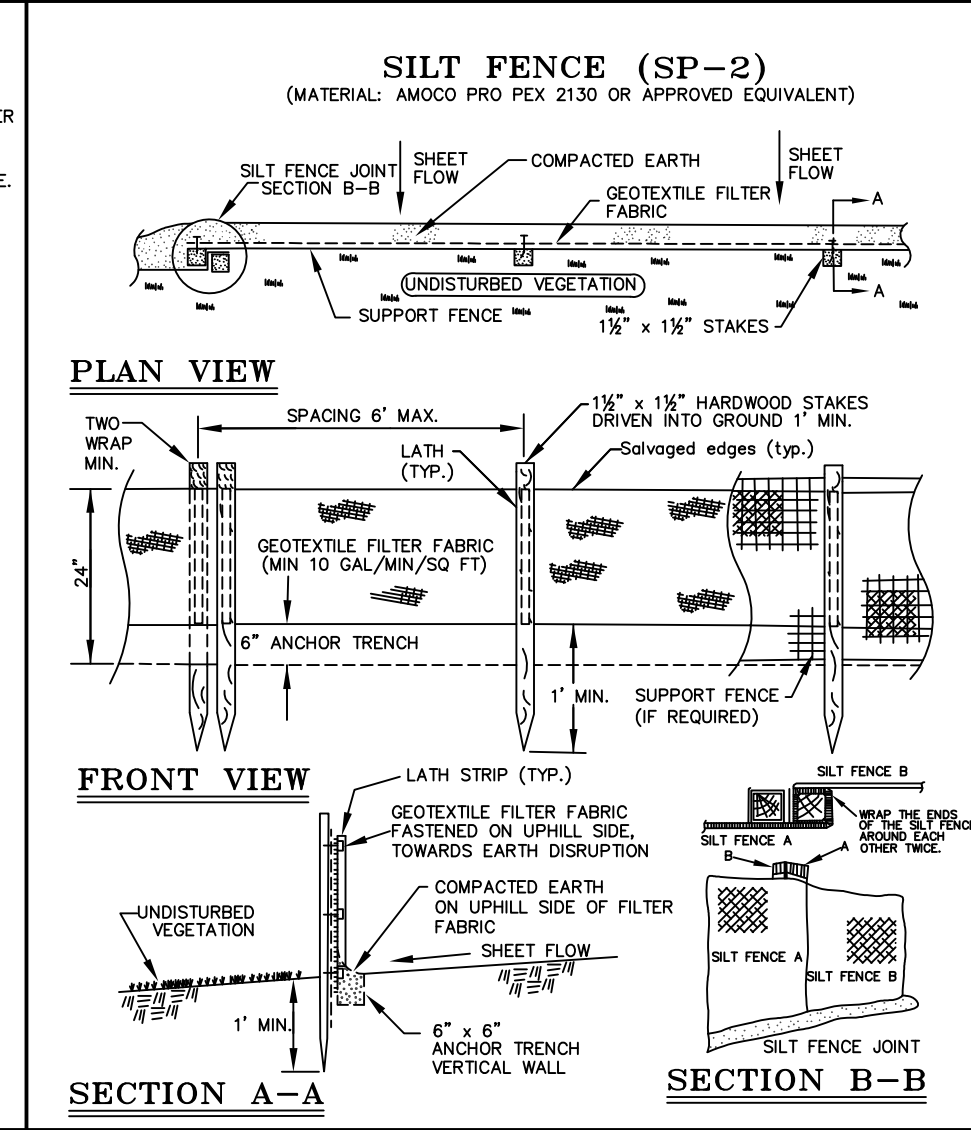
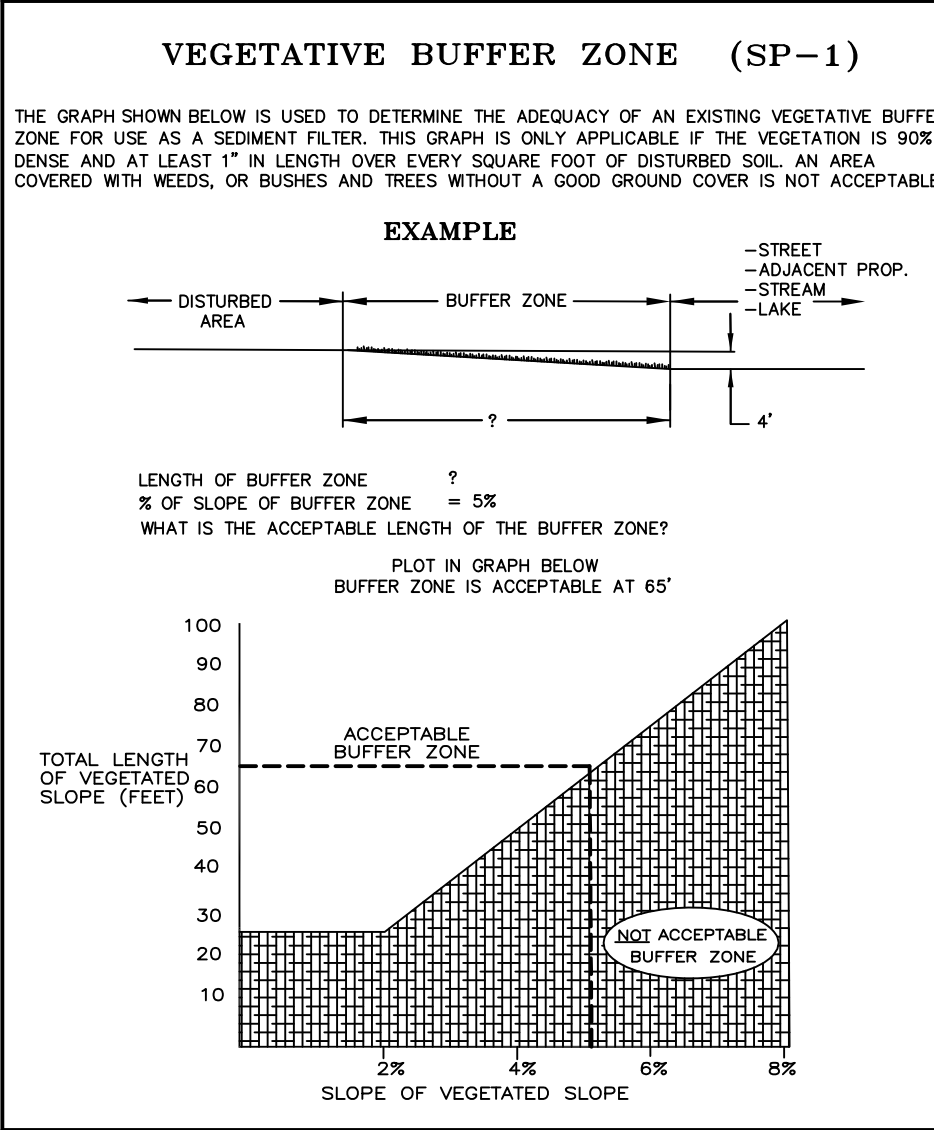
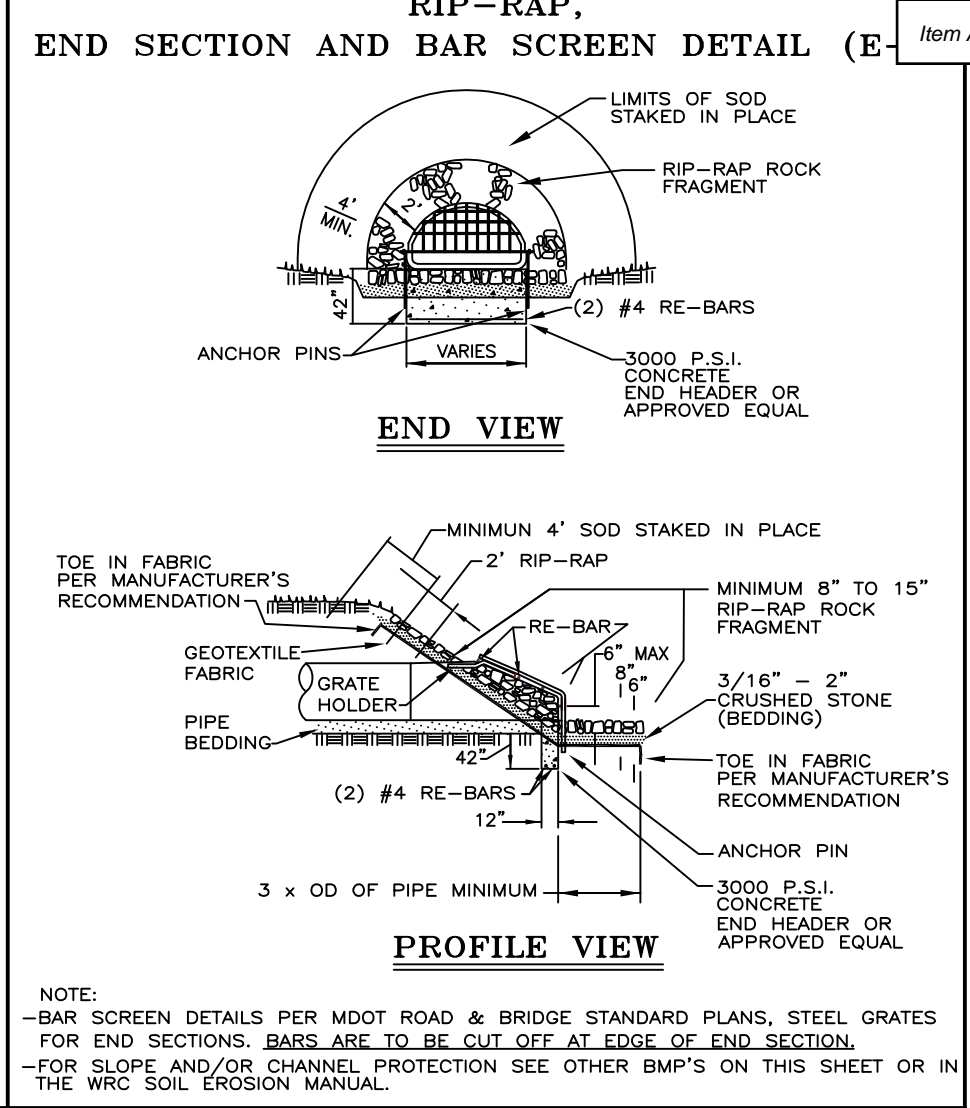
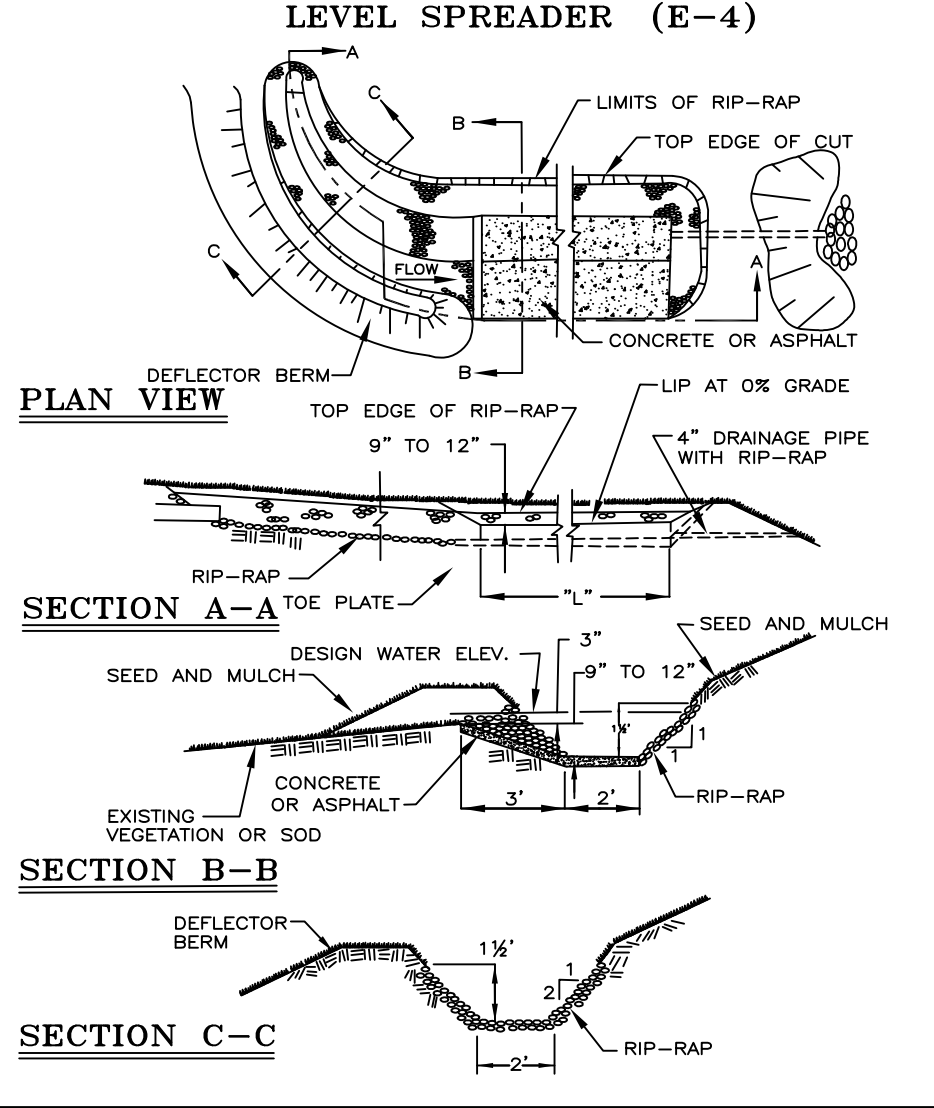
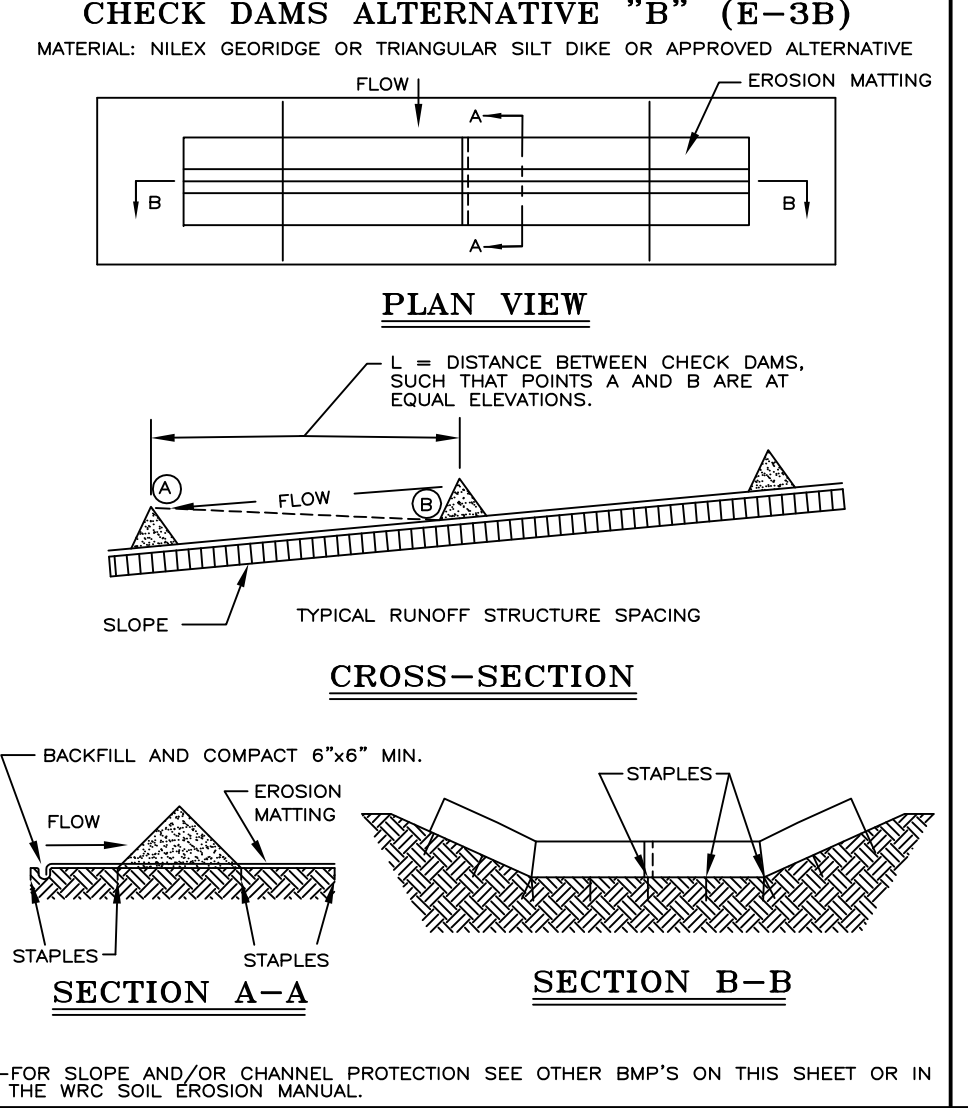
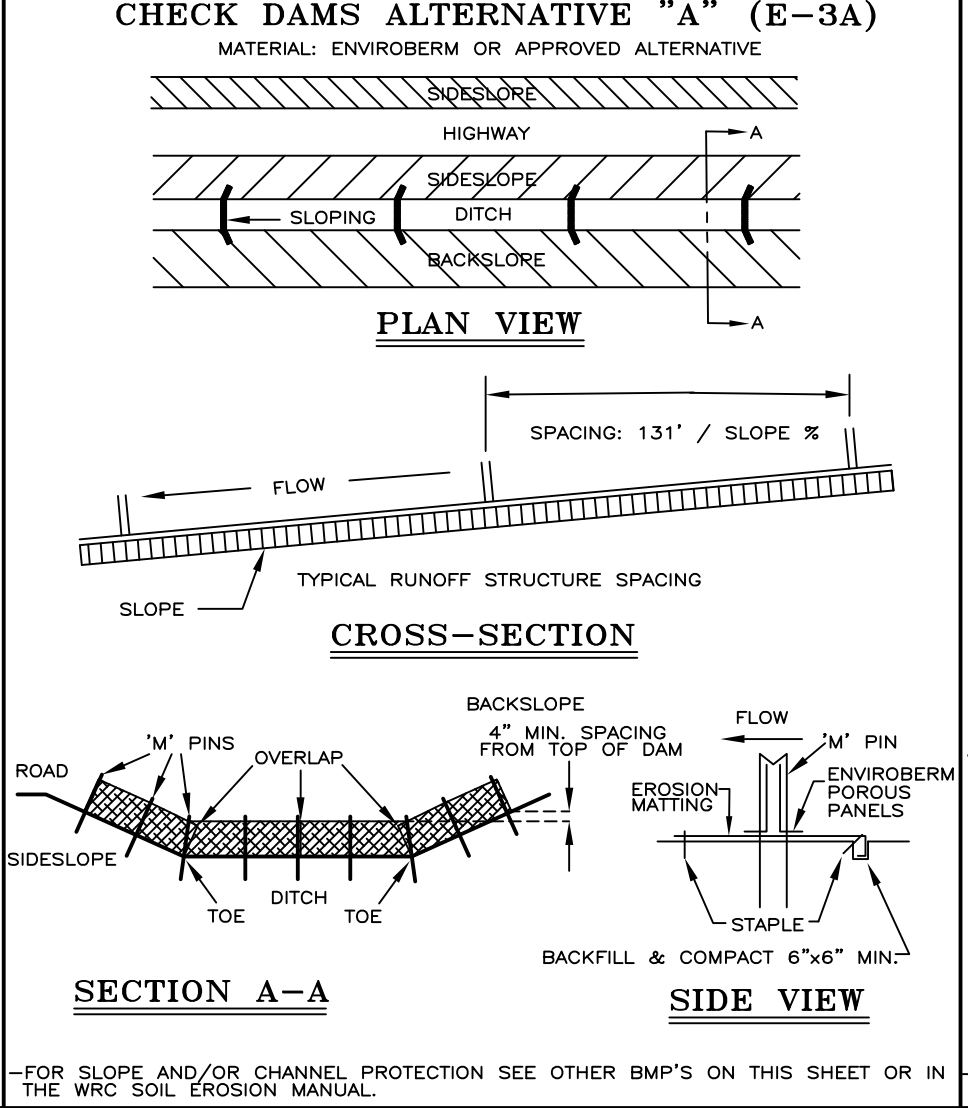
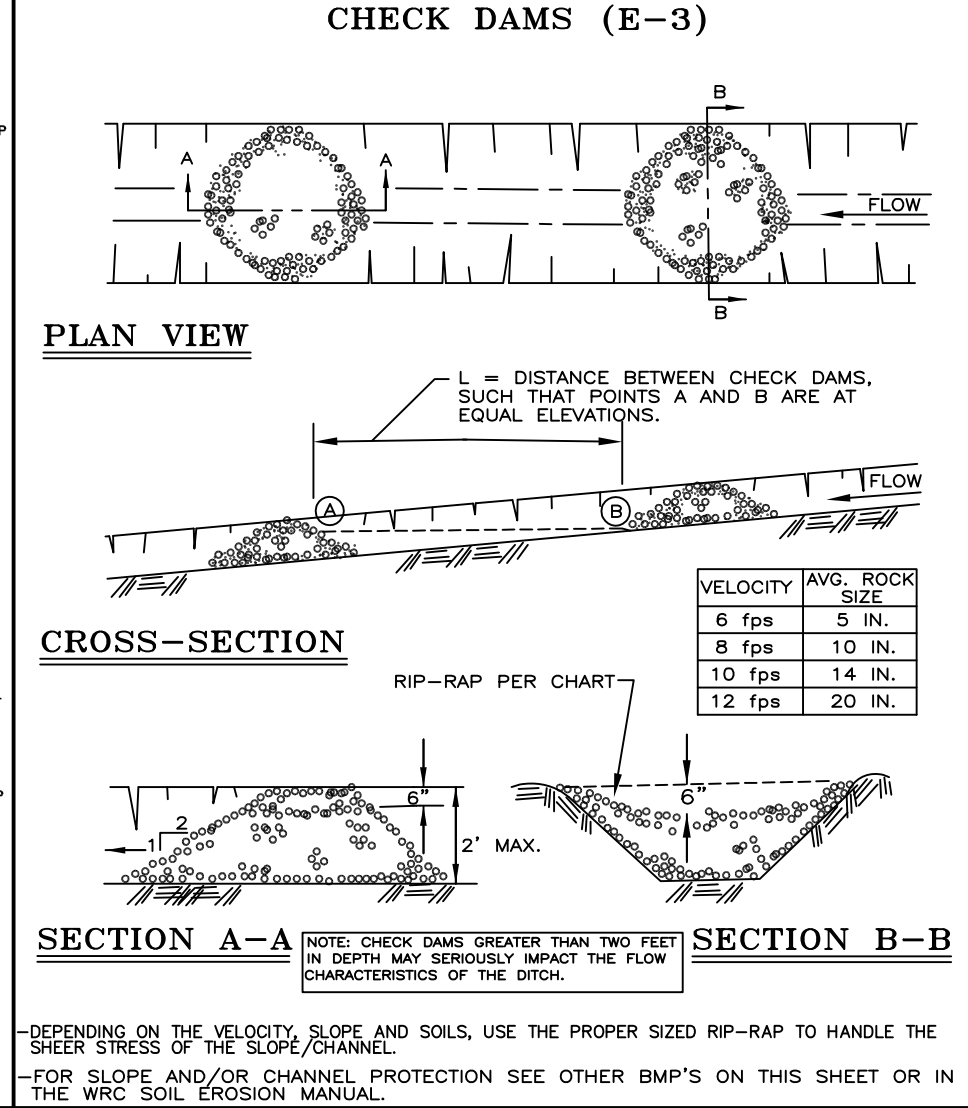
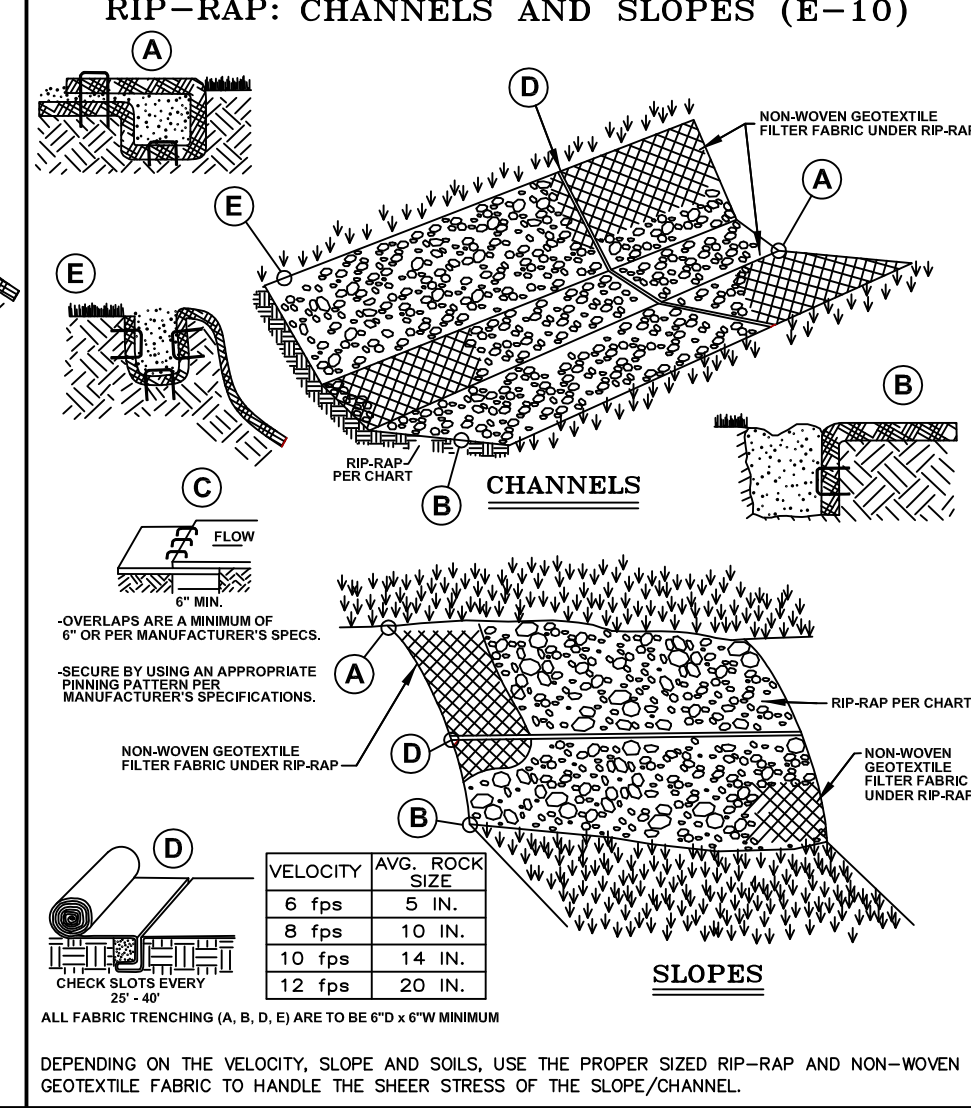
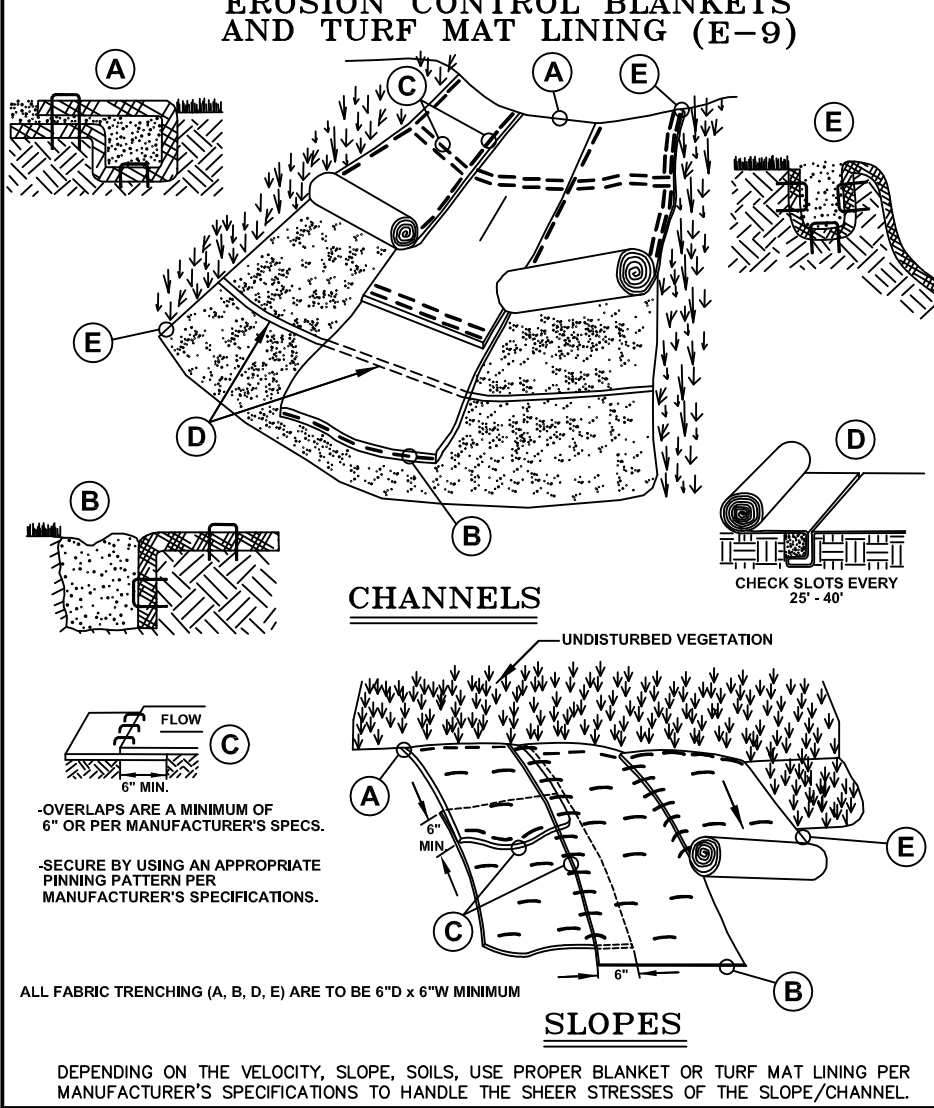


MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
	FIRST ISSUE	08/16/95		REVISE	10-03-02		REVISE	06-01-07
	ADD SO-1	06-17-96		REVISE	12-17-03		UPDATED TITLE BLOCK	04/30/13
	NEW BAR GRATE	11-03-97		SEC REFERENCE	05-17-05			

Johnson & Anderson
 4494 Elizabeth Lake Road Waterford, Michigan 48328 tel (248) 681-7800 fax (248) 681-2660
 1060 W. Norton Avenue, Suite 7 Muskegon, Michigan 49441 tel (231) 780-3100 fax (231) 780-3115
 3910 Lapeer Road 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

STORM SEWER STANDARD DETAILS
 JOB NO. _____
 DATE ISSUED 08/16/95
 SHEET NO. _____



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	01/01/01	PROPOSED DETAIL
2	02/01/01	FOR CONSTRUCTION APPROVAL, NAME CHANGES
3	03/01/01	FOR CONSTRUCTION APPROVAL, NAME CHANGES
4	04/01/01	FOR CONSTRUCTION APPROVAL, NAME CHANGES

ORIG. DATE: 01/01/01

SCALE: _____

DESIGNED BY: WRC

DRAWN BY: Mapping

WRC WATER RESOURCES COMMISSIONER

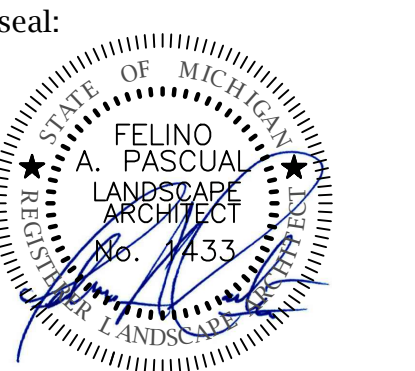
ONE PUBLIC WORKS DRIVE, BLDG 95 WEST WATERFORD, MICHIGAN 48320-1907

SHEET NO.: 1 of 19



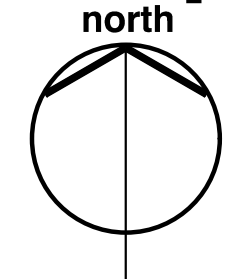
FELINO A. PASCUAL and ASSOCIATES

Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5388
fax. (248) 557-5416



landscape plan for: West Valley a multi-family rental development community White Lake Township, Michigan

note:
unless noted otherwise, numerical value on landscape quantities specified on plan take precedence over graphic representation.



scale: 0' 30' 60' 120' 180'
1" = 60' - 0"



residential landscape requirements:

greenbelt	REQUIRED	PROVIDED
TOTAL LN.FT. OF GREENBELT FRONTAGE	848'±	
848'± GREENBELT FRONTAGE - 167'± EXISTING WOOD # VEGETATION FRONTAGE	681'±	
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 30 LN.FT. (681' LN.FT. / 30 LN.FT. = 22.7 TREES)	23	23
EIGHT (8) SHRUB PER 30 LN.FT. (681' LN.FT. / 30 LN.FT. = 22.7 x 8-SHRUBS = 181.6 SHRUBS)	182	182
GREENBELT SHRUB PLANTINGS (SHT. LS-3)	53	
ENTRY SHRUB PLANTINGS (SHT. LS-5)	129	
TOTAL PROVIDED	182	

interior landscape

	REQUIRED	PROVIDED
TOTAL ACRES OF SITE	15.14 AC±	
ACRES OF 60' R.O.W. AREA	1.21 AC±	
ACRES OF INTERNAL ROAD AREA	1.31 AC±	
TOTAL ACRES OF SITE NET AREA	12.54 AC± (546,242 SQ.FT.)	
TOTAL SQ.FT. OF INTERIOR LANDSCAPING AREA	81,937 SQ.FT.	
15% OF 12.54 AC± (546,242 SQ.FT.)=81,936.36		
ONE (1) DECIDUOUS, ORNAMENTAL OR EVERGREEN TREE PER 300 SQ.FT. (81,937 SQ.FT. / 300 SQ.FT. = 273.12 TREES)	273	273
FIVE (5) SHRUB PER 300 SQ.FT. (81,937 SQ.FT. / 300 SQ.FT. = 273.12 x 5-SHRUBS = 1,365.61 SHRUBS)	1366	1366
BUILDING FOUNDATION SHRUB PLANTINGS (SHT. LS-4)	1,101	
DETENTION POND SHRUB PLANTINGS (SHT. LS-4)	75	
GENERAL SHRUB PLANTINGS (SHT. LS-2)	109	
GENERAL SHRUB PLANTINGS (SHT. LS-3)	81	
TOTAL PROVIDED	1,014	

residential buffer

	REQUIRED	PROVIDED
TOTAL LN.FT. OF SOUTH PROPERTY LINE	1307'±	
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 15 LN.FT. (1307 SQ.FT. / 15 LN.FT. = 87.13 TREES)	87	23-NEW + EXISTING TREES
FOUR (4) SHRUB PER 15 LN.FT. (1307 LN.FT. / 15 LN.FT. = 87.13 x 4 = 348.53 SHRUBS)	349	EXISTING VEGETATION
TOTAL LN.FT. OF WEST PROPERTY LINE	720'±	
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 15 LN.FT. (720 LN.FT. / 15 LN.FT. = 48 TREES)	48	16-NEW + EXISTING TREES
FOUR (4) SHRUB PER 15 LN.FT. (720 LN.FT. / 15 LN.FT. = 48 x 4 = 192 SHRUBS)	192	EXISTING VEGETATION

landscape maintenance notes:

LANDSCAPE MAINTENANCE PROCEDURES AND FREQUENCIES TO BE FOLLOWED SHALL BE SPECIFIED ON THE LANDSCAPE PLAN, ALONG WITH THE MANNER IN WHICH THE EFFECTIVENESS, HEALTH AND INTENDED FUNCTIONS OF THE VARIOUS LANDSCAPE AREAS ON THE SITE WILL BE ENSURED.

1. LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.
2. PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES. SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.
3. ALL DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED AND REPLACED WITHIN SIX (6) MONTHS AFTER IT DIES OR IN THE NEXT PLANTING SEASON, WHICHEVER OCCURS FIRST. THE PLANTING SEASON FOR DECIDUOUS PLANTS SHALL BE BETWEEN MARCH 15 AND NOVEMBER 15 OR UNTIL THE PREPARED SOIL BECOMES FROZEN. THE PLANTING SEASON FOR EVERGREEN PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1. PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE.

tree cluster/grouping planting notes:

1. typical 3 to 4 evergreen or canopy tree cluster grouping per same species
2. maximum of 8-evergreen tree cluster grouping per same species provided
3. maximum of 5-canopy tree cluster grouping per same species provided

TREES SHALL BE LOCATED A MINIMUM 6' FROM ALL WATER MAIN, SANITARY, AND STROM SEWER. NO TREES TO BE PLANTED IN DRAINAGE SWALE

client:

JMF WHITE LAKE, LLC.
1700 W. BIG BEAVER ROAD SUITE 120
TROY, MI 48084

project:

WEST VALLEY

project location:

White Lake Twp., Michigan

Union Lake Road

sheet title:

overall landscape planting detail

job no./issue/revision date:

LS19.104.08	REVIEW	9-3-2019
LS19.104.09	SPA	9-28-2019
LS21.034.21	SPA	2-18-2021
LS21.034.21	COMMENTS	3-16-2021
LS23.083.07	COMMENTS	7-29-2023
LS23.083.11	COMMENTS	11-2-2023
LS24.032.02	UPDATES TRP COMMENTS	2-7-2024
LS24.032.05	UPDATES	5-29-2024

drawn by:

JP, DK, PH

checked by:

FP

date:

2-2-2024

notice:

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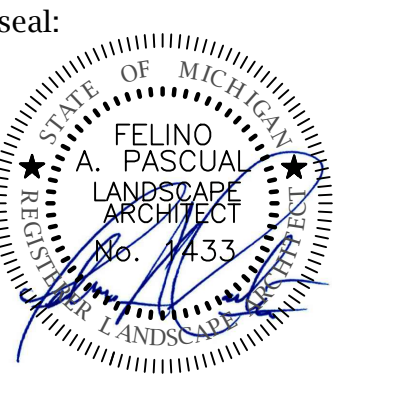
The location and elevations of existing underground utilities as shown on this drawing are only approximate; no guarantee is either expressed or implied as to the completeness of accuracy; contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no:

LS24.032.02

sheet no:

LS-1 of 5



client:
JMF WHITE LAKE, LLC.
 1700 W. BIG BEAVER ROAD SUITE 120
 TROY, MI 48084

project:
WEST VALLEY

project location:
 White Lake Twp., Michigan

Union Lake Road
 sheet title:

landscape planting detail

job no./issue/revision date:

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LS19.104.09	SPA	9-28-2019
LS21.034.21	SPA	2-18-2021
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LS23.083.11	COMMENTS	11-2-2023
LS24.032.02	UPDATES TWP	2-7-2024
LS24.032.05	UPDATES	5-29-2024

drawn by:
JP, DK, PH

checked by:
FP
 date:
2-2-2024

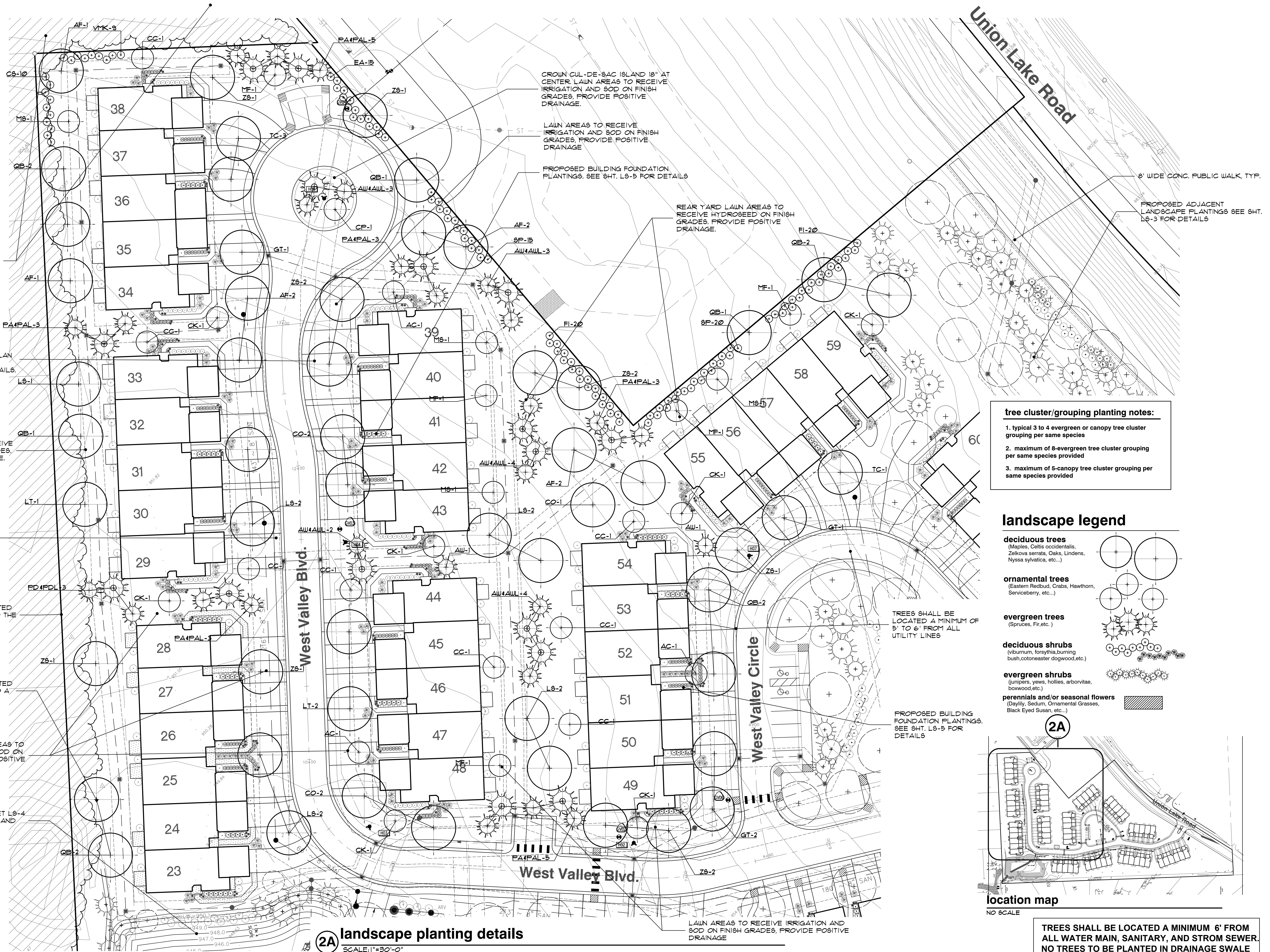
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project no:
LS24.032.02

sheet no:
LS-2 of 5



HATCHING DENOTES EXISTING WOODS AND VEGETATION

PROPOSED UNDERGROUND UTILITIES-SEE ENGINEERING PLAN FOR FINAL LOCATIONS, SIZES, TYPES, ELEVATIONS AND DETAILS.

REAR YARD AREAS TO RECEIVE HYDROSEED ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE.

5' WIDE COLLECTOR WALK

TREES SHALL NOT BE PLANTED CLOSER THAN FOUR FEET TO THE PROPERTY LINE

TREES SHALL NOT BE PLANTED CLOSER THAN FOUR FEET TO A PROPERTY LINE

FRONT AND SIDES LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE

DETENTION POND- SEE SHEET L6-4 FOR PROPOSED PLANTINGS AND POND SEED MIX DETAILS

CROWN CUL-DE-SAC ISLAND 18" AT CENTER LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE.

LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE

PROPOSED BUILDING FOUNDATION PLANTINGS. SEE SHT. L6-5 FOR DETAILS

REAR YARD LAWN AREAS TO RECEIVE HYDROSEED ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE.

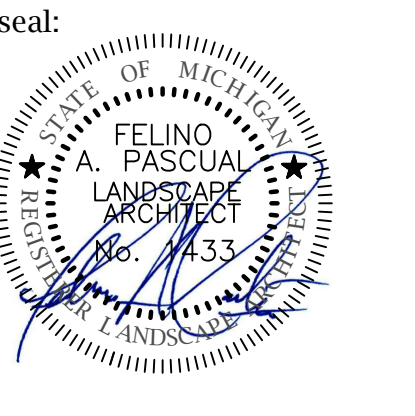
TREES SHALL BE LOCATED A MINIMUM OF 5' TO 6' FROM ALL UTILITY LINES

PROPOSED BUILDING FOUNDATION PLANTINGS. SEE SHT. L6-5 FOR DETAILS

LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE

8' WIDE CONC. PUBLIC WALK, TYP.

PROPOSED ADJACENT LANDSCAPE PLANTINGS SEE SHT. L6-3 FOR DETAILS



client:
JMF WHITE LAKE, LLC.
 1700 W. BIG BEAVER
 ROAD SUITE 120
 TROY, MI 48084

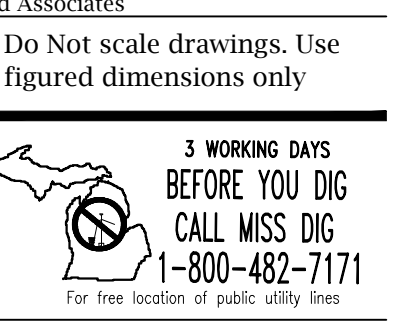
project:
WEST VALLEY
 project location:
 White Lake Twp., Michigan

Union Lake Road
 sheet title:
landscape planting detail

job no./issue/revision date:

LS19.104.08	REVIEW	9-3-2019
LS19.104.09	SPA	9-28-2019
LS21.034.21	SPA	2-18-2021
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LS23.083.11	COMMENTS	11-2-2023
LS24.032.02	UPDATES-TWP	2-7-2024
LS24.032.05	UPDATES	5-29-2024

drawn by:
JP, DK, PH
 checked by:
FP
 date:
2-2-2024
 notice:
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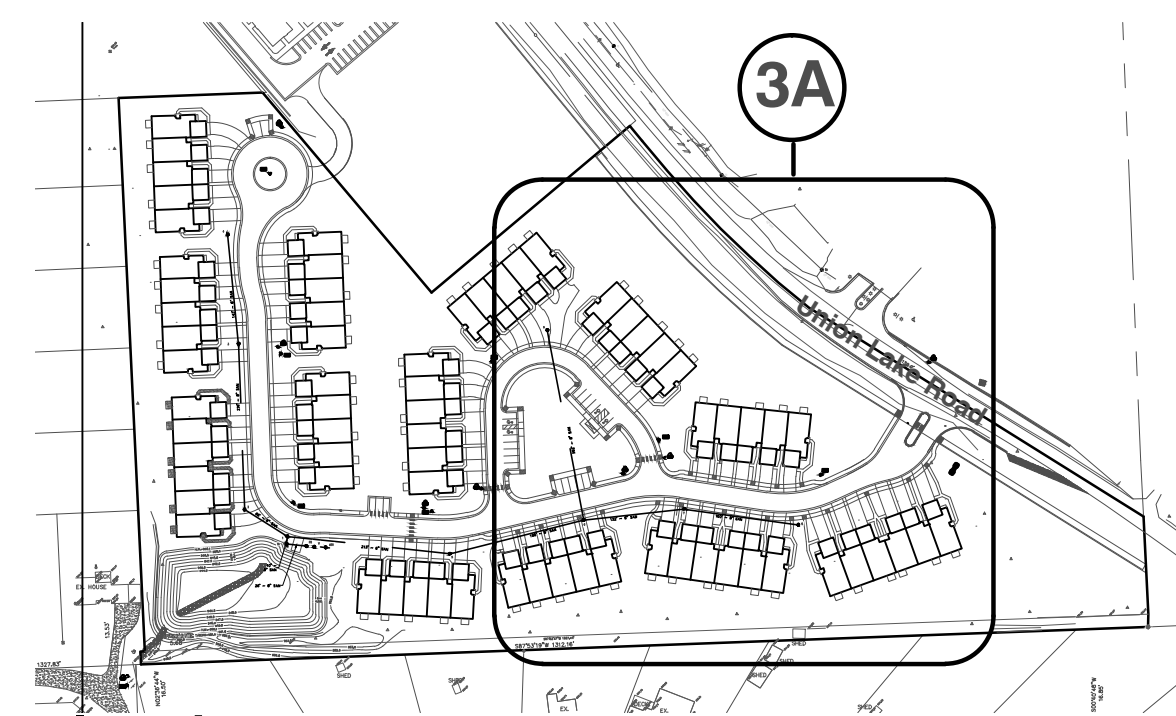


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project no:
LS24.032.02
 sheet no:
LS-3 of 5

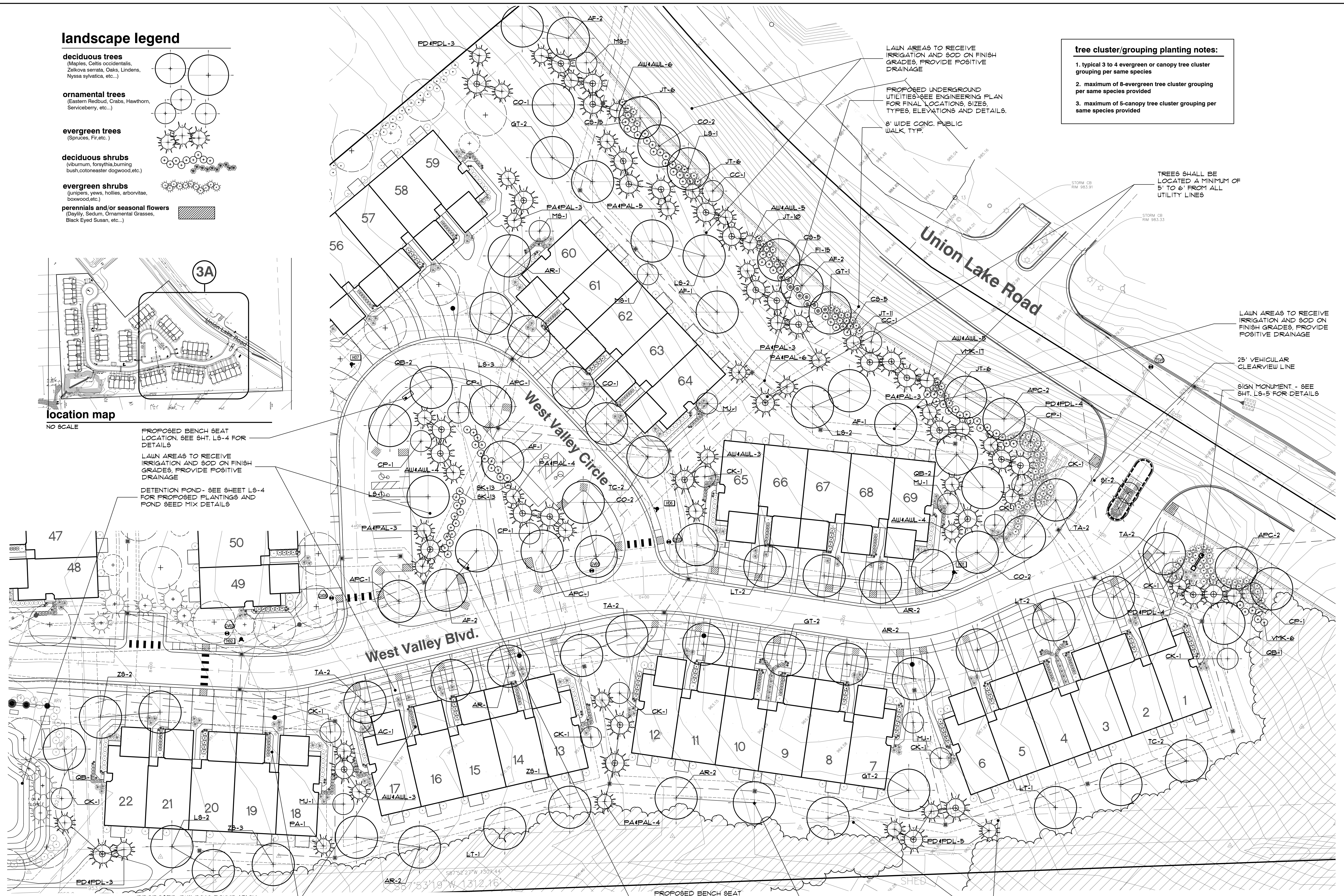
landscape legend

- deciduous trees**
 (Maples, Cotus occidentalis, Zelkova serrata, Oaks, Lindens, Nyssa sylvatica, etc...)
- ornamental trees**
 (Eastern Redbud, Crabs, Hawthorn, Serviceberry, etc...)
- evergreen trees**
 (Spruces, Fir, etc.)
- deciduous shrubs**
 (viburnum, forsythia, burning bush, cotoneaster dogwood, etc.)
- evergreen shrubs**
 (Junipers, yews, hollies, arborvitae, boxwood, etc.)
- perennials and/or seasonal flowers**
 (Daylily, Sedum, Ornamental Grasses, Black Eyed Susan, etc...)



location map
 NO SCALE

PROPOSED BENCH SEAT LOCATION. SEE SHT. LS-4 FOR DETAILS
 LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE
 DETENTION POND - SEE SHEET LS-4 FOR PROPOSED PLANTINGS AND POND SEED MIX DETAILS



tree cluster/grouping planting notes:

1. typical 3 to 4 evergreen or canopy tree cluster grouping per same species
2. maximum of 8-evergreen tree cluster grouping per same species provided
3. maximum of 5-canopy tree cluster grouping per same species provided

LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE
 PROPOSED UNDERGROUND UTILITIES-SEE ENGINEERING PLAN FOR FINAL LOCATIONS, SIZES, TYPES, ELEVATIONS AND DETAILS.
 8' WIDE CONC. PUBLIC WALK, TYP.

TREES SHALL BE LOCATED A MINIMUM OF 5' TO 6' FROM ALL UTILITY LINES

LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE

25' VEHICULAR CLEARVIEW LINE

SIGN MONUMENT - SEE SHT. LS-5 FOR DETAILS

PROPOSED BUILDING FOUNDATION PLANTINGS. SEE SHT. LS-5 FOR DETAILS

PROPOSED BENCH SEAT LOCATION. SEE SHT. LS-4 FOR DETAILS

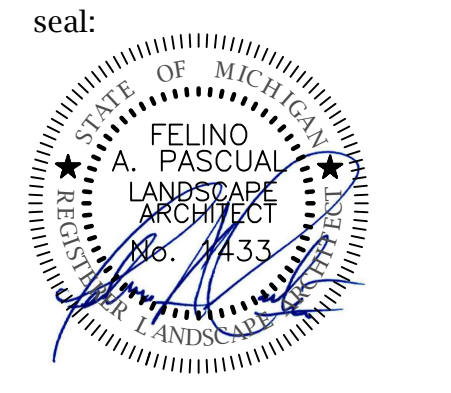
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3A landscape planting details
 SCALE: 1"=30'-0"

FELINO A. PASCUAL
and ASSOCIATES
Community Land Planner and
registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5388
fax. (248) 557-5416



client:
JMF WHITE LAKE, LLC.
1700 W. BIG BEAVER
ROAD SUITE 120
TROY, MI 48084

project:
WEST VALLEY

project location:
White Lake Twp., Michigan

Union Lake Road
sheet title:

plant material list
and planting
details

job no./issue/revision date:

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drawn by:
JP, DK, PH

checked by:
FP
date:
2-2-2024

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LS24.032.02

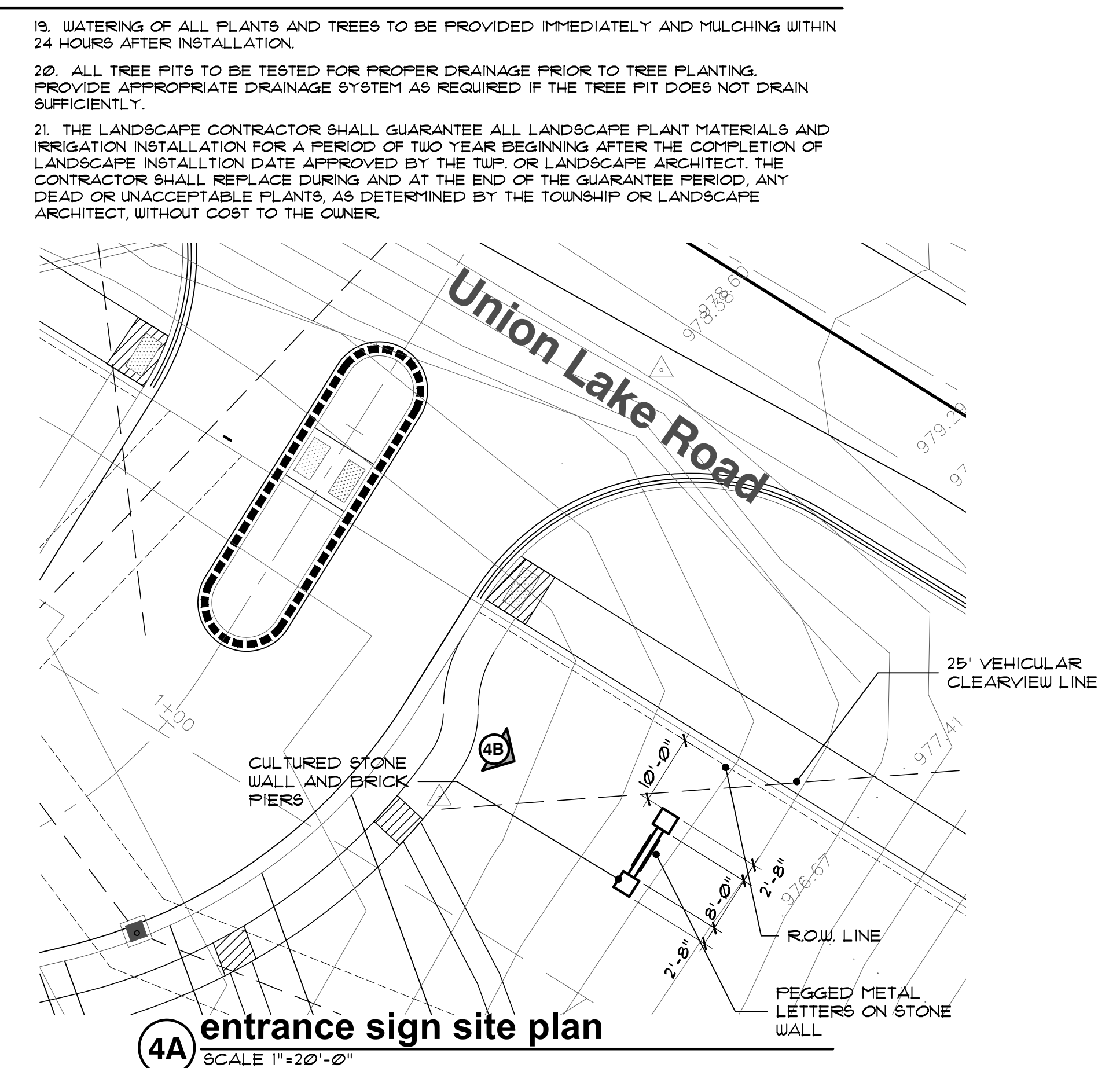
sheet no:
LS-4 of 5

plant material list

key	quant. LS-2	quant. LS-3	botanical name	common name	size	comments
LARGE AND SMALL DECIDUOUS TREES						
GT	4	1	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	
TC	3	4	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2 1/2" BB	
LS	9	10	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
Z6	11	4	ZELKOVA SERRATE 'VILLAGE GREEN'	VILLAGE GREEN ZELKOVA	2 1/2" BB	
TA	-	8	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	2 1/2" BB	
AR	-	10	ACER R. 'FRANKSRED'	RED SUNSET RED MAPLE	2 1/2" BB	
CO	5	8	CELTIS OCCIDENTALIS	HACKBERRY	2 1/2" BB	
LT	3	6	LIRIODENDRON TULIFIFERA	TULIPTREE	2 1/2" BB	
QB	11	6	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
AF	8	9	ACER X FREEMANII 'JEFFSRED'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	
APC	-	1	ACER F. 'CRIMSON KING'	CRIMSON KING NORWAY MAPLE	2 1/2" BB	
SHRUBS						
CC	8	2	CERCIS CANADENSIS	EASTERN REDBUD (MULTI-STEM)	8' BB	(MULTI-STEM)
AC	3	1	AMELANCHIER CANADENSIS	SHADBLow SERVICEBERRY	8' BB	(MULTI-STEM)
CK	1	10	CORNUS KOUSA	KOUSA DOGWOOD	2" BB	
CP	1	5	CRATAEGUS PHAENOPYRUM	WASHINGTON HAWTHORN	2" BB	
MS	4	3	MALUS 'SNOWDRIFT'	SNOWDRIFT CRABAPPLE	2" BB	
MF	5	-	MALUS FLORIBUNDA	JAPANESE FLOWERING CRABAPPLE	2" BB	
MJ	-	4	MAGNOLIA LILIFLORA 'JANE'	JANE MAGNOLIA	10' BB	(MULTI-STEM)
SI	-	2	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	2" BB	
LARGE AND SMALL EVERGREENS						
AW	11	16	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
AUL	1	13	ABIES CONCOLOR	CONCOLOR WHITE FIR	10' BB	O
FA	14	18	FICEA ABIES	NORWAY SPRUCE	8' BB	
PAL	8	14	FICEA ABIES	NORWAY SPRUCE	10' BB	O
PD	2	11	FICEA GLAUCA 'DENSATA'	BLACK HILLS SPRUCE	8' BB	
PDL	1	8	FICEA GLAUCA 'DENSATA'	BLACK HILLS SPRUCE	10' BB	O

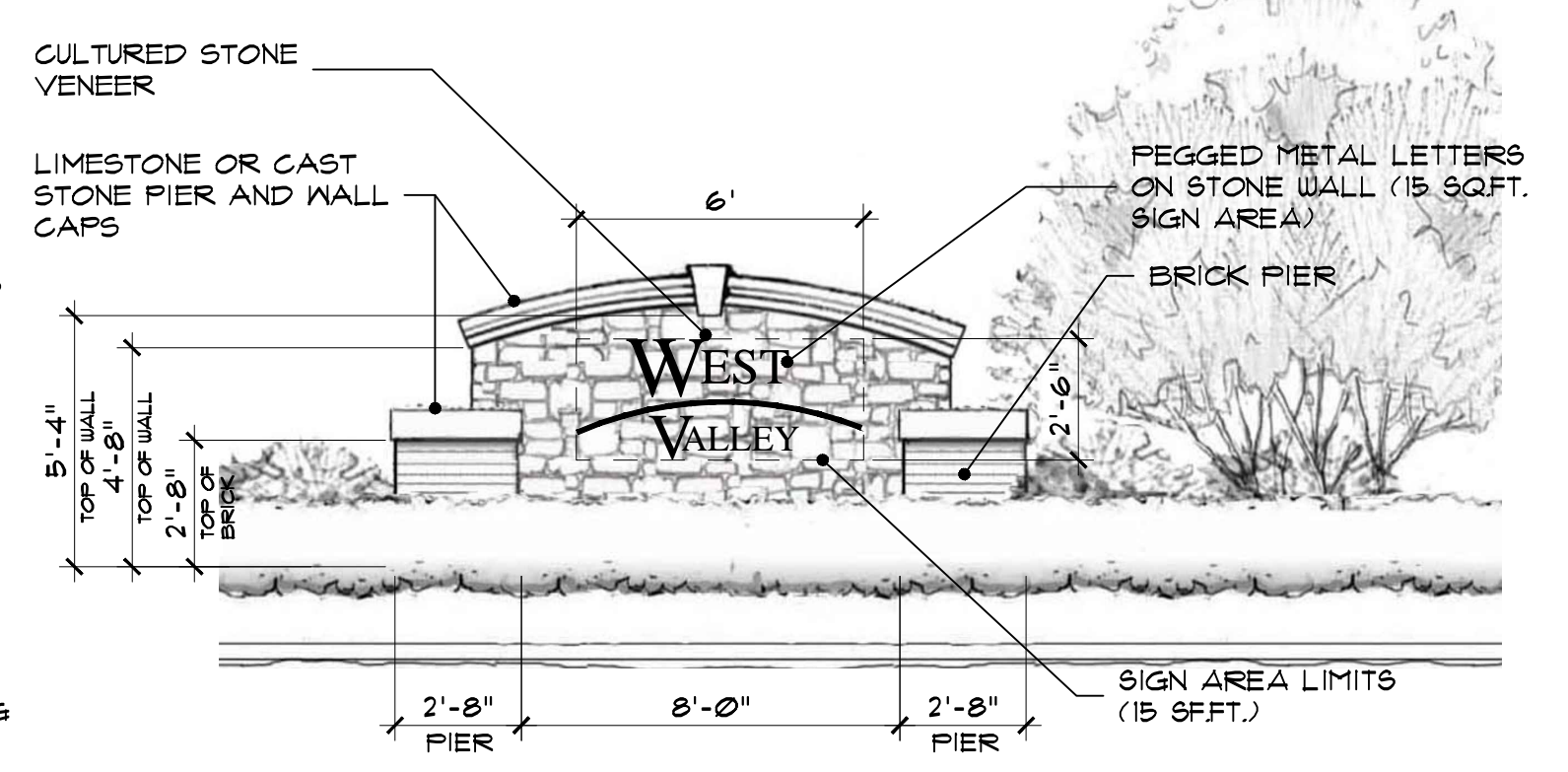
general landscape notes:

- LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISTING CONDITIONS, REVIEW PROPOSED PLANTINGS AND RELATED WORK, CONTACT THE OWNER AND/OR LANDSCAPE ARCHITECT WITH ANY CONCERNS OR DISCREPANCY BETWEEN THE PLAN, PLANT MATERIAL LIST, AND/OR SITE CONDITIONS.
- PRIOR TO BEGINNING OF CONSTRUCTION ON ANY WORK CONTRACTORS SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES, GAS, ELECTRIC, TELEPHONE CABLE TO BE LOCATED BY CONTACTING MISS DIG 1-800-482-7171. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE ALL RELATED WORK ACTIVITIES WITH OTHER TRADES AND REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER PRIOR TO COMMENCING.
- NUMERICAL VALUE ON THE LANDSCAPE QUANTITIES SPECIFIED ON THE PLAN TAKE PRECEDENCE OVER GRAPHIC REPRESENTATION. VERIFY ANY CONCERN-DISCREPANCY WITH LANDSCAPE ARCHITECT.
- ALL CONSTRUCTION AND PLANT MATERIAL LOCATION TO BE ADJUSTED ON SITE IF NECESSARY.
- ALL SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED BY WHITE LAKE TOWNSHIP AND LANDSCAPE ARCHITECT.
- ALL LARGE TREES AND EVERGREENS TO BE STAKED, GUYED AND WRAPPED AS DETAILED, SHOWN ON PLAN.
- PLANT BEDS TO BE DRESSED WITH MIN. 4" OF FINELY DOUBLE SHREDDED HARD BARK MULCH.
- DIG SHRUB FITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE FITS 2' LARGER THAN ROOT BALL. BACK FILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM EXCAVATED PLANTING HOLE.
- NATURAL COLOR, FINELY DOUBLE SHREDDED HARDWOOD BARK MULCH REQUIRED FOR ALL PLANTINGS.
- REMOVE ALL TWINE, WIRE AND BURLAP FROM TREE AND SHRUB EARTH BALLS, AND FROM TREE TRUNKS. 4" THICK BARK MULCH FOR TREES IN 4" DIA. CIRCLE WITH 3" FULLED AWAY FROM TRUNK. 4" THICK BARK MULCH FOR SHRUBS AND 4" THICK BARK MULCH FOR PERENNIALS.
- PLANT MATERIAL QUALITY & INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN ASSOCIATION OF NURSERYMEN LANDSCAPE STANDARDS.
- PROVIDE FEAT SOD FOR ALL NEW AND DISTURBED LAWN AREAS UNLESS NOTED OTHERWISE.
- ALL PLANTING AREAS TO BE PREPARED WITH APPROPRIATE SOIL MIXTURES AND FERTILIZER BEFORE PLANT INSTALLATION.
- PLANT TREES AND SHRUBS GENERALLY NO CLOSER THAN THE FOLLOWING DISTANCES FROM SIDEWALKS, CURBS AND PARKING STALLS:
 - SHADE TREES 5 FT.
 - ORNAMENTAL AND EVERGREEN TREES (CRAB, PINE, SPRUCE, ETC.) 10 FT.
 - SHRUBS THAT ARE LESS THAN 1 FOOT TALL AND WIDE AT MATURITY 2 FT.
- NO TREES OR EVERGREENS TO BE INSTALLED OVER AND/OR WITHIN 5' TO 6' OF ANY PROPOSED OR EXISTING UTILITY LINES AS SHOWN ON THE OVERALL LANDSCAPE PLAN. SEE ENGINEERING PLANS FOR LOCATION AND DETAILS.
- ALL LAWN AREAS AND LANDSCAPE BEDS TO BE FULLY IRRIGATED WITH AN AUTOMATIC UNDERGROUND SYSTEM IRRIGATION SYSTEM TO HAVE SEPARATE ZONES FOR LAWN AREAS, PARKING ISLANDS, AND SHRUB BEDS WITH DIFFERENT CONTROL MOISTURE LEVEL ADJUSTMENT PER ZONE AS REQUIRED.
- UNLESS NOTED OTHERWISE LANDSCAPE BEDS ADJACENT TO LAWN TO RECEIVE EDGING. EDGING SHALL BE 4" X 1/2" METAL (FINISH BLACK OR GREEN) OR APPROVED EQUAL AND TO BE INSTALLED WITH HORIZONTAL METAL STAKES AT 32" O.C. OR PER MANUFACTURER'S SPECIFICATION.
- LANDSCAPE BEDS ADJACENT AND NEXT TO BUILDING SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND FLOOR SOILS & MIN. OF 12" DEPTH BACK FILL WITH GOOD, MEDIUM TEXTURED PLANTING SOILS. ADD A MIN. 4" OF TOPSOIL OVERTILL TO FINISH GRADE. PROVIDE POSITIVE DRAINAGE.



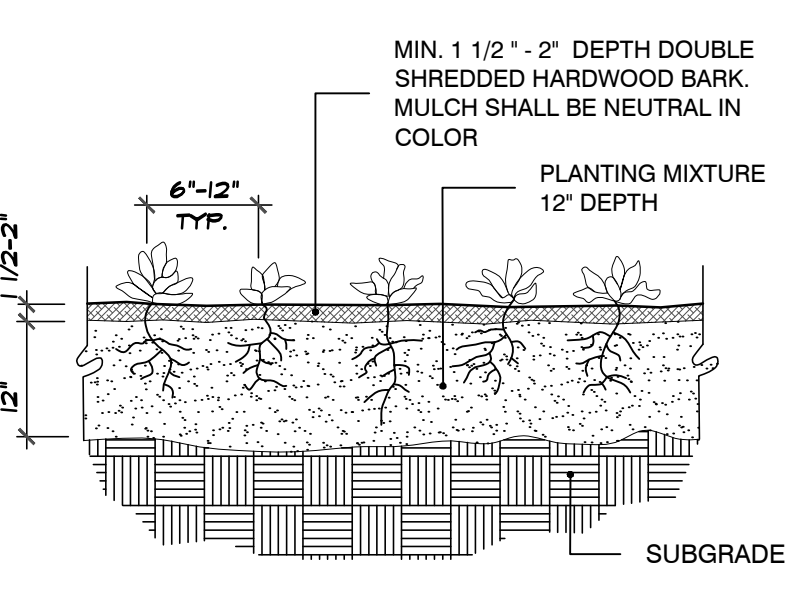
signage monument notes:

- LOCATE AND STAKE ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. COORDINATE ANY ADJUSTMENTS WITH ARCHITECT.
- ALL INFORMATION CONTAINED HEREIN IS SUBJECT TO APPROVAL, AND PERMITS PERTAINING TO BE OBTAINED PRIOR TO CONSTRUCTION.
- SEE LANDSCAPE PLAN FOR PROPOSED PLANTINGS ADJACENT TO PROPOSED ENTRY SIGN MONUMENTS, PIERS & FENCES.
- VERIFY SOIL BEARING CAPACITY PRIOR TO ENTRY SIGN MONUMENT & PIER CONSTRUCTION. IF SOIL BEARING CAPACITY FALLS BELOW STANDARD REQUIREMENTS, CONSULT STRUCTURAL ENGINEER FOR RECOMMENDATION OF FINAL ENTRY MONUMENT & PIER FOOTING DESIGN.



TREES IDENTIFIED FOR PROTECTION DURING CONSTRUCTION AND THE MEANS OF PROTECTION SHALL BE IDENTIFIED PRIOR TO FINAL SITE PLAN. NO CONSTRUCTION SHALL OCCUR UNTIL TREE PROTECTION HAS BEEN INSTALLED AND APPROVED BY THE COMMUNITY DEVELOPMENT DIRECTOR.

TREES SHALL BE LOCATED A MINIMUM 6' FROM ALL WATER MAIN, SANITARY, AND STROM SEWER. NO TREES TO BE PLANTED IN DRAINAGE SWALE



shrub planting detail

no scale

transformer pad planting detail

SCALE 1"=20'-0"

A MINIMUM OF 2' SEPARATION BETWEEN TRANSFORMER AND FULL GROWN SHRUBS AND TREES. GROUND COVERS ALLOWED UP TO TRANSFORMER PAD IF MAINTAINED BELOW 4" FULL GROWTH. IF TRANSFORMER FACES TOWARDS THE HOUSE, THEN THE SAME CONDITIONS EXIST. NO FULL GROWTH IN FRONT OF THE TRANSFORMER FOR AT LEAST A MINIMUM OF 8'. THERE ARE NO WAIVERS GRANTED TO THE ABOVE CONDITION. DETAIL PER THE DETROIT EDISON COMPANY-SERVICE PLANNING DEPARTMENT (3-11-98)

SEE ENGINEERING PLANS FOR PROPOSED LOCATIONS, TOTAL NUMBER OF TRANSFORMERS AND FINAL LOCATION PER DETROIT EDISON REQUIREMENTS.

evergreen planting detail

no scale



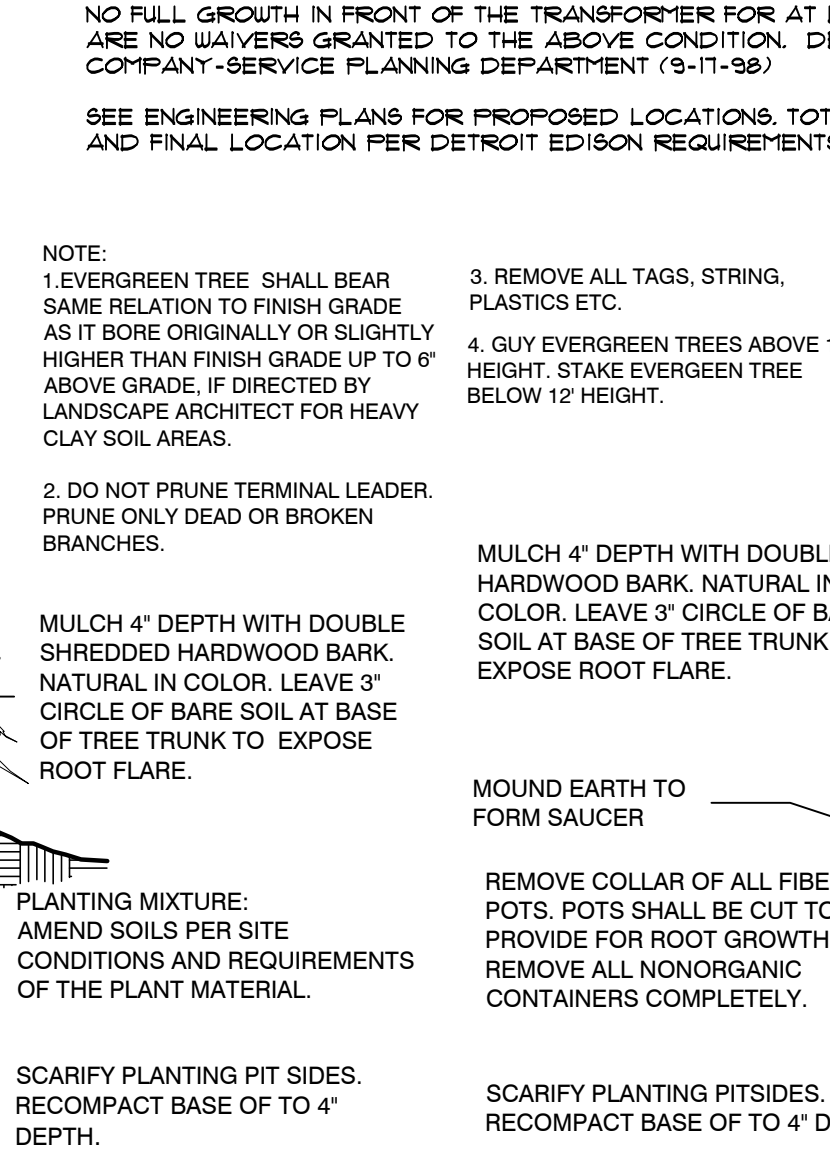
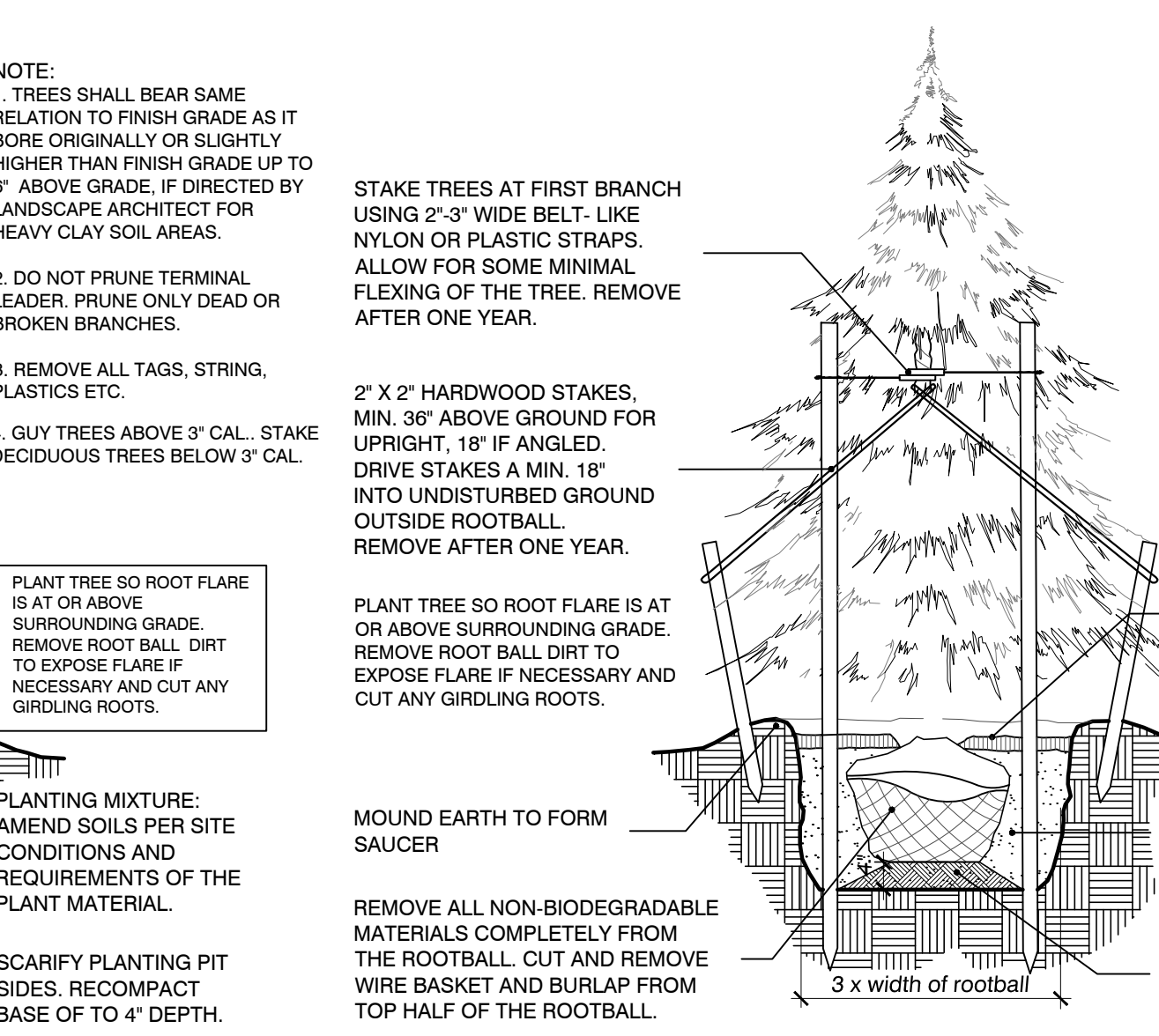
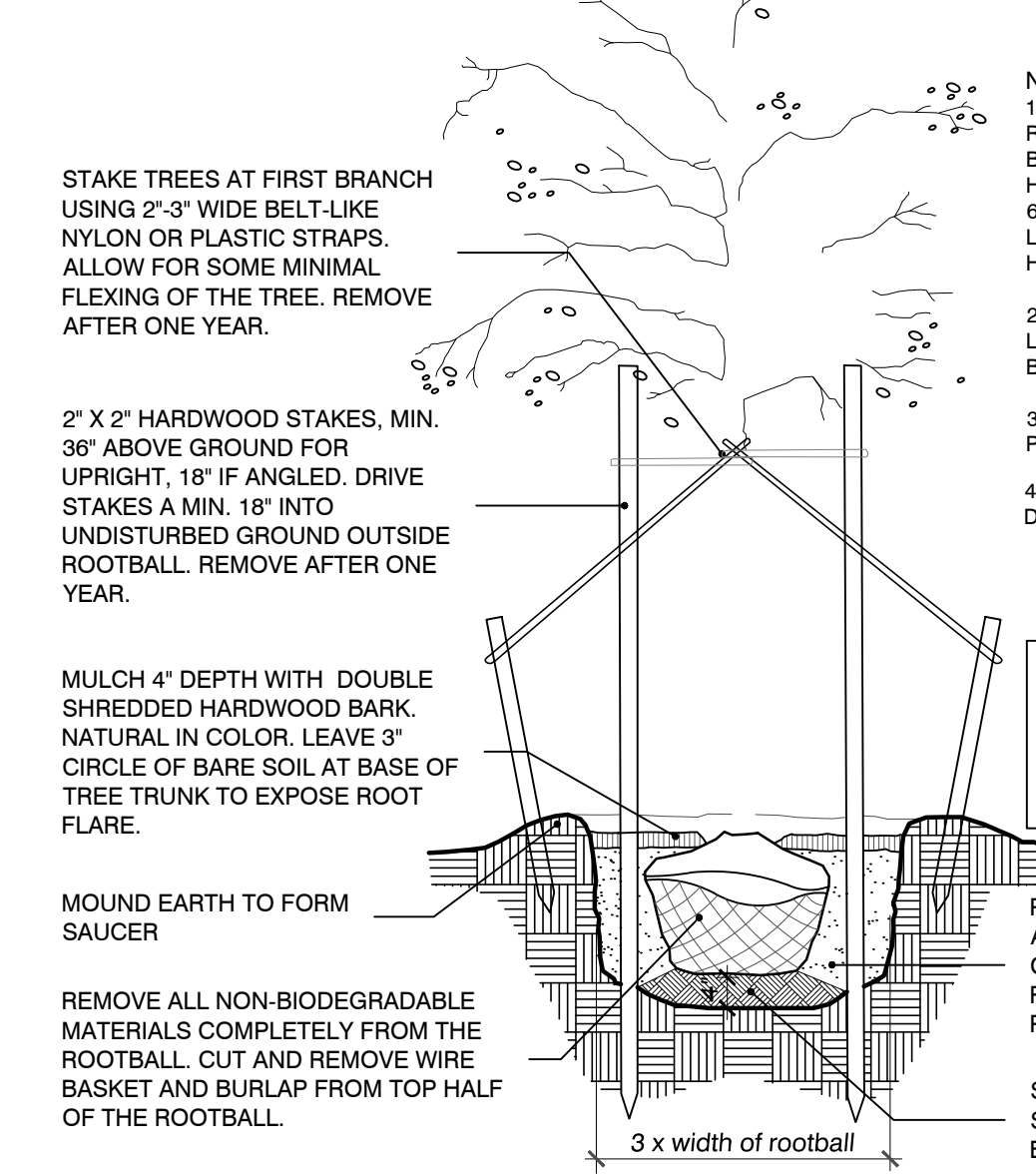
decorative wood fence

6" HIGH DECORATIVE WOOD FENCE. SEE ENGINEERING PLANS FOR FINAL LOCATION.



bench seating

(2-CONDITION)





client:
JMF WHITE LAKE, LLC.
 1700 W. BIG BEAVER
 ROAD SUITE 120
 TROY, MI 48084

project:
WEST VALLEY
 project location:
 White Lake Twp., Michigan

Union Lake Road
 sheet title:
overall landscape planting detail

job no./issue/revision date:

LS19.104.08	REVIEW	9-3-2019
LS19.104.09	SPA	9-28-2019
LS21.034.21	SPA	2-18-2021
LS21.034.21	COMMENTS	3-16-2021
LS23.083.07	COMMENTS	7-29-2023
LS23.083.11	COMMENTS	11-2-2023
LS24.032.02	UPDATES TWP. COMMENTS	2-7-2024
LS24.032.05	UPDATES	5-29-2024

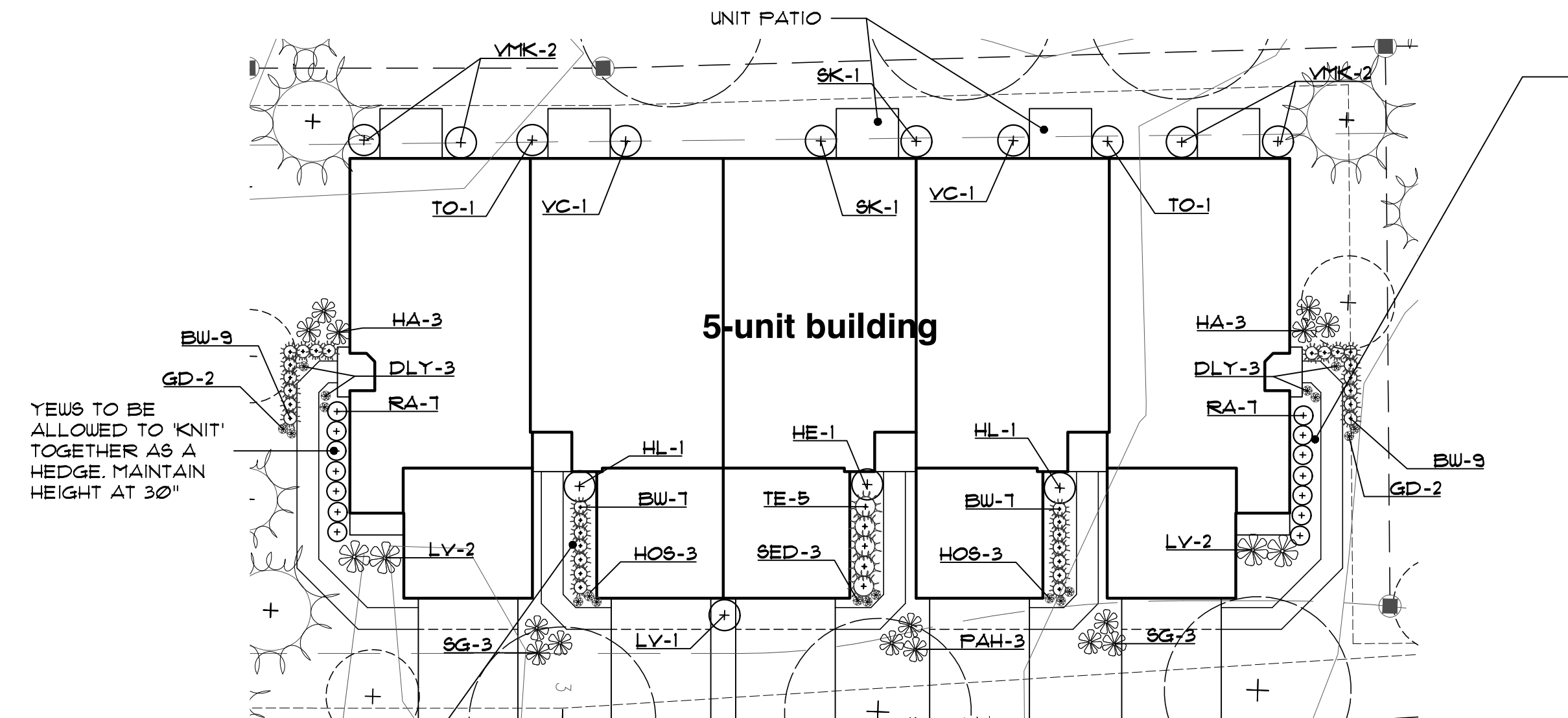
drawn by:
JP, DK, PH
 checked by:
FP
 date:
2-2-2024

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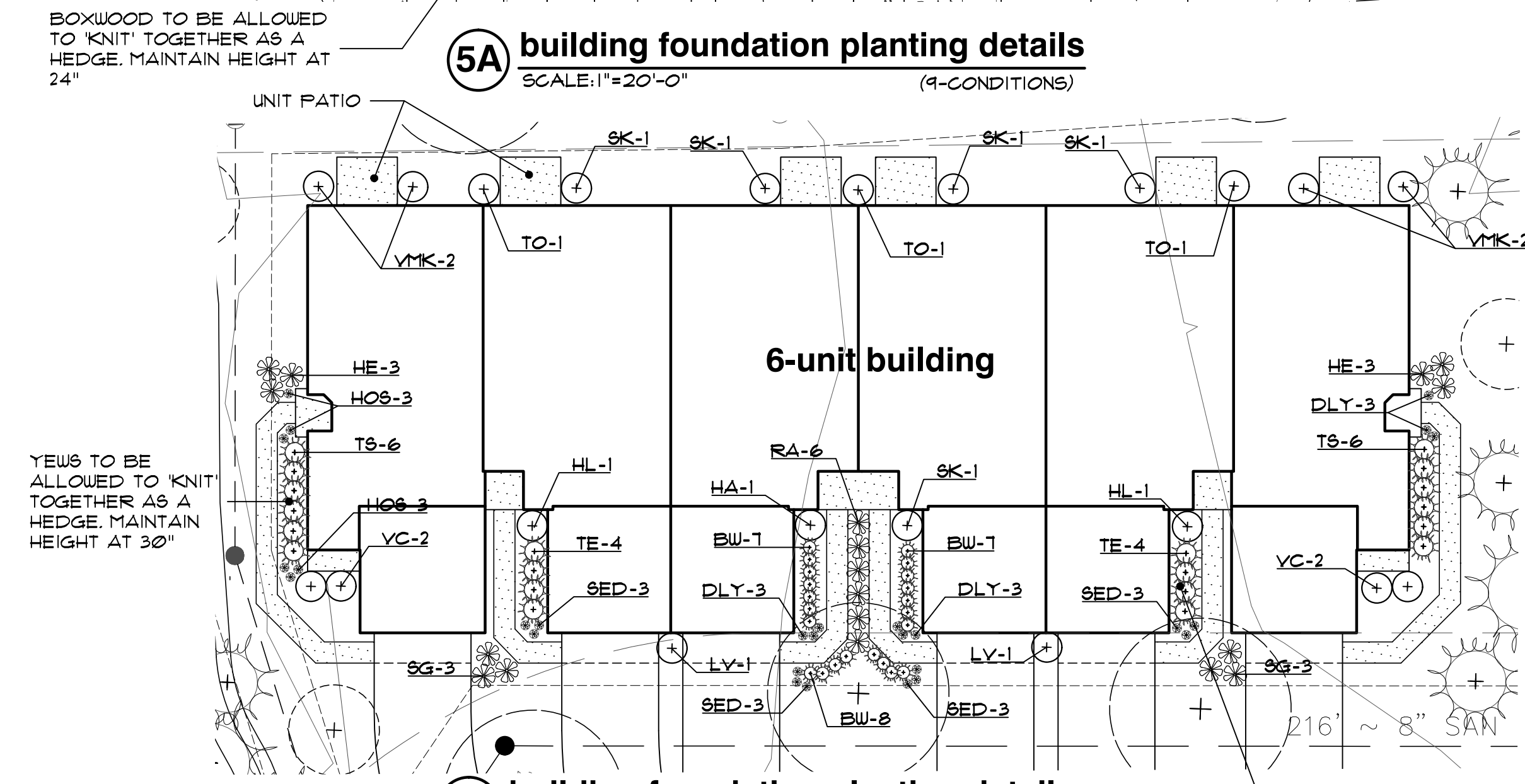


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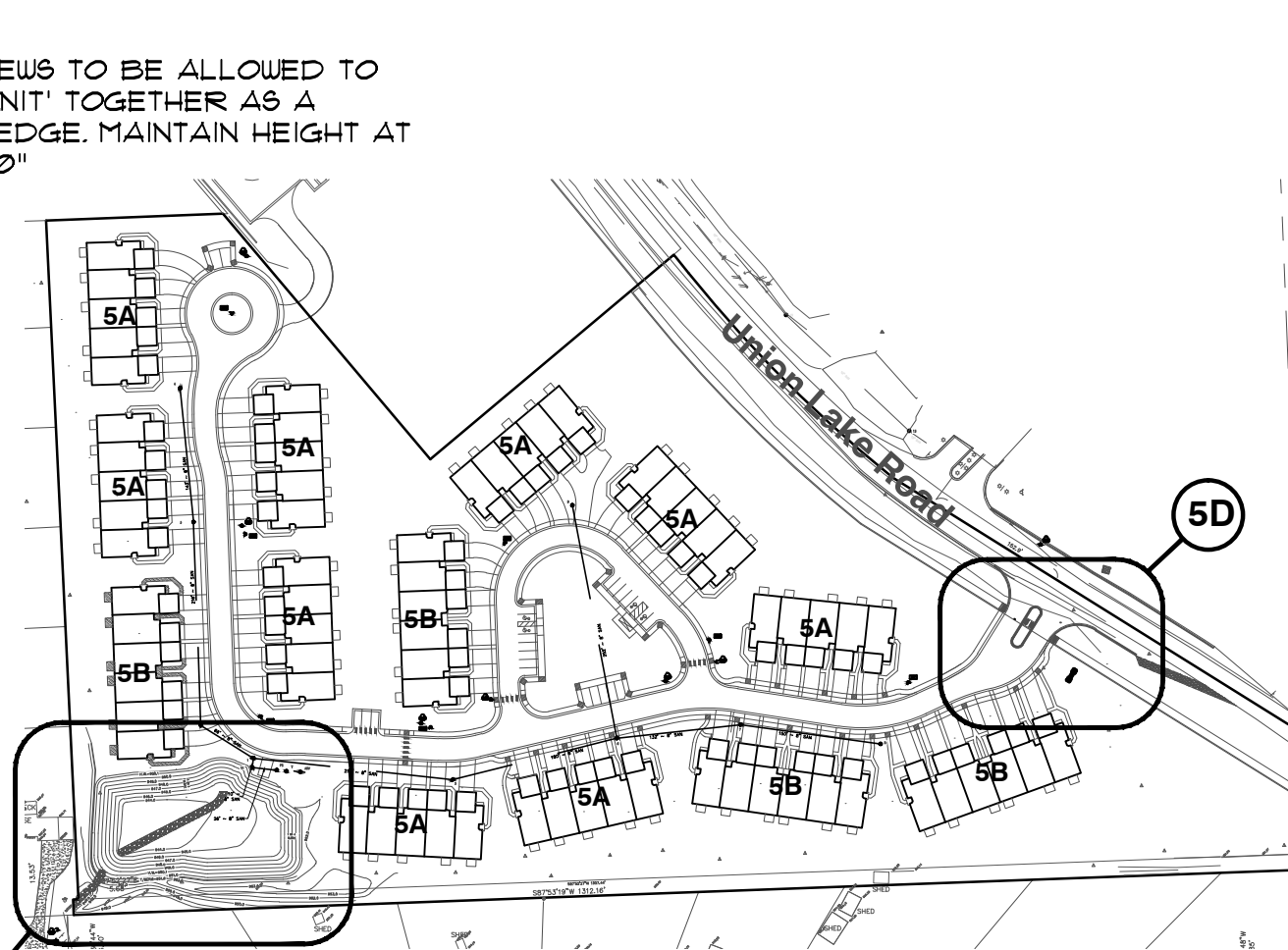
project no:
LS24.032.02
 sheet no:
LS-5 of 5



5A building foundation planting details
 SCALE: 1"=20'-0"
 (9-CONDITIONS)



5B building foundation planting details
 SCALE: 1"=20'-0"
 (4-CONDITIONS)

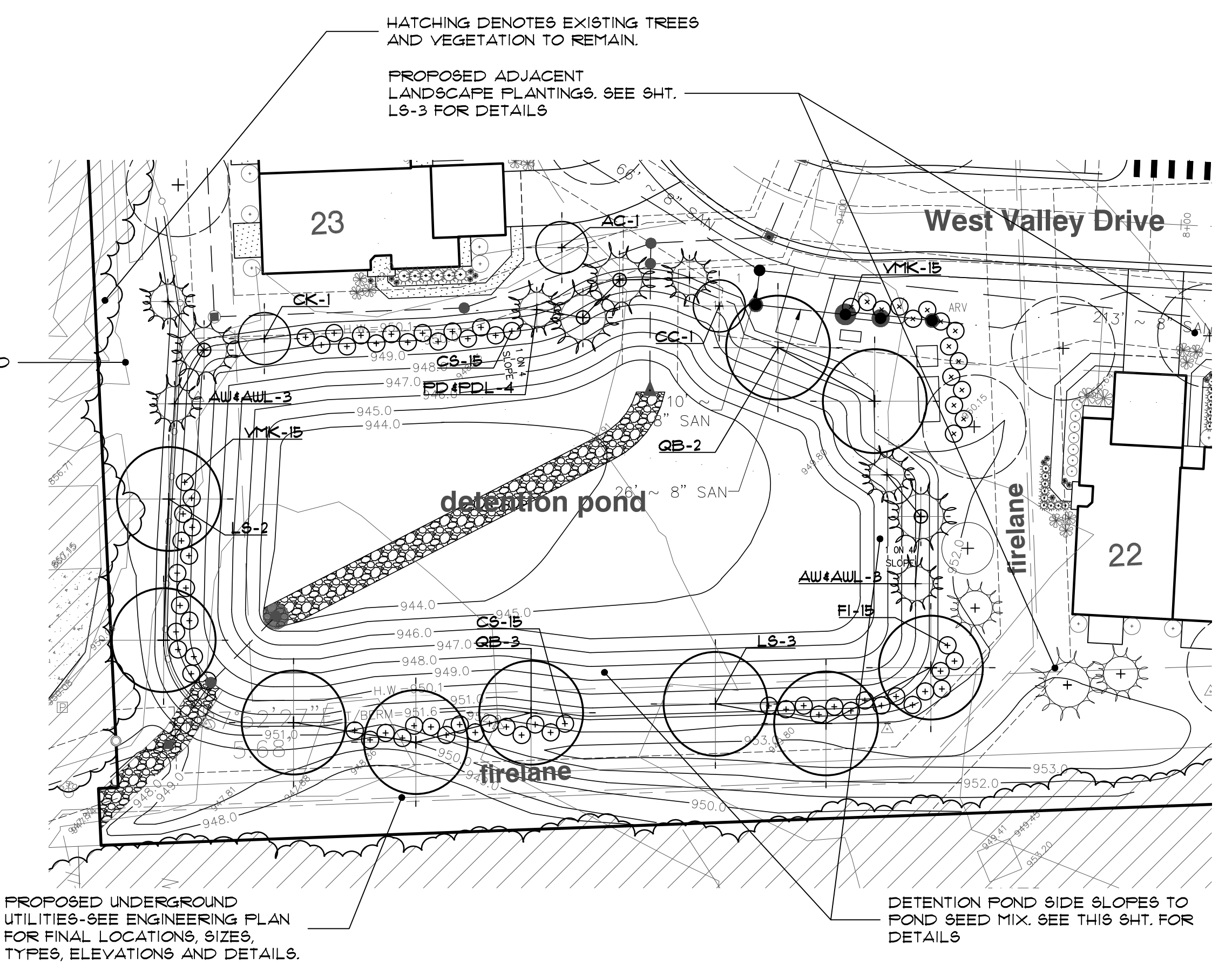


key reference map
 SCALE: 1"=200'-0"

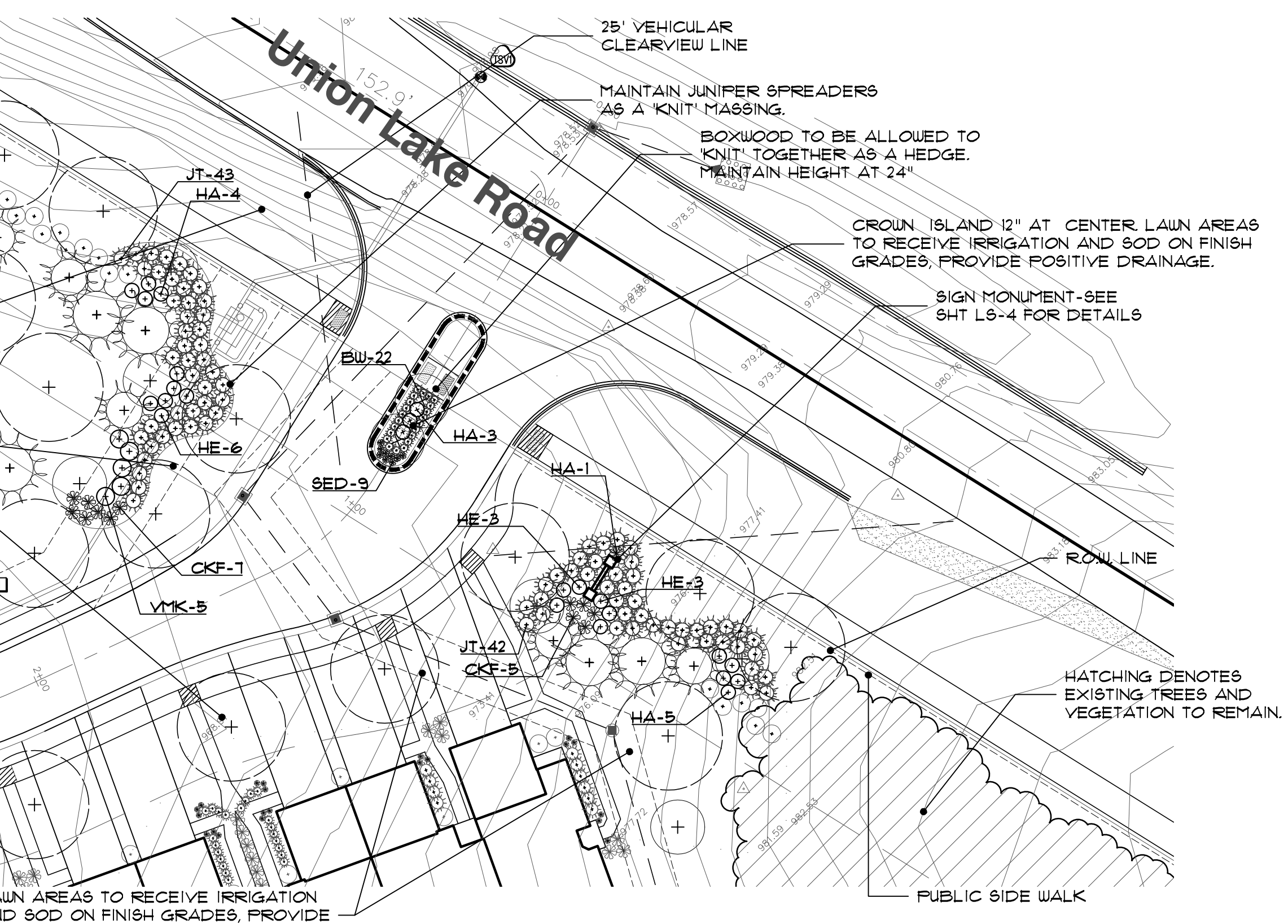
detention basin seed mix:

- Sedge Meadow Mix: (Edge Zone)**
 A mix of sedges, grasses and wildflowers recommended for soils that are saturated during most of the growing season. Use just above the normal waterline in the capillary zone in our Lake Edge Enhancement System.
- Sedge Meadow Mix oz/acre**
- | | | | |
|----|---|---|---|
| 1 | Carex comosa (Bristly Sedge) | 1 | Aster puniceus (Swamp Aster) |
| 1 | Carex cristatella (Crested Sedge) | 1 | Aster umbellatus (Flat-topped Aster) |
| 6 | Carex frankii (Frank's Sedge) | 3 | Cassia hebecarpa (Wild Senna) |
| 2 | Carex hystericina (Porcupine Sedge) | 2 | Eupatorium maculatum (Spotted Joe-Pye Weed) |
| 4 | Carex lurida (Lurid Sedge) | 2 | Eupatorium perfoliatum (Boneset) |
| 2 | Carex stipitata (Awn-fruited Sedge) | 2 | Helenium autumnale (Autumn Sneezewood) |
| 2 | Carex tribuloides (Pointed Oval Sedge) | 1 | Liatris spicata (Dense Blazing Star) |
| 6 | Carex vulpocarpa (Fox Sedge) | 1 | Lobelia cardinalis (Cardinal Flower) |
| 64 | Elymus virginicus (Virginia Wild Rye) | 1 | Lobelia siphilitica (Great Blue Lobelia) |
| 6 | Glyceria striata (Fowl Manna Grass) | 2 | Penstemon digitalis (Foxglove Beardtongue) |
| 8 | Leersia oryzoides (Pine Cut Grass) | 1 | Pycnanthemum virginianum (Mountain Mint) |
| 8 | Panicum virgatum (Switchgrass) | 3 | Rudbeckia fulgida speciosa (Showy Black-eyed Susan) |
| 2 | Scorpus atrovirens (Dark Green Bulrush) | 4 | Rudbeckia hirta (Black-eyed Susan) |
- Forbs oz/acre**
- | | | | |
|---|---|---|--|
| 1 | Aster subcordatum (Water plantain) | 1 | Veronica hastata (Blue Veronica) |
| 1 | Angelica atropurpurea (Angelica) | 2 | Veronica fasciculata (Smooth Ironweed) |
| 1 | Aster novae-angliae (New England Aster) | 1 | Veronicastrum virginicum (Culver's Root) |
| 1 | | 1 | Zizia aurea (Golden Alexanders) |
- Components per acre**
- Sedge Meadow: 8 lbs grasses and sedges, 3 lbs forbs
- annual cover: (Edge, Upland & Dry Upland Zones)**
- 50% Temporary Grasses: will contain two of the following species:
 Seed Oats, Avena sativa, Annual Rye, Lolium multiflorum, Winter Wheat, Tricum aestivum, American Slough Grass, Beckmannia syzigachne
- SOURCE:**
 NATIVESCAPE LLC
 P.O. BOX 122
 MANCHESTER, MICHIGAN 48156
 ph: 517.456.9646
 www.nativescape.net

ALL REQUIRED SITE IRRIGATION SYSTEMS SHALL INCLUDE A RAIN SENSOR OR SIMILAR MEASURE TO ENSURE IRRIGATION DOWN NOT OCCUR DURING OR SHORTLY AFTER PRECIPITATION EVENTS.



5C detention pond landscape planting details
 SCALE: 1"=30'-0"



5D entry landscape planting details
 SCALE: 1"=30'-0"

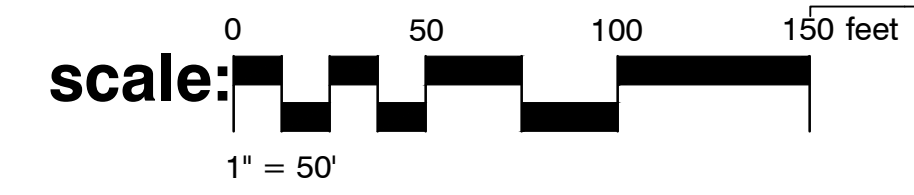
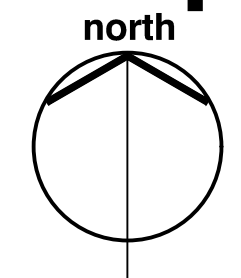
TREES SHALL BE LOCATED A MINIMUM 6' FROM ALL WATER MAIN, SANITARY, AND STROM SEWER. NO TREES TO BE PLANTED IN DRAINAGE SWALE

plant material list

key	quant. 5A	quant. 5B	quant. 5C	quant. 5D	botanical name	common name	size	comments
LARGE AND SMALL DECIDUOUS TREES								
LS	-	-	5	-	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
GB	-	-	5	-	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
CC	-	-	1	-	CERCIS CANADENSIS	EASTERN REDBUD (MULTI-STEM)	8' BB	(MULTI-STEM)
AC	-	-	1	-	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	8' BB	(MULTI-STEM)
CK	-	-	1	-	CORNUS KOUSA	KOUSA DOGWOOD	2" BB	
SHRUBS								
SK	18	20	-	-	SYRINGA FATULA 'MISS KIM'	MISS KIM DWARF LILAC	3' BB.	
TO	18	12	-	-	THUJA OCCIDENTALIS 'NIGRA'	AMERICA DARK GREEN ARBORVITAE	3' BB.	
HA	54	4	-	13	HYDRANGEA ANNABELLE	ANNABELLE HYDRANGEA	15 CONT.	
HL	18	8	-	-	HYDRANGEA 'LINDSEY ANN'	LA DREAM IN HYDRANGEA	15 CONT.	
LY	45	8	-	-	LIGUSTRUM X VICARYI	GOLDEN VICARY PRIVET	15 CONT.	60" O.C. SPACING
YC	18	16	-	-	VIBURNUM CARLESII	KOREAN SPICE FRAGRANT VIBURNUM	3' BB	60" O.C. SPACING
SG	54	24	-	-	SPIRAEA X B. BUMALDA 'GOLDFLAME'	GOLDFLAME SPIREA	15 CONT.	
HE	9	24	-	12	HYDRANGEA M. 'GLOWING EMBERS'	GLOWING EMBERS HYDRANGEA	15 CONT.	
FI	-	-	15	-	FORSYTHIA X INTERMEDIA	BORDER FORSYTHIA	3' BB	60" O.C. SPACING
CS	-	-	30	-	CORNUS STOLONIFERA	REDTUG DOGWOOD	3' BB	60" O.C. SPACING
VMK	36	16	30	5	VIBURNUM X B. 'MOHAUK'	MOHAUK VIBURNUM	3' BB	
RA	126	24	-	-	RIBES ALPINUM 'GREEN MOUND'	GREEN MOUND ALPINE CURRANT	15 CONT.	
LARGE AND SMALL EVERGREENS								
BW	288	88	-	22	BUXUS S. 'VADAR VALLEY'	VADAR VALLEY BOXWOOD	18" BB	24" O.C. SPACING
T8	-	48	-	-	TAXUS, SEBIAN	SEBIAN YEW	24"-30" BB	32" O.C. SPACING
TE	45	32	-	-	TAXUS X M. 'EVERLOW'	EVERLOW YEW	24"-30" BB	32" O.C. SPACING
JT	-	-	-	85	JUNIPERUS S. 'TAMARISAFOLIA'	TAMIS JUNIPER	24"-30" BB	42" O.C. SPACING
AW	-	-	4	-	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
AUL	-	-	2	-	ABIES CONCOLOR	CONCOLOR WHITE FIR	10' BB O	
PS	-	-	2	-	PICEA GLAUCA 'DENSATA'	BLACK HILLS SPRUCE	8' BB	
PBL	-	-	2	-	PICEA GLAUCA 'DENSATA'	BLACK HILLS SPRUCE	10' BB O	
PERENNIALS AND GRASSES								
GD	36	-	-	-	GERANIUM X. 'ROZANNE'	ROZANNE GERANIUM	8' / FLAT	
PAH	21	-	-	-	FENISSETUM ALOPECUROIDES 'HAHLEN'	DWARF FOUNTAIN GRASS	15 CONT.	
CKF	-	-	-	12	CALAMAGROSTIS X A. 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	15 CONT.	
DLY	54	36	-	-	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	1" CONT.	
SED	21	48	-	9	SEDUM X. 'NEON'	NEON SEDUM	1" CONT.	
HOS	54	24	-	-	HOSTA 'PATRIOT'	PATRIOT HOSTA	1" CONT.	

irrigation plan for:
West Valley
White Lake Township, Michigan

note:
 unless noted otherwise, numerical value on landscape
 quantities specified on plan take precedence over
 graphic representation.



seal:

client:

JMF WHITE LAKE, LLC.
 1700 W. BIG BEAVER
 ROAD SUITE 120
 TROY, MI 48084

project:

**WEST
 VALLEY**

project location:

White Lake Twp. ,
 Michigan

Union Lake Road

sheet title:

IRRIGATION PLAN

job no./issue/revision date:

LS24.032.02 UPDATES 2-7-2024
 LS24.032.05 UPDATES 5-29-2024

drawn by:

JP, DK, PH

checked by:

FP

date:

2-15-2024

notice:

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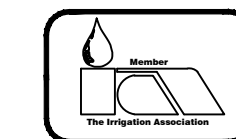
project no:

LS24.032.02

sheet no:

IRR-1 of 6

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seal:

client:

JMF WHITE LAKE, LLC.
 1700 W. BIG BEAVER
 ROAD SUITE 120
 TROY, MI 48084

project:

WEST VALLEY

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White Lake Twp. ,
 Michigan

Union Lake Road

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IRRIGATION PLAN

job no./issue/revision date:

LS24.032.02	UPDATES	COMMENTS
	2-7-2024	
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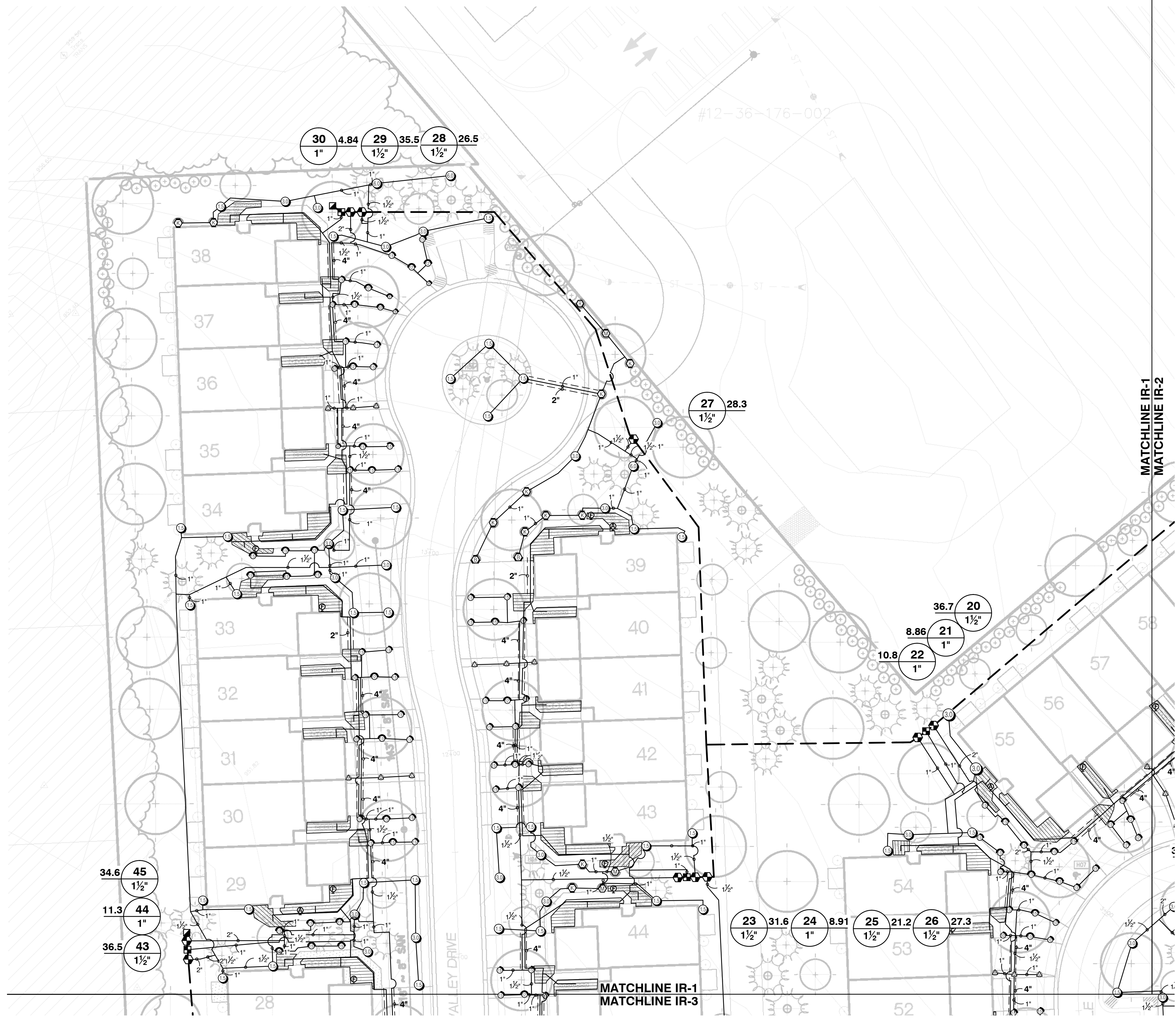
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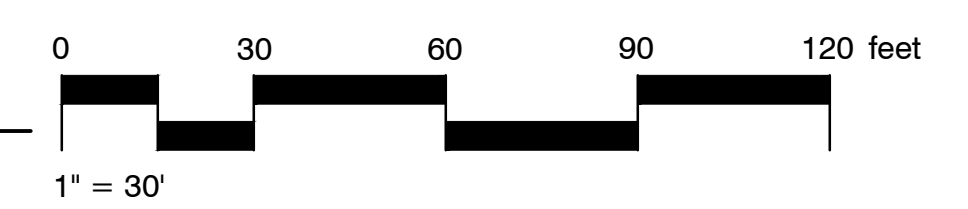
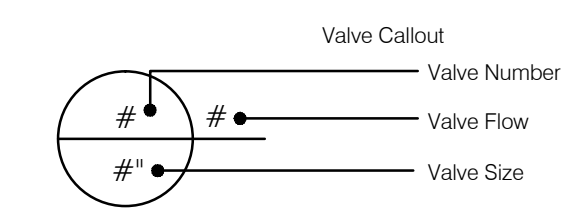
sheet no:

IRR-2 of 6



IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL	QTY
	Rain Bird 1804 15 Strip Series	104
	Rain Bird 1804 8 Series MPR	83
	Rain Bird 1804 10 Series MPR	42
	Rain Bird 1804 12 Series MPR	44
	Rain Bird 1804 15 Series MPR	163
	Rain Bird 1804-SAM-P45 W/MP 1000	34
	Rain Bird 1804-SAM-P45 W/MP 2000	41
	Rain Bird 1804-SAM-P45 W/MP 3000	24
	Rain Bird 1804-SAM-P45 W/MP Strip	9
	Rain Bird 5004-PC 1.5	100
	Rain Bird 5004-PC 3.0	174
	Rain Bird 5004-PC 6.0	3
	Rain Bird XCZ-100-IVMQ 1"	10
	Rain Bird MDCFCAP	32
	Rain Bird ARV050 1/2"	15
	Area to Receive Dripline	16,126 l.f.
	Rain Bird XFD-06-18	
	Rain Bird IVM-PGA Globe 1-1/2"	33
	Rain Bird IVM-PGA Globe 1"	2
	Rain Bird 5-RC 1"	4
	Rain Bird IVM-PGA Globe 2"	1
	Febco 825Y W/ Enclosure 2"	1
	Rain Bird ESPLXVM Controller	1
	Rain Bird WR2-RFC	1
	Rain Bird FS-150-P	1
	Point of Connection 2"	1
	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF	62.5 l.f.
	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF 1"	18,377 l.f.
	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF 1 1/2"	3,357 l.f.
	Irrigation Lateral Line: PVC Class 160 SDR 26 2"	797.5 l.f.
	Irrigation Mainline: PVC Class 160 SDR 26 2 1/2"	3,256 l.f.
	Pipe Sleeve: PVC Class 160 SDR 26 2"	140.2 l.f.
	Pipe Sleeve: PVC Class 160 SDR 26 4"	1,256 l.f.
	Pipe Sleeve: PVC Class 160 SDR 26 6"	32.9 l.f.



seal:

client:

JMF WHITE LAKE, LLC.
 1700 W. BIG BEAVER
 ROAD SUITE 120
 TROY, MI 48084

project:

WEST VALLEY

project location:

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 Michigan

Union Lake Road

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IRRIGATION PLAN

job no./issue/revision date:

LS24.032.02	UPDATES	2-7-2024
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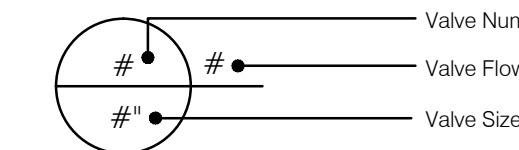
sheet no:

IRR-3 of 6

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL	QTY
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	Rain Bird 1804 8 Series MPR	83
	Rain Bird 1804 10 Series MPR	42
	Rain Bird 1804 12 Series MPR	44
	Rain Bird 1804 15 Series MPR	163
	Rain Bird 1804-SAM-P45 W/MP 1000	34
	Rain Bird 1804-SAM-P45 W/MP 2000	41
	Rain Bird 1804-SAM-P45 W/MP 3000	24
	Rain Bird 1804-SAM-P45 W/MP Strip	9
SYMBOL	MANUFACTURER/MODEL	QTY
	Rain Bird 5004-PC 1.5	100
	Rain Bird 5004-PC 3.0	174
	Rain Bird 5004-PC 6.0	3
SYMBOL	MANUFACTURER/MODEL	QTY
	Rain Bird XCZ-100-IVMQ 1"	10
	Rain Bird MDCFCAP	32
	Rain Bird ARV050 1/2"	15
	Area to Receive Dripline	16,126 l.f.
	Rain Bird XFDe-06-18	
SYMBOL	MANUFACTURER/MODEL	QTY
	Rain Bird IVM-PGA Globe 1-1/2"	33
	Rain Bird IVM-PGA Globe 1"	2
	Rain Bird 5-RC 1"	4
	Rain Bird IVM-PGA Globe 2"	1
	Febco 825Y W/ Enclosure 2"	1
	Rain Bird ESPLXVM Controller	1
	Rain Bird WR2-RFC	1
	Rain Bird FS-150-P	1
	Point of Connection 2"	1
	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF	62.5 l.f.
	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF 1"	18,377 l.f.
	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF 1 1/2"	3,357 l.f.
	Irrigation Lateral Line: PVC Class 160 SDR 26 2"	797.5 l.f.
	Irrigation Mainline: PVC Class 160 SDR 26 2 1/2"	3,256 l.f.
	Pipe Sleeve: PVC Class 160 SDR 26 2"	140.2 l.f.
	Pipe Sleeve: PVC Class 160 SDR 26 4"	1,256 l.f.
	Pipe Sleeve: PVC Class 160 SDR 26 6"	32.9 l.f.

Valve Callout



seal:

client:

JMF WHITE LAKE, LLC.
 1700 W. BIG BEAVER
 ROAD SUITE 120
 TROY, MI 48084

project:

WEST VALLEY

project location:
 White Lake Twp. ,
 Michigan

Union Lake Road

sheet title:

IRRIGATION PLAN

job no./issue/revision date:

LS24.032.02	UPDATES	2-7-2024
LS24.032.05	UPDATES	5-29-2024

drawn by:

JP, DK, PH

checked by:

FP

date:

2-15-2024

notice:

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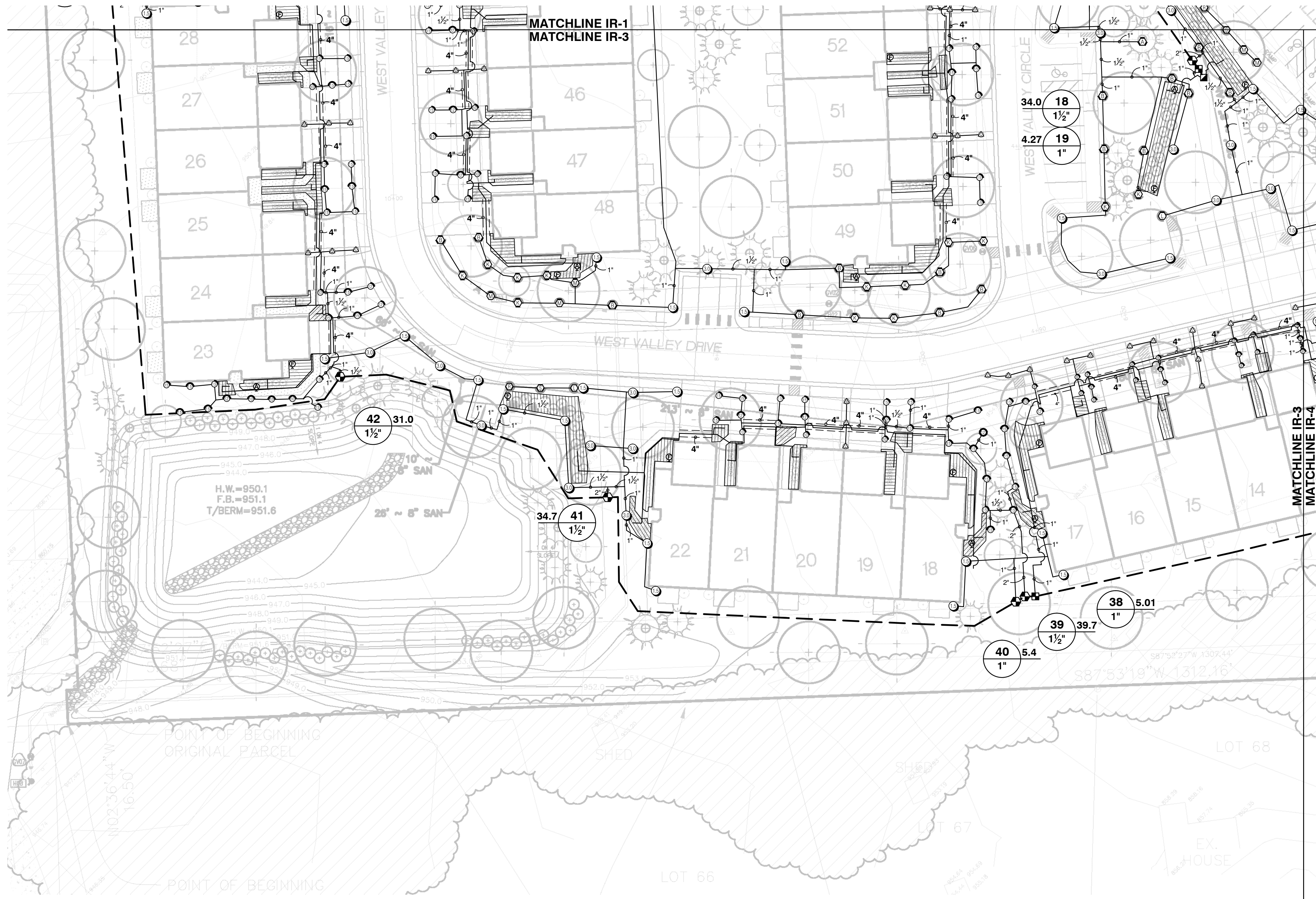
The location and elevations of existing underground utilities as shown on this drawing are only approximate; no guarantee is either expressed or implied as to the completeness of accuracy; contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no:

LS24.032.02

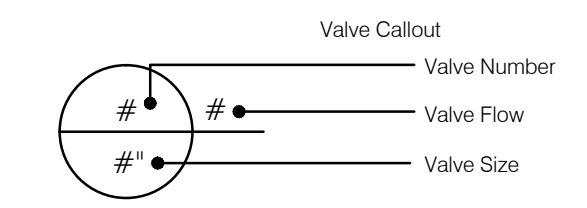
sheet no:

IRR-4 of 6

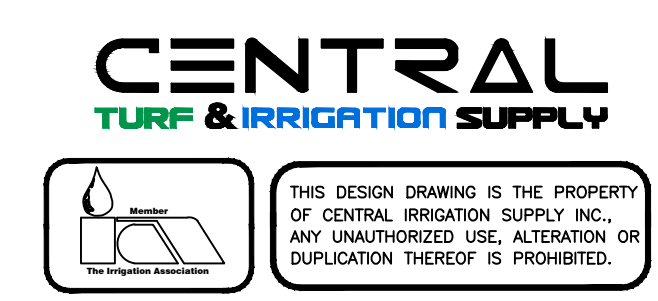
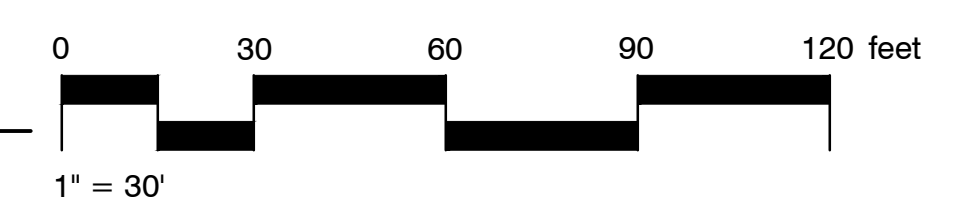


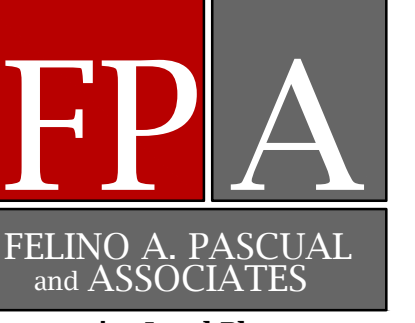
IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL	QTY
EST LCS RCS CST SST	Rain Bird 1804 15 Strip Series	104
Q T H F	Rain Bird 1804 6 Series MPR	83
Q T H F	Rain Bird 1804 10 Series MPR	42
Q T H TO F	Rain Bird 1804 12 Series MPR	44
Q T H TO F	Rain Bird 1804 15 Series MPR	163
M L O	Rain Bird 1804-SAM-P45 W/MP 1000	34
M L O	Rain Bird 1804-SAM-P45 W/MP 2000	41
M L O	Rain Bird 1804-SAM-P45 W/MP 3000	24
LST SST RST	Rain Bird 1804-SAM-P45 W/MP Strip	9
SYMBOL	MANUFACTURER/MODEL	QTY
15	Rain Bird 5004-PC 1.5	100
30	Rain Bird 5004-PC 3.0	174
60	Rain Bird 5004-PC 6.0	3
SYMBOL	MANUFACTURER/MODEL	QTY
■	Rain Bird XCZ-100-IVMQ 1"	10
⊕	Rain Bird MDCFCAP	32
⊕	Rain Bird ARV050 1/2"	15
▨	Area to Receive Dripline Rain Bird XFDc-06-18	16,126 I.F.
SYMBOL	MANUFACTURER/MODEL	QTY
◆	Rain Bird IVM-PGA Globe 1-1/2"	33
◆	Rain Bird IVM-PGA Globe 1"	2
◆	Rain Bird 5-RC 1"	4
MV	Rain Bird IVM-PGA Globe 2"	1
BF	Febco 825Y W/ Enclosure 2"	1
C	Rain Bird ESPLXIVM Controller	1
R	Rain Bird WR2-RFC	1
FS	Rain Bird FS-150-P	1
POC	Point of Connection 2"	1
—	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF	62.5 I.F.
—	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF 1"	18,377 I.F.
—	Irrigation Lateral Line: Polyethylene Pipe100 PSI Non NSF 1 1/2"	3,357 I.F.
---	Irrigation Lateral Line: PVC Class 160 SDR 26 2"	797.5 I.F.
---	Irrigation Mainline: PVC Class 160 SDR 26 2 1/2"	3,256 I.F.
----	Pipe Sleeve: PVC Class 160 SDR 26 2"	140.2 I.F.
----	Pipe Sleeve: PVC Class 160 SDR 26 4"	1,256 I.F.
----	Pipe Sleeve: PVC Class 160 SDR 26 6"	32.9 I.F.



2A IRRIGATION PLAN
 SCALE: 1"=30'-0"





FELINO A. PASCUAL and ASSOCIATES

Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:

client:

JMF WHITE LAKE, LLC.
1700 W. BIG BEAVER ROAD SUITE 120
TROY, MI 48084

project:

WEST VALLEY

project location:

White Lake Twp. , Michigan

Union Lake Road

sheet title:

IRRIGATION PLAN

job no./issue/revision date:

LS24.032.02 UPDATES COMMENTS 2-7-2024
LS24.032.05 UPDATES 5-29-2024

drawn by:
JP, DK, PH

checked by:
FP

date:
2-15-2024

notice:
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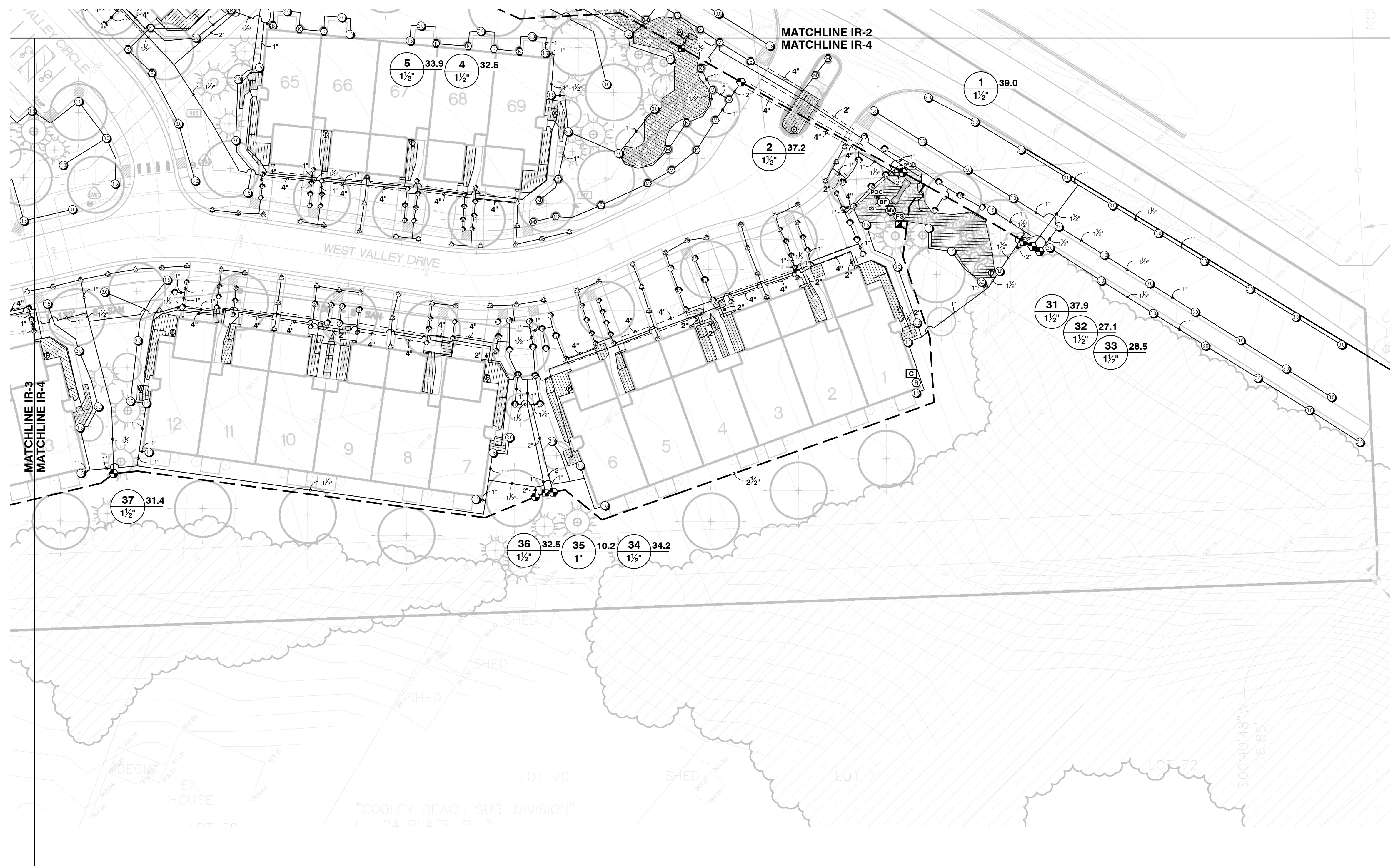
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project no:

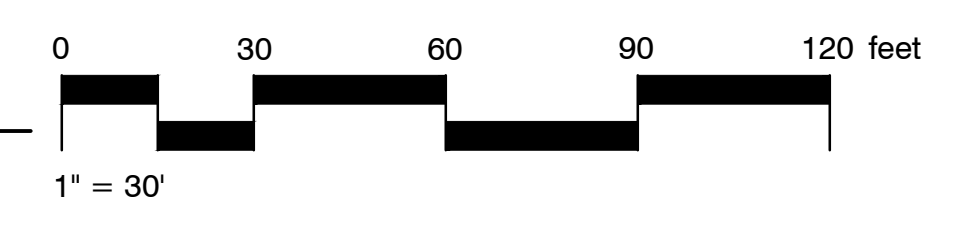
LS24.032.02

sheet no:

IRR-5 of 6



2A IRRIGATION PLAN
SCALE: 1"=30'-0"



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seal:

client:

JMF WHITE LAKE, LLC.
 1700 W. BIG BEAVER
 ROAD SUITE 120
 TROY, MI 48084

project:

WEST VALLEY

project location:
White Lake Twp. , Michigan

Union Lake Road

sheet title:

IRRIGATION NOTES & DETAILS

job no./issue/revision date:

LS24.032.02	UPDATES	2-7-2024
LS24.032.05	UPDATES	5-29-2024

drawn by:

JP, DK, PH

checked by:

FP

date:

2-15-2024

notice:

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project no:

LS24.032.02

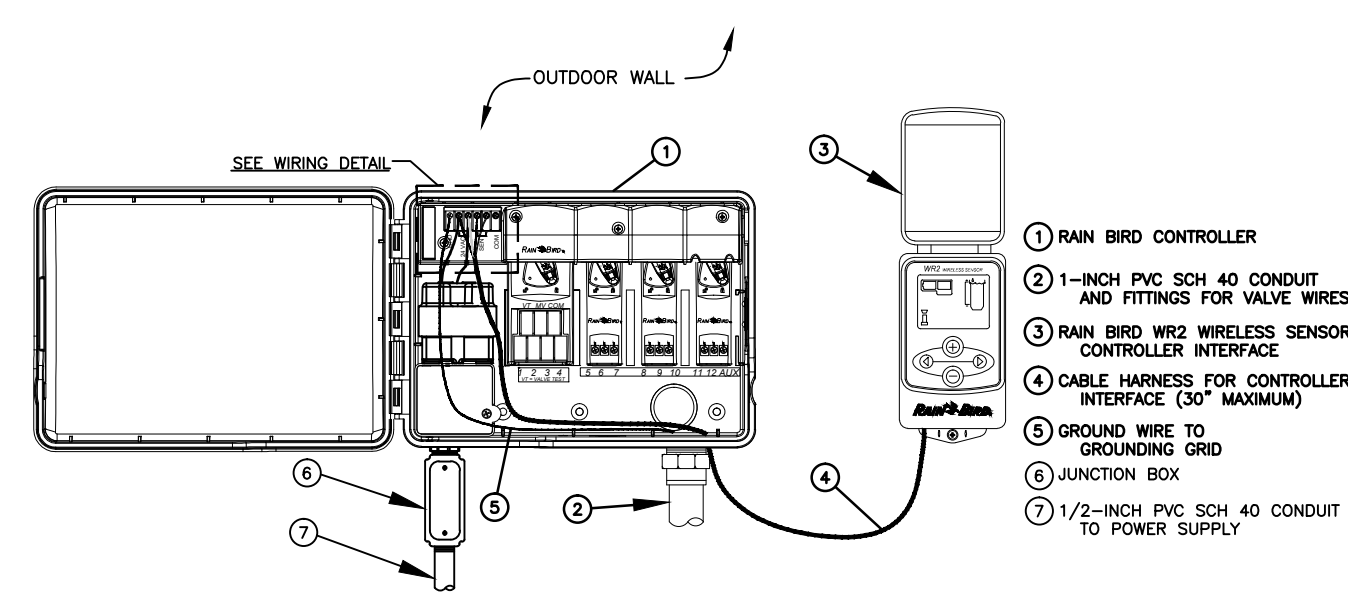
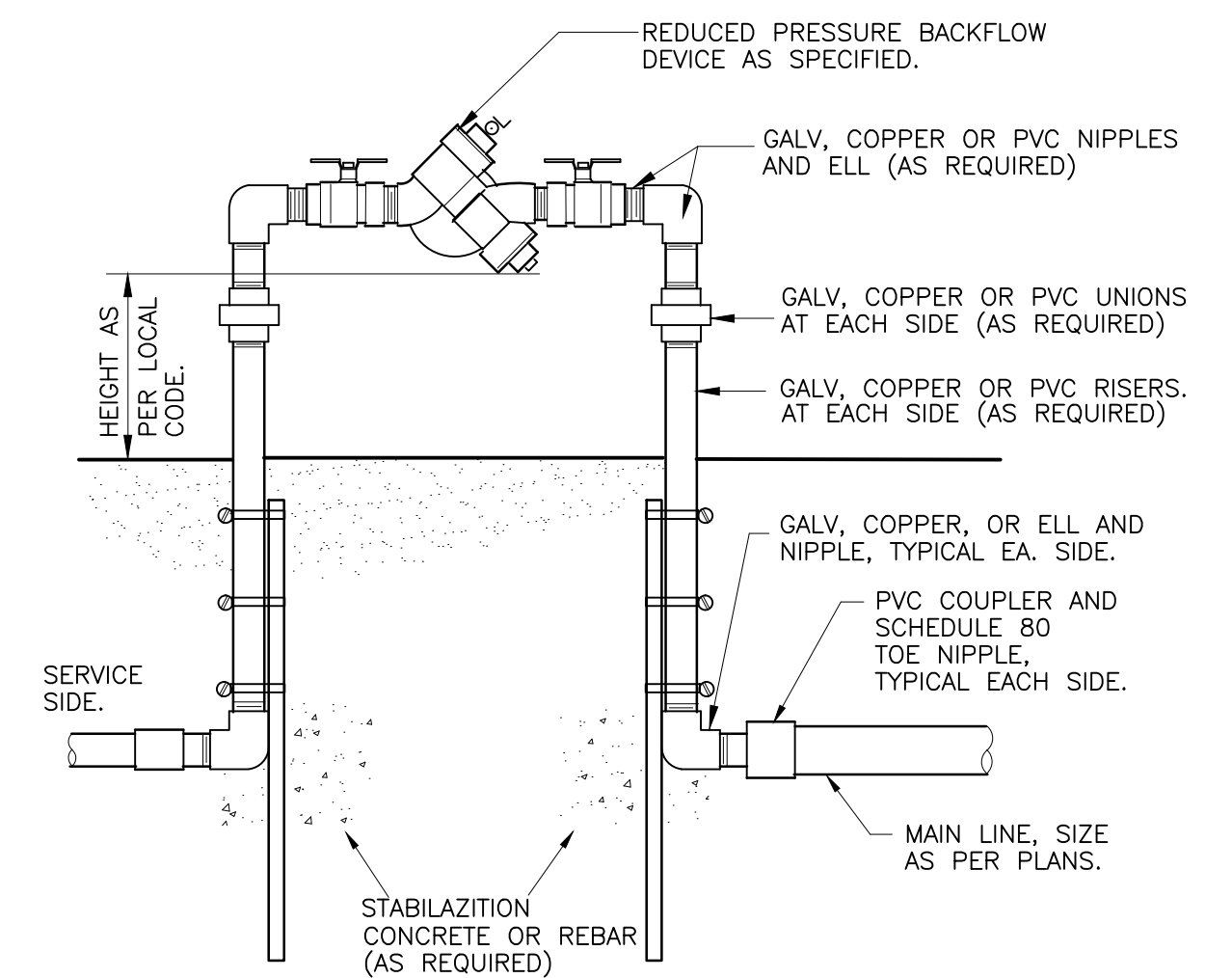
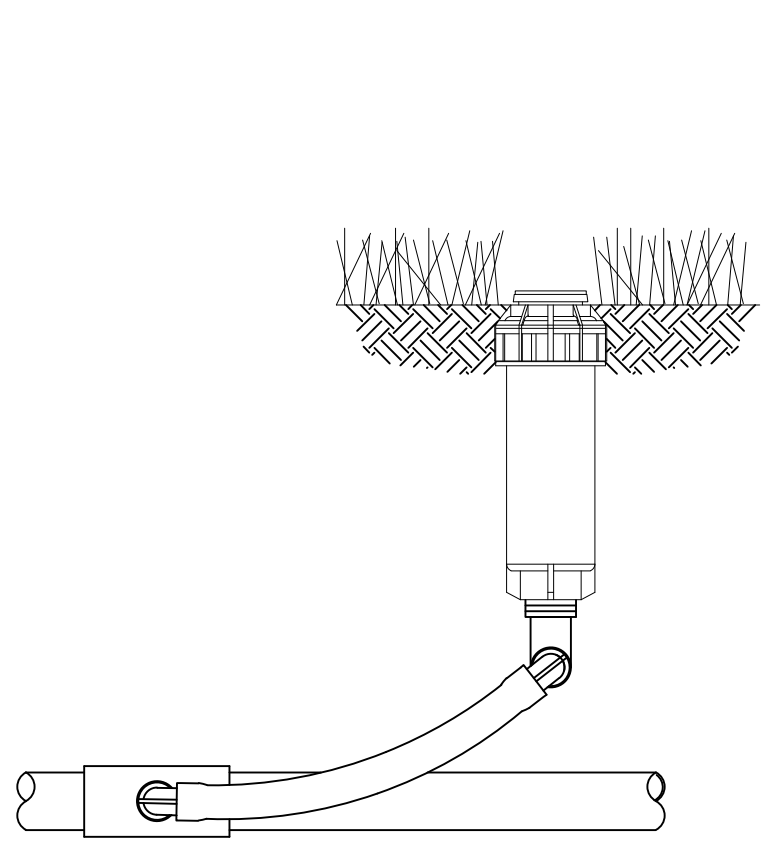
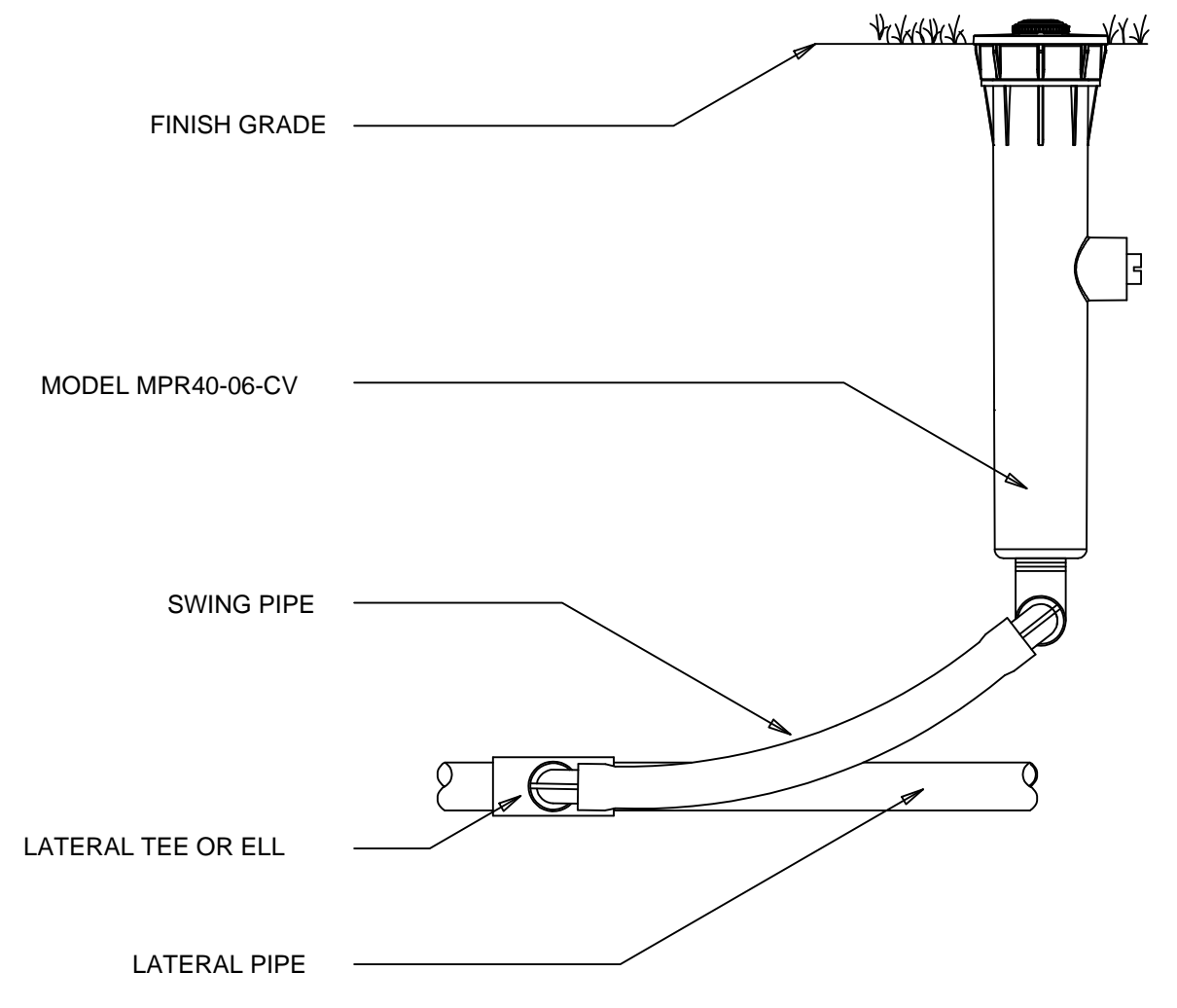
sheet no:

IRR-6 of 6

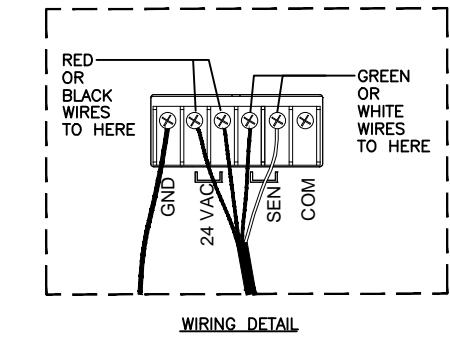
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 TURF & IRRIGATION SUPPLY

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INSTALLATION MAY DIFFER PER LOCAL CODE



NOTES:
 1. FOR BEST PERFORMANCE, THE CONTROLLER INTERFACE SHOULD BE INSTALLED AT LEAST FIVE FEET ABOVE THE GROUND.
 2. IT IS RECOMMENDED THAT THE CONTROLLER INTERFACE BE INSTALLED AWAY FROM SOURCES OF ELECTRICAL INTERFERENCE (SUCH AS TRANSFORMERS, GENERATORS, PUMPS, FANS, ELECTRICAL METER BOXES) AND METAL OBJECTS TO MAXIMIZE COMMUNICATION RANGE.

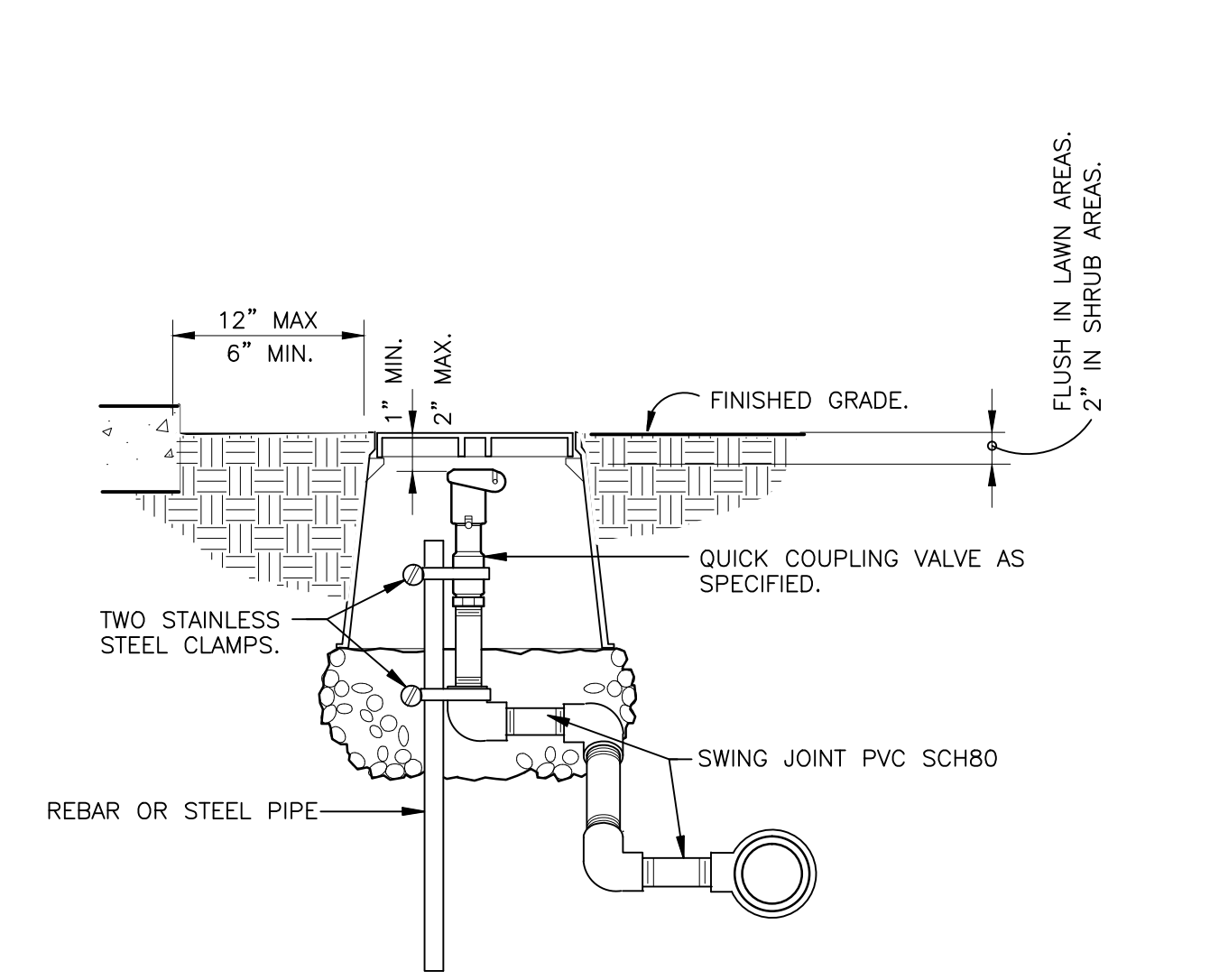
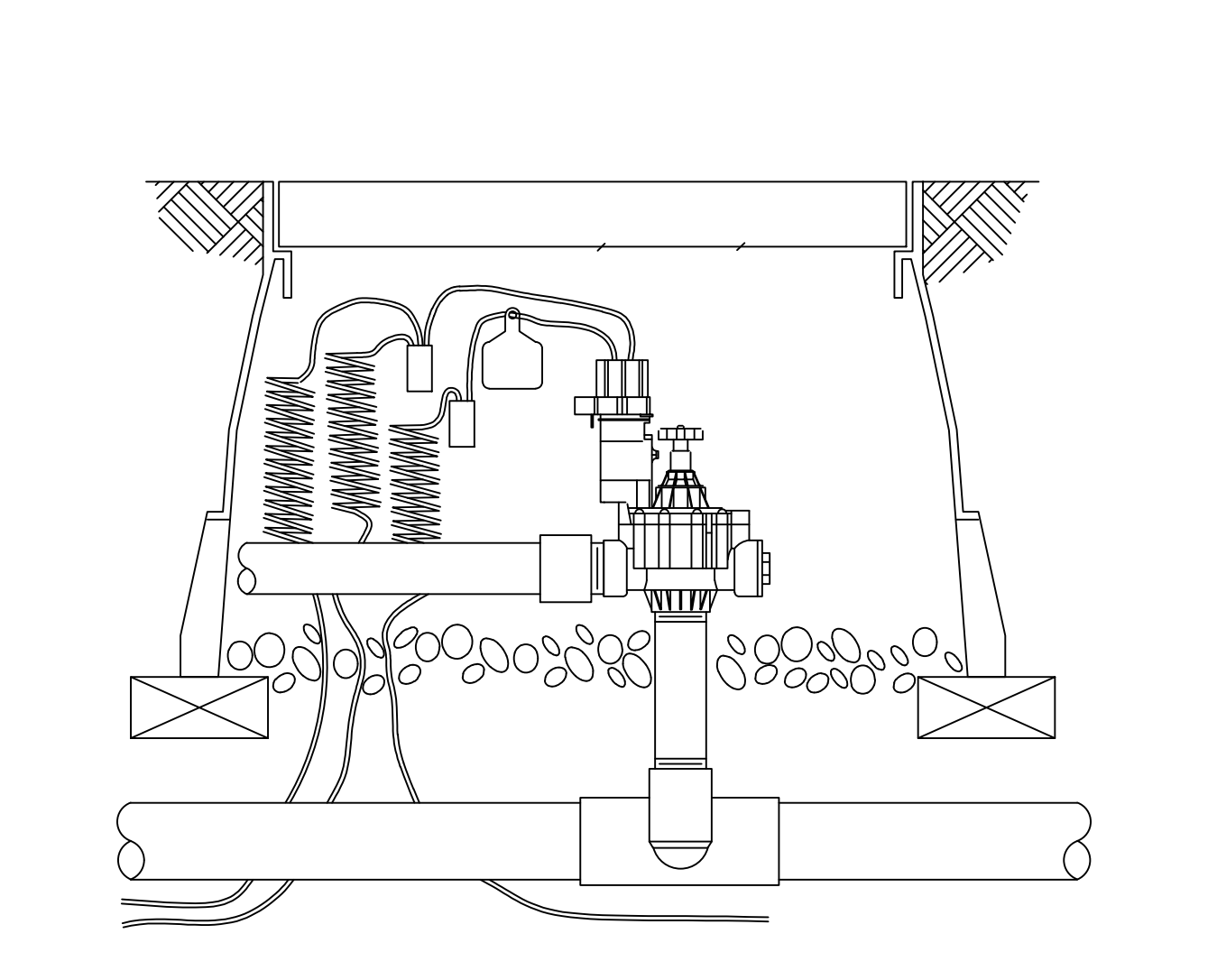
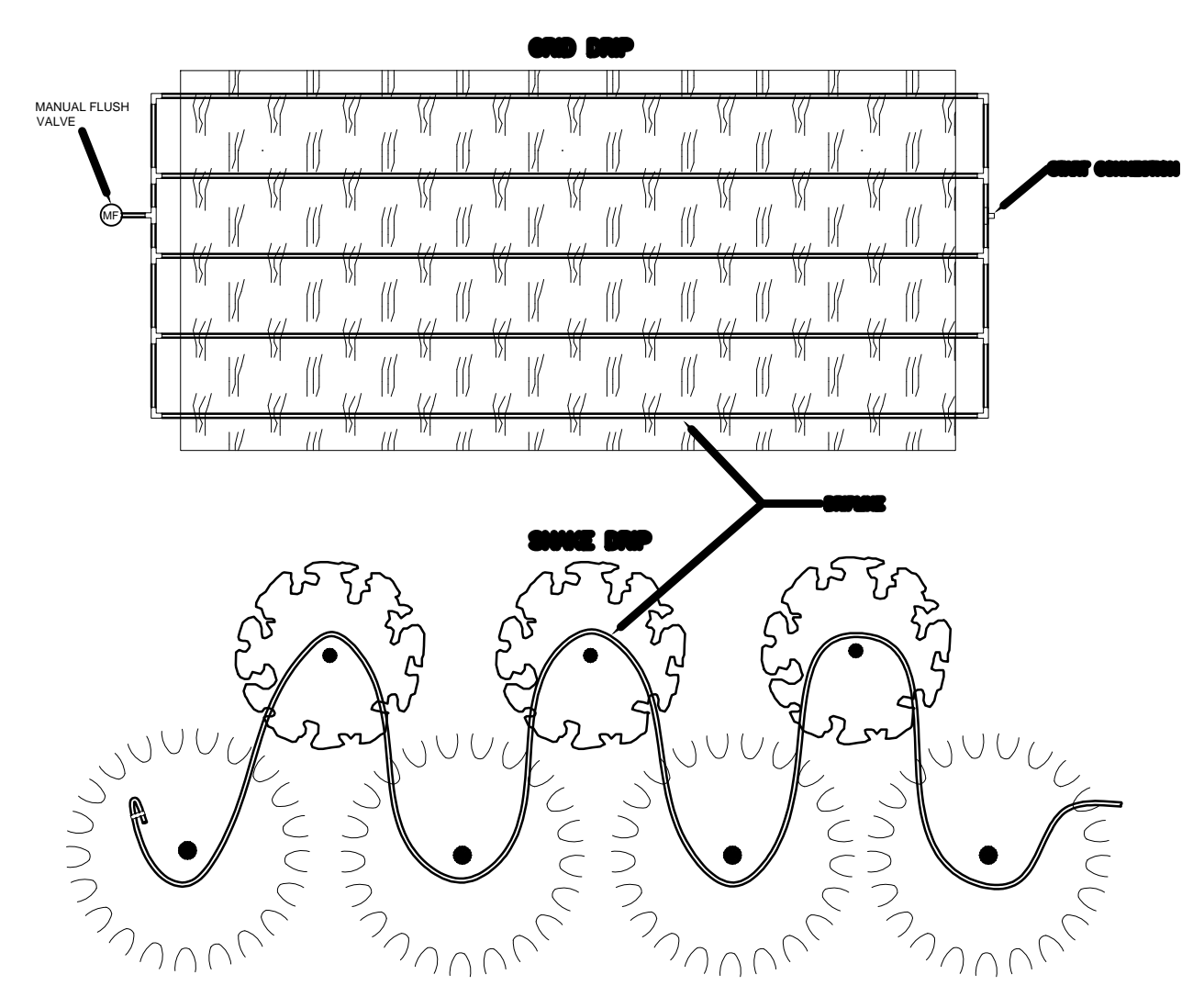


1 1804 SPRAY W/ MP ROTATOR NOZZLE
 DETAIL-FILE

2 5004 ROTOR HEAD WITH SWING PIPE
 NTS S1-RO-RAI-01

3 REDUCED PRESSURE BACKFLOW DEVICE STANDARD
 S1-BA-01

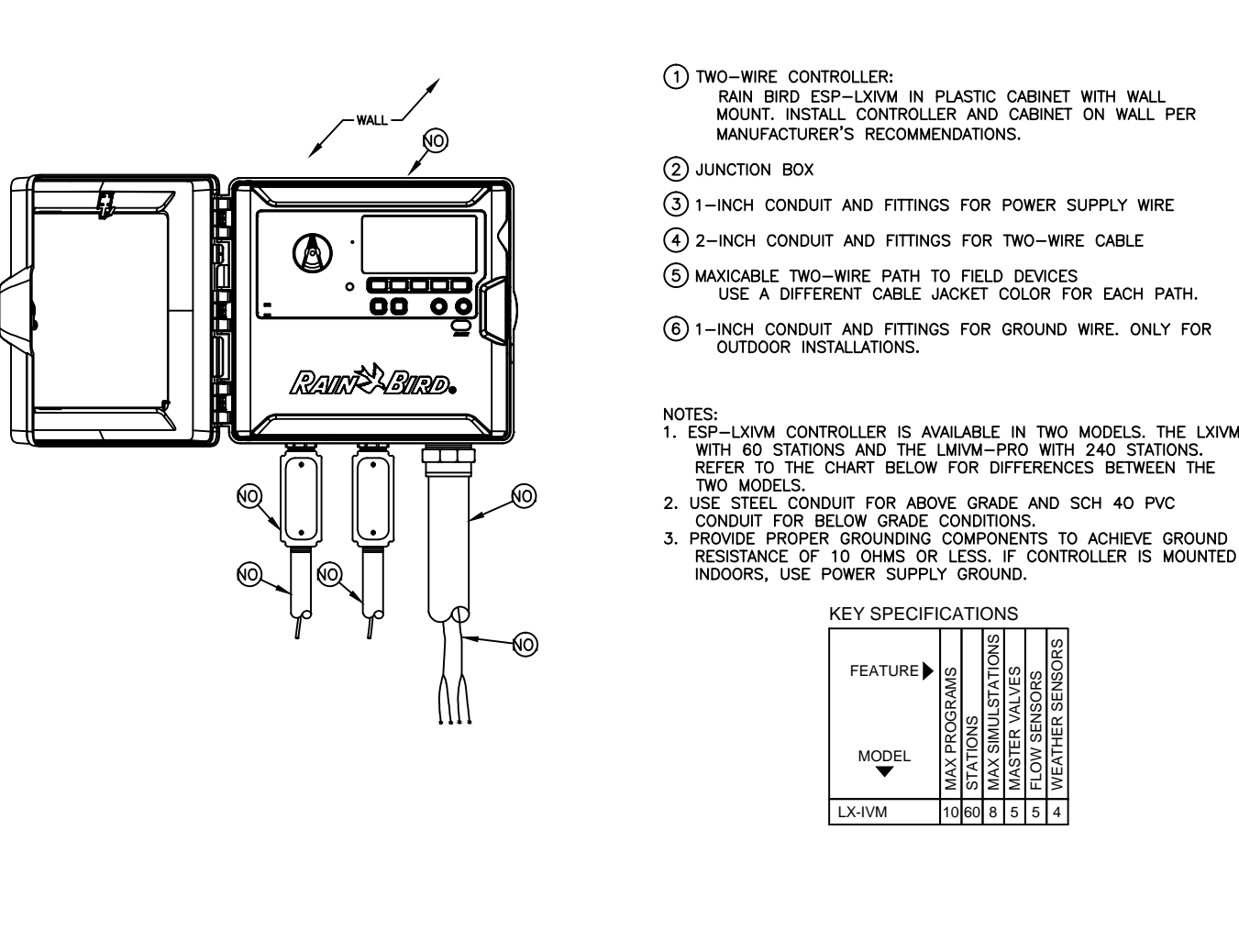
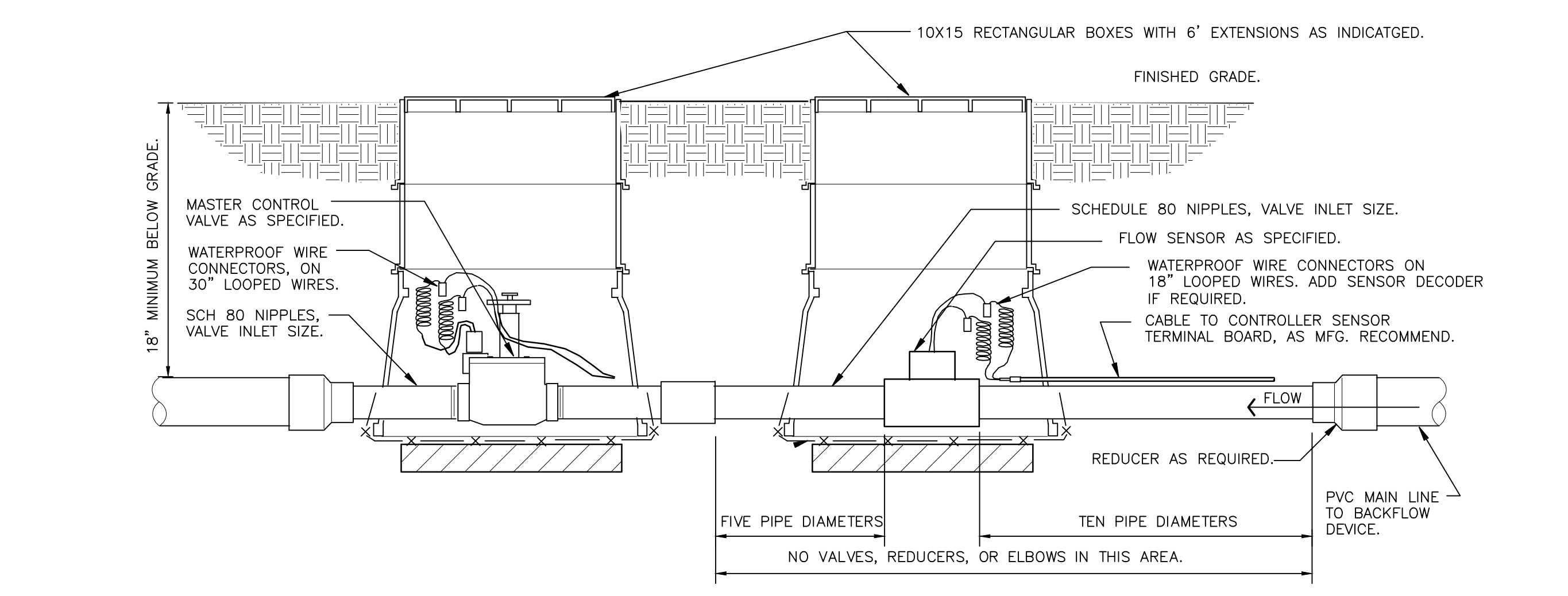
4 WR2 WIRELESS RAIN SENSOR
 NTS



5 TYPICAL DRIP TUBING LAYOUT
 NTS

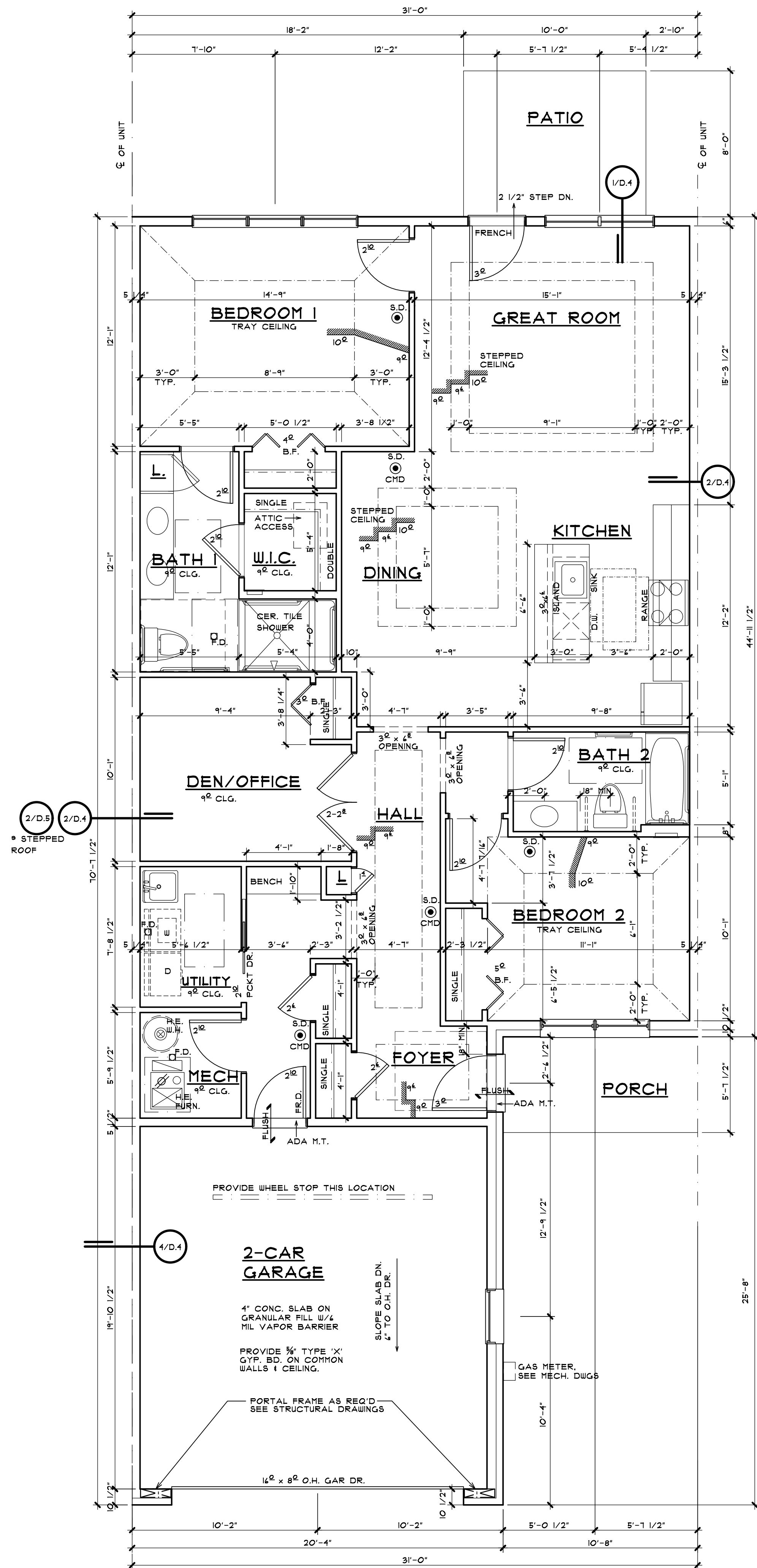
6 RAIN BIRD IVM-PGA VALVE
 NTS

7 QUICK COUPLING VALVE IN BOX
 S1-QU-01



8 MASTER VALVE/FLOW SENSOR ASSEMBLY
 S1-MV-03

9 ESP-LXIVM TWO-WIRE CONTROLLER IN PLASTIC CABINET
 NTS



2 INTERIOR UNIT FIRST FLOOR PLAN - TYPE 'B'
A101 SINGLE STORY DWELLING UNIT

SCALE: 1/4" = 1'-0"

INTERIOR UNIT GROSS SQUARE FOOTAGE	
1ST FLOOR (FIN.)	1,494 SQ FT
GARAGE	421 SQ FT

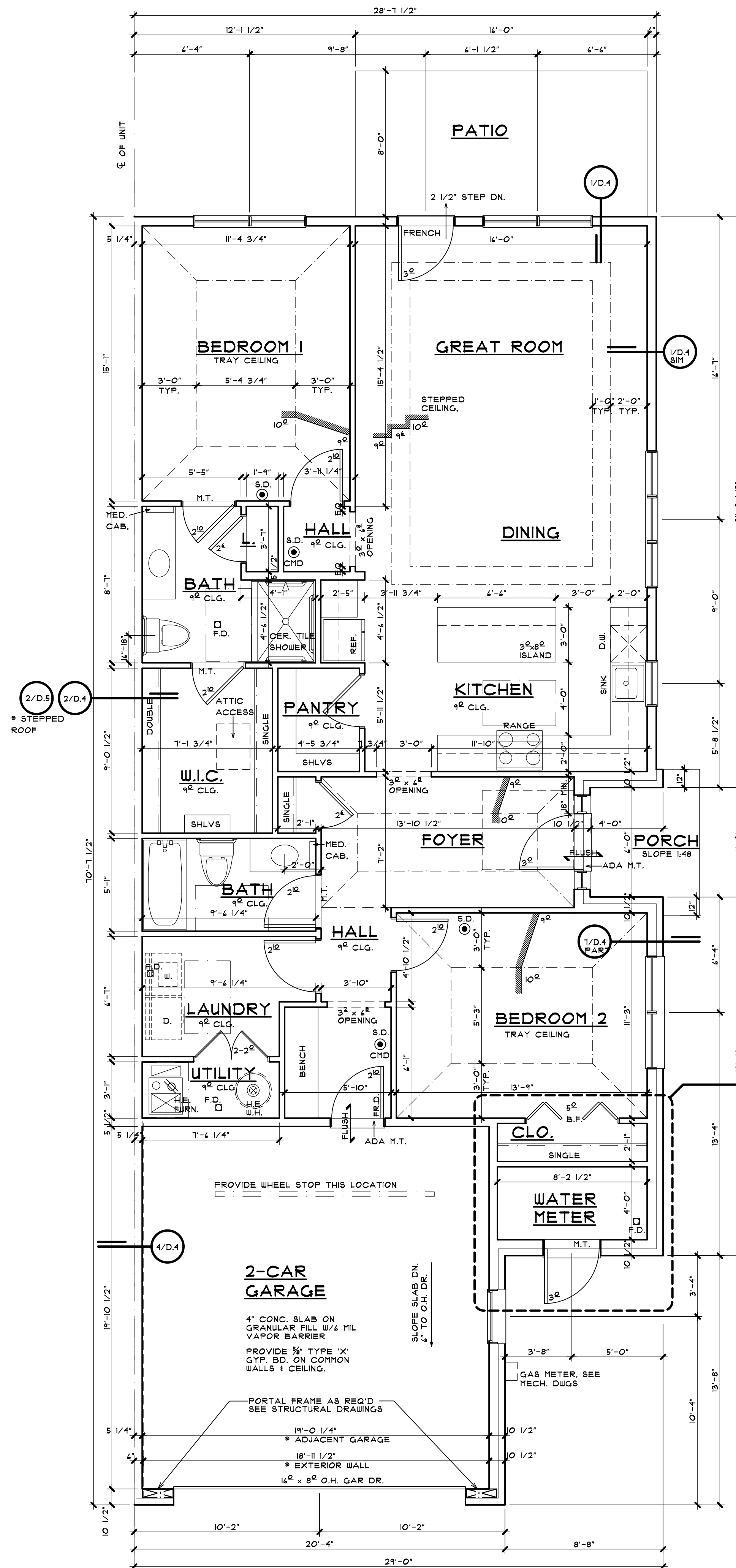
ALL INTERIOR PARTITION DIMENSIONS ARE 3/16" UNLESS NOTED OTHERWISE.

BEFORE CONSTRUCTION OBTAIN WINDOW & DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER.

SEE SHEETS N-1 - N-4 FOR ADDITIONAL NOTES REGARDING DRAWINGS & CONSTRUCTION.

SEE SHEETS D-1-D-4 FOR ADDITIONAL DETAILS REGARDING DRAWINGS & CONSTRUCTION.

DO NOT SCALE THESE DRAWINGS. USE CALCULATED DIMENSIONS. IF VARIATIONS OCCUR CONTACT ARCHITECT FOR CLARIFICATION.

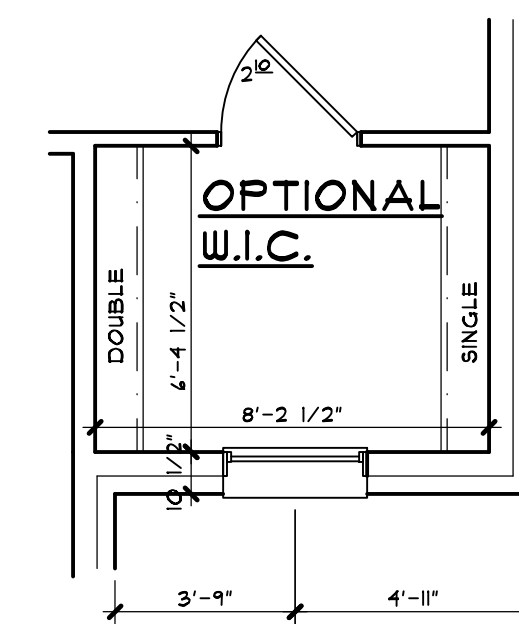


1 END UNIT FIRST FLOOR PLAN - TYPE 'B'
A101 SINGLE STORY DWELLING UNIT

SCALE: 1/4" = 1'-0"

END UNIT GROSS SQUARE FOOTAGE	
1ST FLOOR (FIN.)	1,478 SQ FT
GARAGE	416 SQ FT

1 OPT. CLOSET PLAN
A101 PART. PLAN SCALE: 1/4" = 1'-0"



END UNIT GROSS SQUARE FOOTAGE	
1ST FLOOR (FIN.)	1,478 SQ FT
GARAGE	416 SQ FT

1 OPT. CLOSET PLAN
A101 PART. PLAN SCALE: 1/4" = 1'-0"

NOTE:
 SEE STRUCTURAL ENGINEERING PLANS (BY OTHERS) FOR ALL STRUCTURAL INFORMATION. ALL FOUNDATION INFORMATION REGARDING BEARING CAPACITY OF SOIL CAN VARY ON A BUILDING BY BUILDING BASIS.

NOTES
 ALL EXTERIOR TRIM TO BE ALUMINUM WRAPPED OR VINYL. VERIFY EXACT LOCATIONS FOR EACH MATERIAL WITH OWNER PRIOR TO CONSTRUCTION.
 PROVIDE PEEP HOLES AND DEAD BOLTS AT ALL FRONT ENTRY DOORS. SEE BUILDER FOR SPECIFICATIONS.
 ALL DRYWALL TO BE PREPARED & READY TO BE PAINTED-INCLUDING THE GARAGE.
 BRICK ROWLOCK SILLS MAY BE REPLACED WITH PRECAST STONE OR CONCRETE. VERIFY WITH BUILDER PRIOR TO CONSTRUCTION.
 NOTE: FUTURE GRAB BARS SHOWN AT WATER CLOSETS, TUBS & SHOWERS. PROVIDE BLOCKING ONLY AT TIME OF OCCUPANCY.
 NOTE: ALL GYP. BOARD INSTALLED IN ROUGH BY ROUGH CARPENTERS MUST BE MOLD/MOISTURE RESISTANT TYPE APPROVED FOR INSTALLATION DURING THE ROUGH FRAMING PROCESS.
 NOTE: ROUGH CARPENTER TO VERIFY ALL TUB AND SHOWER SIZES PRIOR TO ROUGH IN.
 NOTE: REFER TO STRUCTURAL DESIGN DRAWINGS FOR ALL STRUCTURAL INFORMATION.

Item A.

Alexander V. Bogaerts + Associates, P.C. • Architecture • Planning • Interior Design

2445 Franklin Road
 Bloomfield Hills, MI 48302
 248 • 334 • 5000

SHEET TITLE
INTERIOR & END UNIT FIRST FLOOR PLANS

CLIENT/PROJECT
WEST VALLEY MULTIFAMILY COMMUNITY
 WHITE LAKE, MICHIGAN

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 ALEXANDER V. BOGAERTS + ASSOC.

PRELIMINARY 08-19-19
 BIDS
 PERMITS 06-15-21
 CONSTRUCTION

REVISIONS
 22-10-18 OWNER COMMENT RESPONSE
 2024 02 07

DRAWN BY
 MS / DA
 CAD FILENAME
 UNITPLANS.DWG
 CHECKED BY
 TM
 JOB NUMBER
 8140
 DATE

SHEET NUMBER
A101

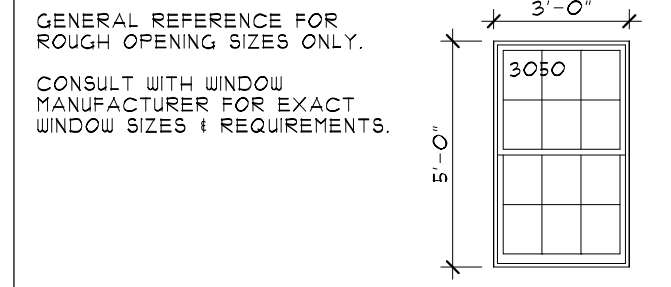
WINDOW SILLS

IN DWELLING UNITS, WHERE THE OPENING OF AN OPERABLE WINDOW IS LOCATED MORE THAN 12" ABOVE FINISHED GRADE OR SURFACE BELOW, THE LOWEST PART OF THE CLEAR OPENING OF THE WINDOW SHALL BE A MINIMUM OF 24 INCHES ABOVE THE FINISHED FLOOR OF THE ROOM IN WHICH THE WINDOW IS LOCATED. GLAZING BETWEEN THE FLOOR AND 24" SHALL BE FIXED OR HAVE OPENINGS THROUGH WHICH A 4 INCH DIAMETER SPHERE CANNOT PASS.
EXCEPTIONS:
1. WINDOWS WHOSE OPENINGS WILL NOT ALLOW A 4" DIA SPHERE TO PASS THROUGH THE OPENING WHERE THE OPENING IS IN ITS LARGEST OPENED POSITION.
2. OPENINGS THAT ARE PROVIDED WITH WINDOW GUARDS THAT COMPLY WITH ASTM F2090.

OVERHANGS & DRAINAGE

PROVIDE GUTTERS AND DOWNSPOUTS FOR DRAINAGE OF ROOF WATER. DOWNSPOUTS ARE TO BE CONNECTED TO THE STORM WATER COLLECTION SYSTEM. SEE CIVIL ENGINEERING DRAWINGS FOR CONNECTION DETAILS/LOCATIONS.
DOWNSPOUT LOCATIONS ARE T.B.D. BY BUILDER.
UNLESS NOTED OTHERWISE OVERHANG DIMENSIONS ARE 12" FROM RAFTER. RAKE DIMENSIONS ARE 4" AT BRICK AND 4" AT SIDING.

TYP. WINDOW DESIGNATION



EGRESS WINDOW

EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPERABLE WINDOW OR EXTERIOR DOOR APPROVED FOR EMERGENCY EGRESS OR RESCUE. THE UNIT(S) MUST BE OPERABLE FROM THE INSIDE TO A FULL CLEAR OPENING WITHOUT THE USE OF SEPARATE TOOLS. WHERE WINDOWS ARE PROVIDED AS A MEANS OF EGRESS OR RESCUE, THEY SHALL HAVE A NET HEIGHT OF NOT MORE THAN 44 INCHES ABOVE THE FLOOR. ALL EGRESS OR RESCUE WINDOWS FROM SLEEPING ROOMS MUST HAVE A MINIMUM NET CLEAR OPENING HEIGHT DIMENSION SHALL BE 24 INCHES AND WIDTH OF 20 INCHES.

NOTE: VERIFY TYPE OF TRIM W/ OWNER PRIOR TO CONSTRUCTION. OWNER MAY CHOOSE 2X TRIM WRAPPED IN ALUMINUM OR VINYL TRIM BOARDS.

NOTE: SEE A5-1 FOR INDIVIDUAL BUILDING COLOR SCHEME

NOTES

ALL EXTERIOR TRIM TO BE ALUMINUM UNWRAPPED OR VINYL. VERIFY EXACT LOCATION FOR EACH MATERIAL WITH OWNER PRIOR TO CONSTRUCTION.
PROVIDE PEEP HOLES AND DEAD BOLTS AT ALL FRONT ENTRY DOORS. SEE BUILDER FOR SPECIFICATIONS.
ALL DRYWALL TO BE READY TO BE PAINTED.
BRICK ROWLOCK SILLS MAY BE REPLACED WITH PRECAST STONE OR CONCRETE. VERIFY WITH BUILDER PRIOR TO CONSTRUCTION.
FIXED GLASS WINDOWS IN GABLES TO HAVE OPAQUE FINISH ON INTERIOR OF GLASS SO FRAMING OF ROOF NOT VISIBLE FROM EXTERIOR.
PROVIDE RECESS LIGHT IN SOFFIT ABOVE DOOR ENTRY - CONNECT TO PHOTO CELL.

PROPOSED VENT AREA: REQUIRED PER EACH END UNIT
VENT AREA RATIO 1:150
ATTIC AREA = 1462 SQ.FT. (1/150)
VENT AREA = 9.75 SQ.FT. x 144 = 1404 SQ.IN.
50% SOFFIT AND 50% RIDGE = 702 SQ.IN. EACH

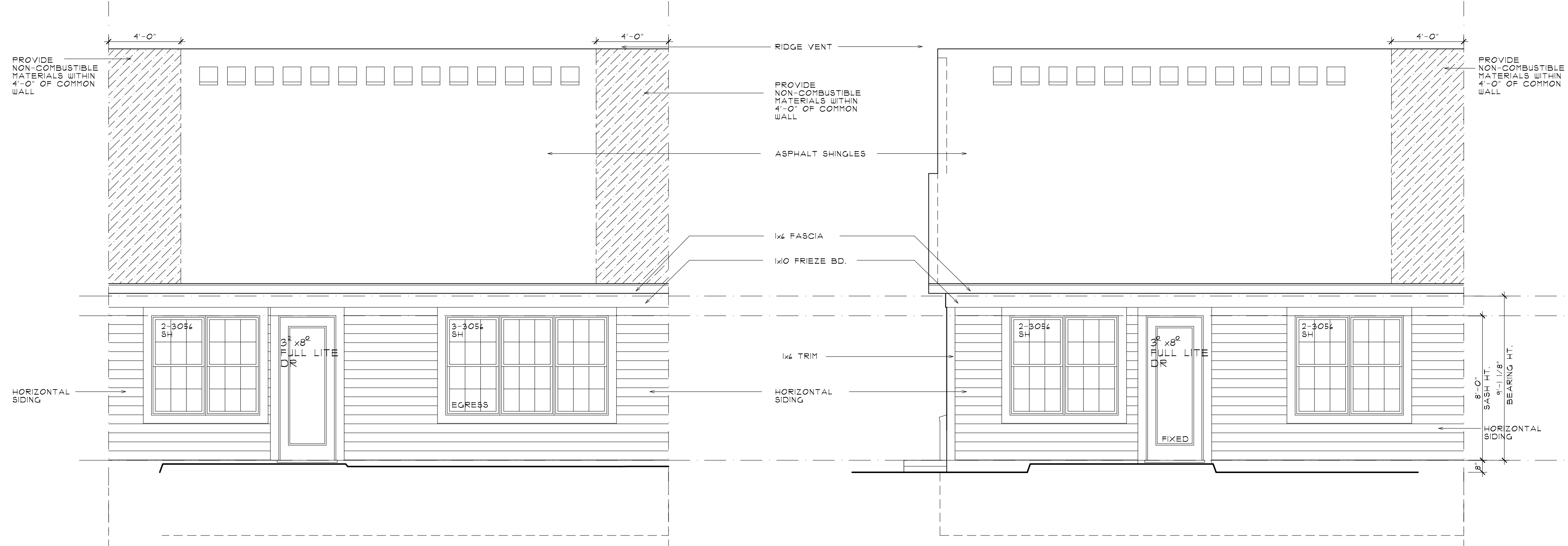
VENT AREA PROVIDED @ RIDGE
CONTINUOUS RIDGE TYPE @ 18 SQ.IN. PER FT. = X LIN.FT.
LOUVER AT RIDGE TYPE @ 54 SQ.IN. EA. = 13 UNITS
GABLE END TYPE (TOTAL) = SQ.IN. = UNITS
TOTAL VENTING AT RIDGE = 702 SQ.IN.

VENT AREA PROVIDED @ SOFFIT
CONTINUOUS SOFFIT TYPE @ 9 SQ.IN. PER FT. = X LIN.FT.
LOUVER TYPE 8"x14" w/o BRICK @ 54 SQ.IN. EA. = 13 UNITS
TOTAL VENTING AT SOFFIT = 702 SQ.IN.

PROPOSED VENT AREA: REQUIRED PER EACH INTERIOR UNIT
VENT AREA RATIO 1:150
ATTIC AREA = 1488 SQ.FT. (1/150)
VENT AREA = 9.9 SQ.FT. x 144 = 1424 SQ.IN.
50% SOFFIT AND 50% RIDGE = 712 SQ.IN. EACH

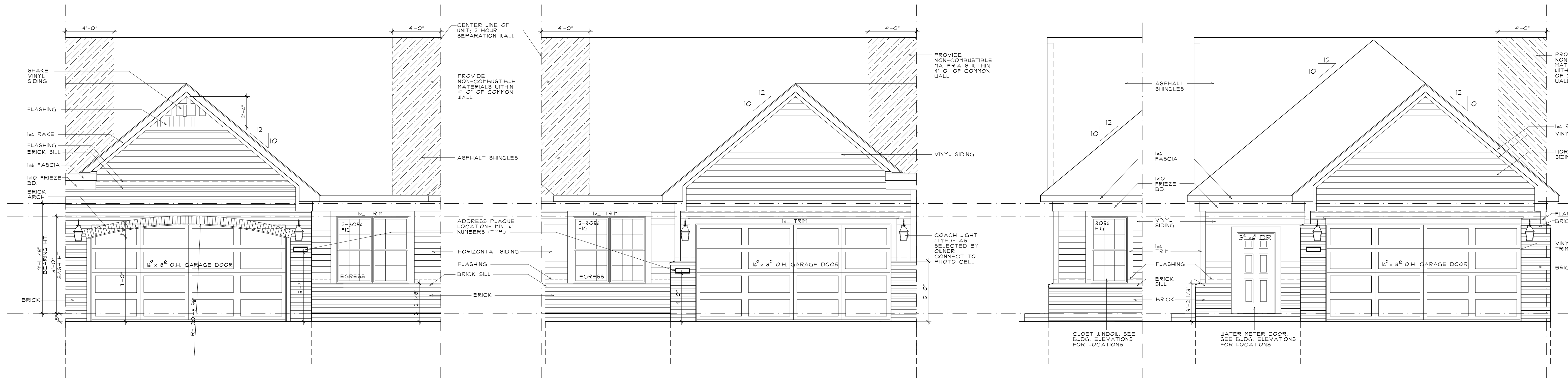
VENT AREA PROVIDED @ RIDGE
CONTINUOUS RIDGE TYPE @ 18 SQ.IN. PER FT. = X LIN.FT.
LOUVER AT RIDGE TYPE @ 54 SQ.IN. EA. = 14 UNITS
TOTAL VENTING AT RIDGE = 756 SQ.IN.

VENT AREA PROVIDED @ SOFFIT
CONTINUOUS SOFFIT TYPE @ 9 SQ.IN. PER FT. = X LIN.FT.
LOUVER TYPE 8"x14" w/o BRICK @ 54 SQ.IN. EA. = 14 UNITS
TOTAL VENTING AT SOFFIT = 756 SQ.IN.



5 REAR ELEVATION - TYP. INTERIOR UNIT
A102 5 AND 6 UNIT SINGLE STORY SCALE: 1/4" = 1'-0"

2 REAR ELEVATION - TYP. END UNIT
A102 5 AND 6 UNIT SINGLE STORY SCALE: 1/4" = 1'-0"



4 FRONT ELEVATION B - TYP. INTERIOR UNIT
A102 5 AND 6 UNIT SINGLE STORY SCALE: 1/4" = 1'-0"

3 FRONT ELEVATION A - TYP. INTERIOR UNIT
A102 5 AND 6 UNIT SINGLE STORY SCALE: 1/4" = 1'-0"

1 FRONT ELEVATION - TYP. END UNIT
A102 5 AND 6 UNIT SINGLE STORY SCALE: 1/4" = 1'-0"

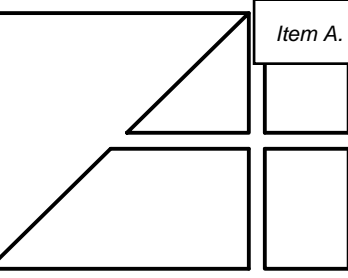
ALL INTERIOR PARTITION DIMENSIONS ARE 3/16" UNLESS NOTED OTHERWISE.

BEFORE CONSTRUCTION OBTAIN WINDOW & DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER.

SEE SHEETS N-1 - N-4 FOR ADDITIONAL DETAILS REGARDING DRAWINGS & CONSTRUCTION.

SEE SHEETS D1-D4 FOR ADDITIONAL NOTES REGARDING DRAWINGS & CONSTRUCTION.

DO NOT SCALE THESE DRAWINGS. USE CALCULATED DIMENSIONS. IF VARIATIONS OCCUR CONTACT ARCHITECT FOR CLARIFICATION.



Interior Design
2445 Franklin Road
Bloomfield Hills, MI 48302
248.334.5000

TYP. UNIT ELEVATIONS
(1/4" Scale)

WEST VALLEY
MULTIFAMILY COMMUNITY
WHITE LAKE, MICHIGAN

PRELIMINARY
08-19-19
PERMITS
06-15-21
CONSTRUCTION

REVISIONS
22-10-18 OWNER COMMENT RESPONSE
2024 02 07

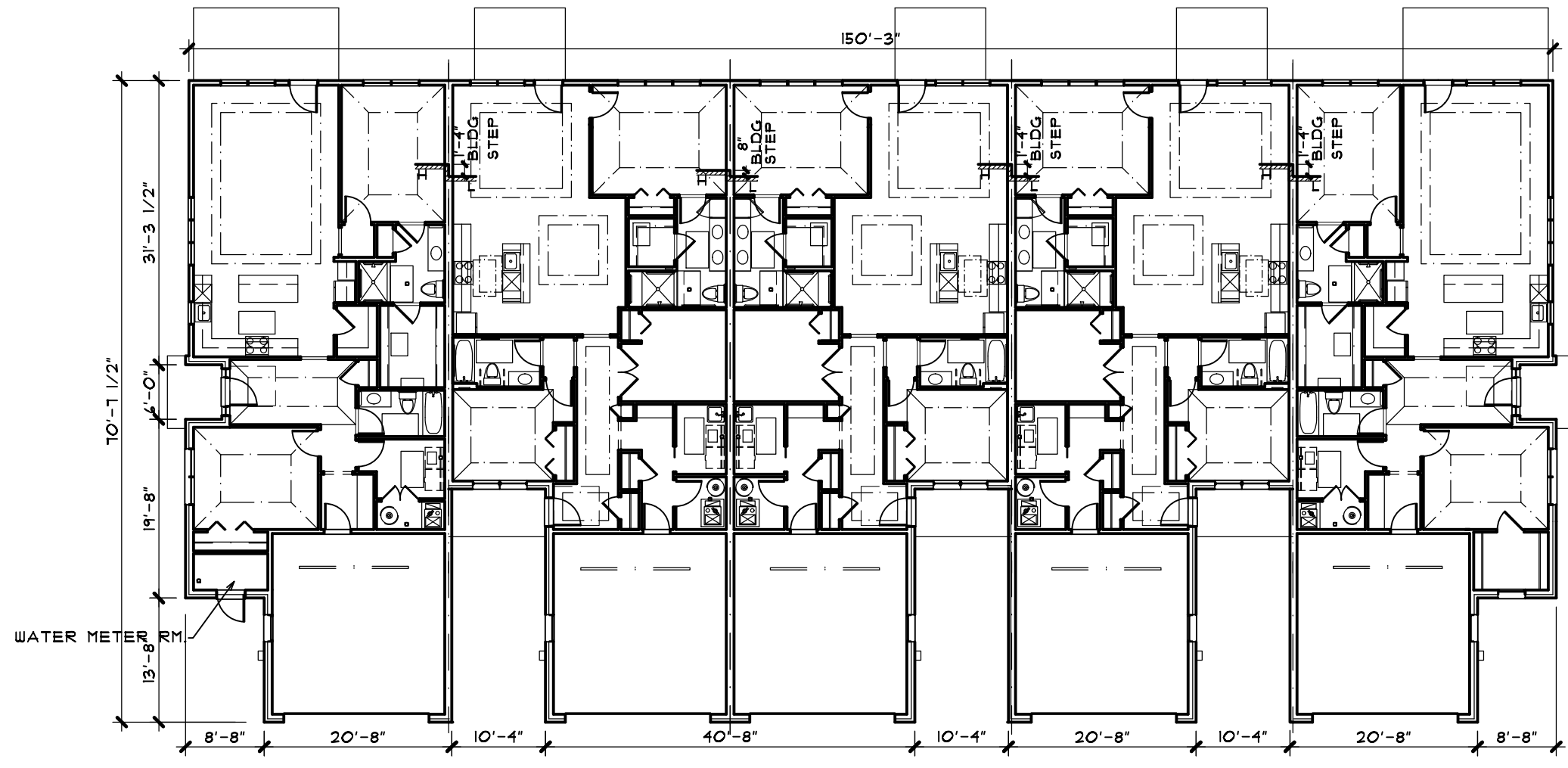
A102

S:\CURRENT\1\client\1\white lake\white lake\west valley\04 DRAWINGS\6140 ELEV.dwg, 2/6/2024 2:39:50 PM

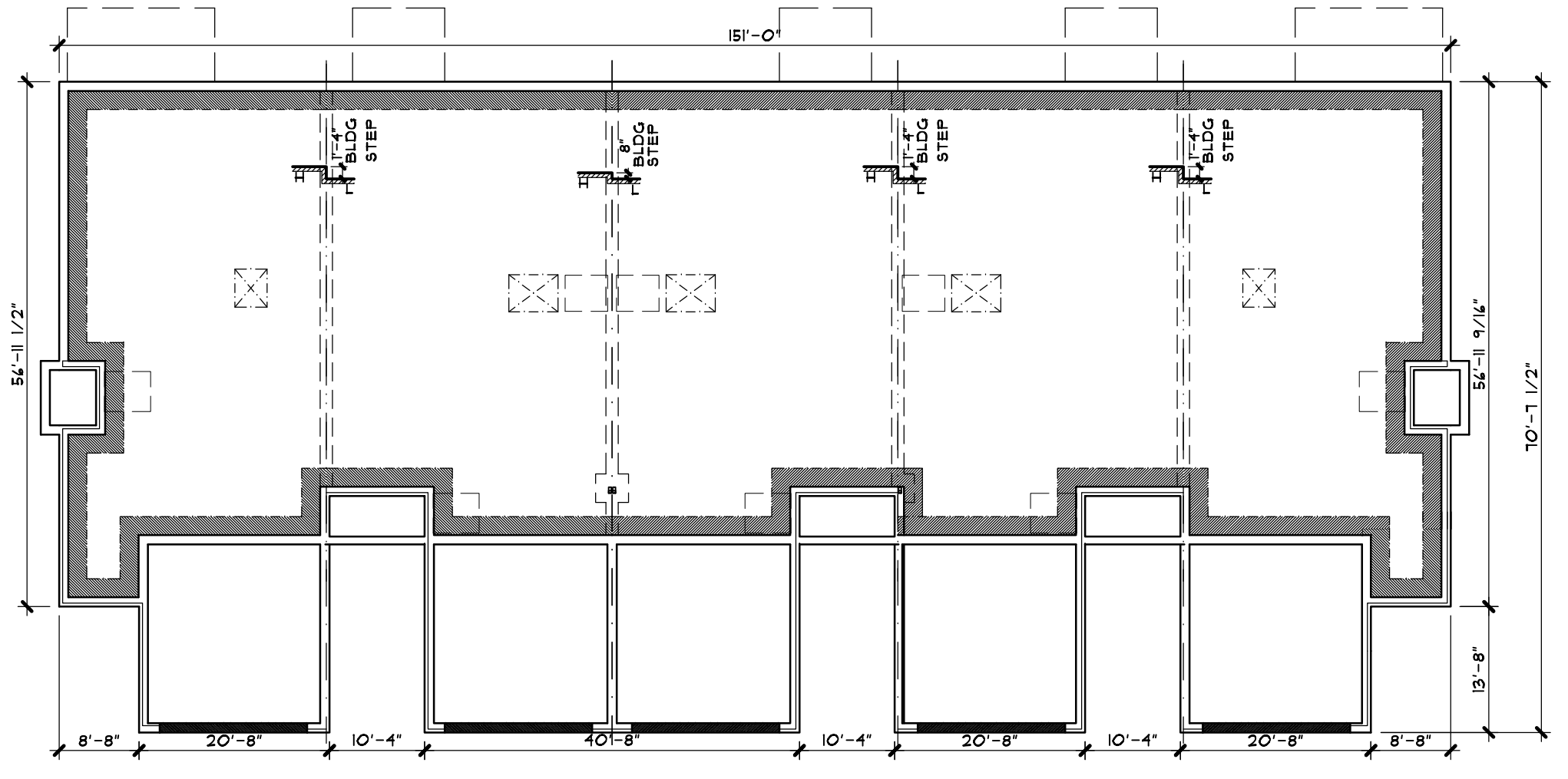
NOTE:

- REFER TO 1/4" SCALE UNIT PLANS FOR ALL NOTES, DIMENSIONS, DETAILS AND ALL ADDITIONAL INFORMATION NOT SHOWN.
- SEE STRUCTURAL ENGINEERING PLANS (BY OTHERS) FOR ALL STRUCTURAL INFORMATION. ALL FOUNDATION INFORMATION REGARDING BEARING CAPACITY OF SOIL CAN VARY ON A BUILDING BY BUILDING BASIS.
- REFER TO CIVIL ENGINEERING PLANS (BY OTHERS) FOR ADDITIONAL INFORMATION ON BUILDING STEPS AND GRADING.

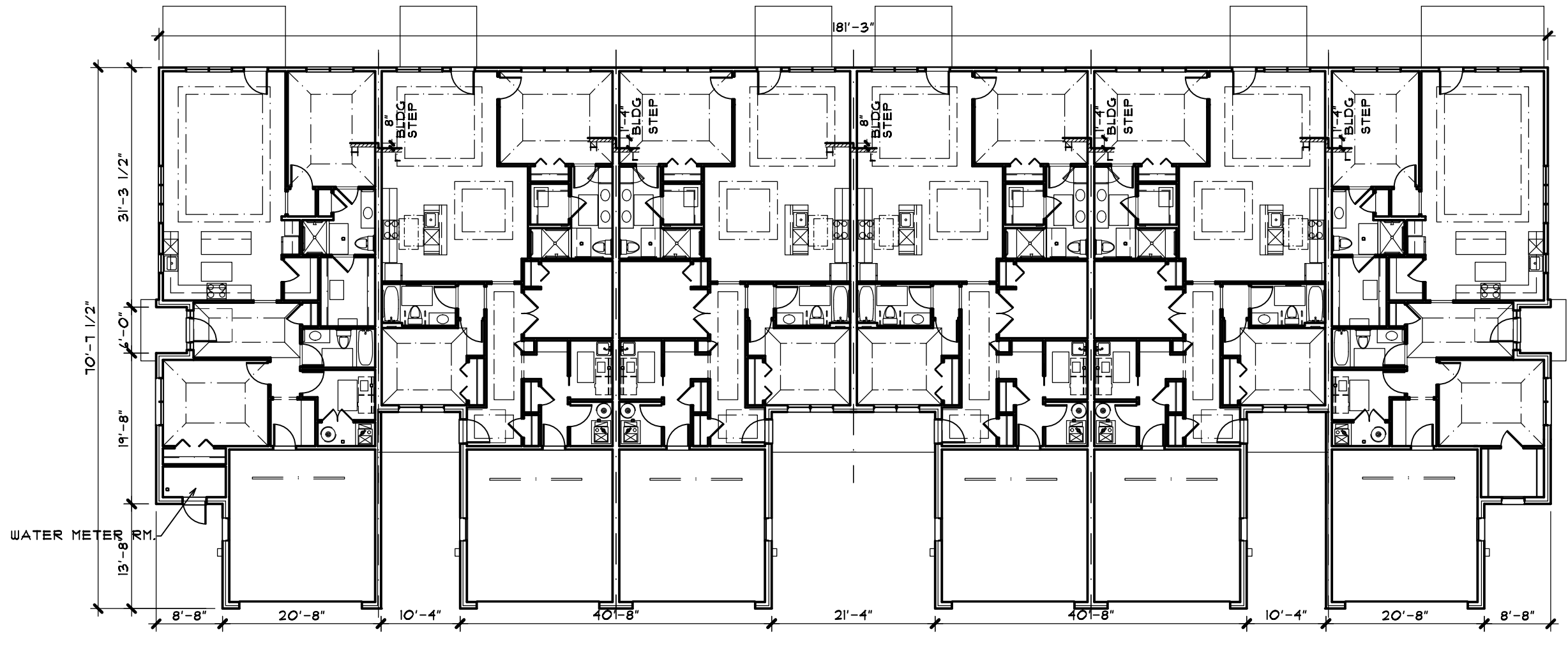
NOTE: CONFIRM WATER METER ROOM LOCATION W/CIVIL PRIOR TO CONSTRUCTION.



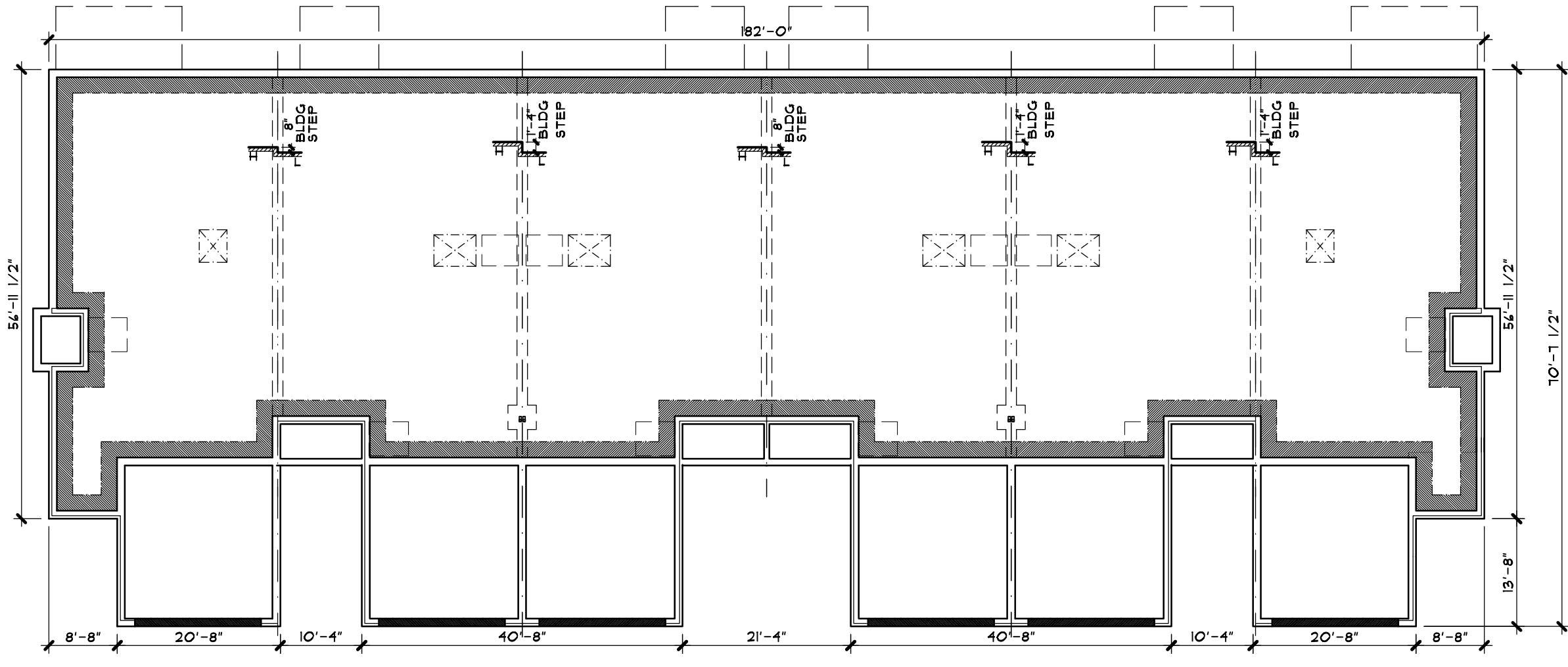
6 BUILDING C (UNIT 13-17) - FIRST FLOOR PLAN
A200 SINGLE STORY DWELLING UNIT SCALE: 1/16" = 1'-0"



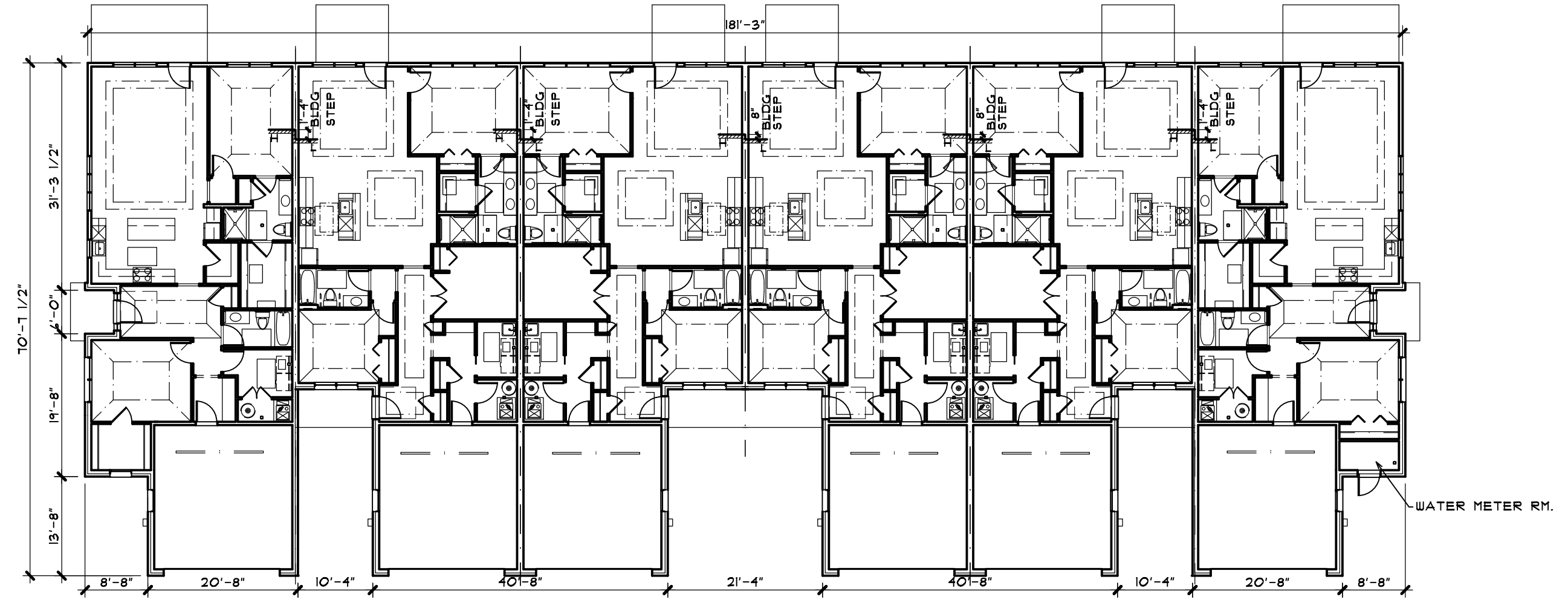
5 BUILDING C (UNIT 13-17) - FOUNDATION PLAN
A200 SINGLE STORY DWELLING UNIT SCALE: 1/16" = 1'-0"



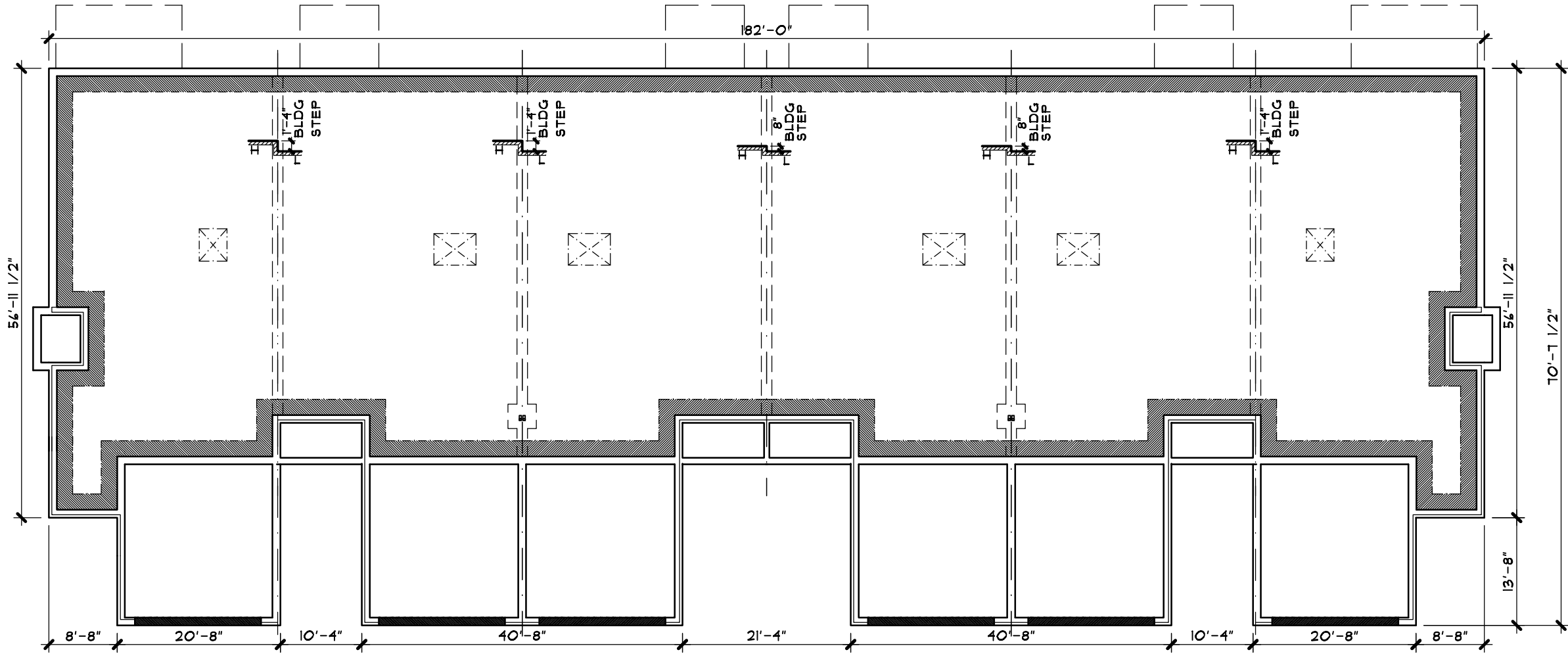
4 BUILDING B (UNIT 7-12) - FIRST FLOOR PLAN
A200 SINGLE STORY DWELLING UNIT SCALE: 1/16" = 1'-0"



3 BUILDING B (UNIT 7-12) - FOUNDATION PLAN
A200 SINGLE STORY DWELLING UNIT SCALE: 1/16" = 1'-0"



2 BUILDING A (UNIT 1-6) - FIRST FLOOR PLAN
A200 SINGLE STORY DWELLING UNIT SCALE: 1/16" = 1'-0"



1 BUILDING A (UNIT 1-6) - FOUNDATION PLAN
A200 SINGLE STORY DWELLING UNIT SCALE: 1/16" = 1'-0"

ALL INTERIOR PARTITION DIMENSIONS ARE 3/16" UNLESS NOTED OTHERWISE.

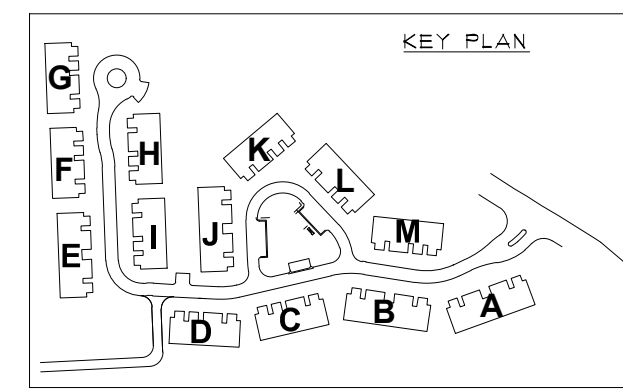
BEFORE CONSTRUCTION OBTAIN WINDOW / DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER.

SEE SHEETS N-1 - N-4 FOR ADDITIONAL NOTES REGARDING DRAWINGS & CONSTRUCTION.

SEE SHEETS D1-D4 FOR ADDITIONAL DETAILS REGARDING DRAWINGS & CONSTRUCTION.

DO NOT SCALE THESE DRAWINGS. USE CALCULATED DIMENSIONS. IF VARIATIONS OCCUR CONTACT ARCHITECT FOR CLARIFICATION.

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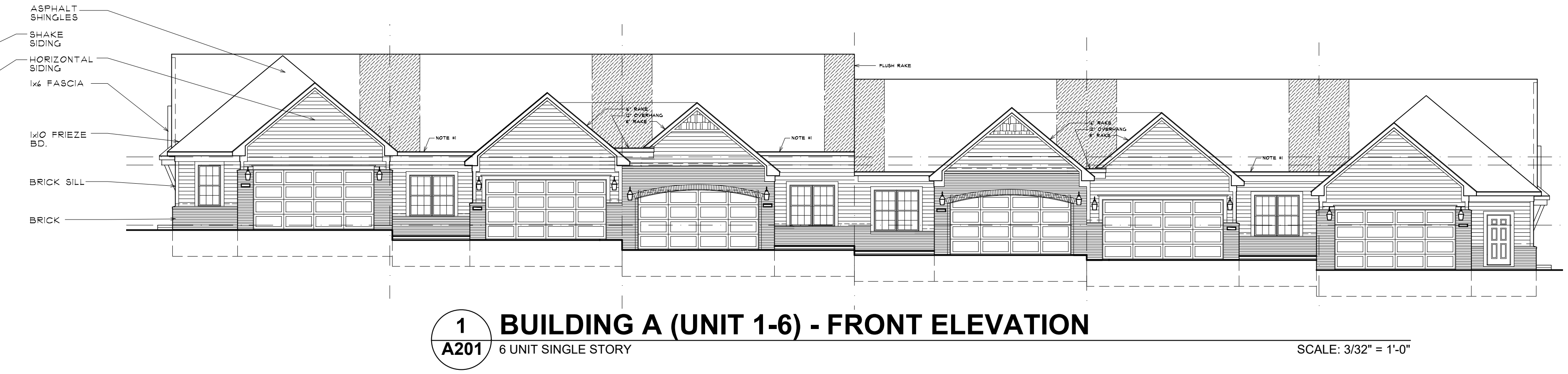
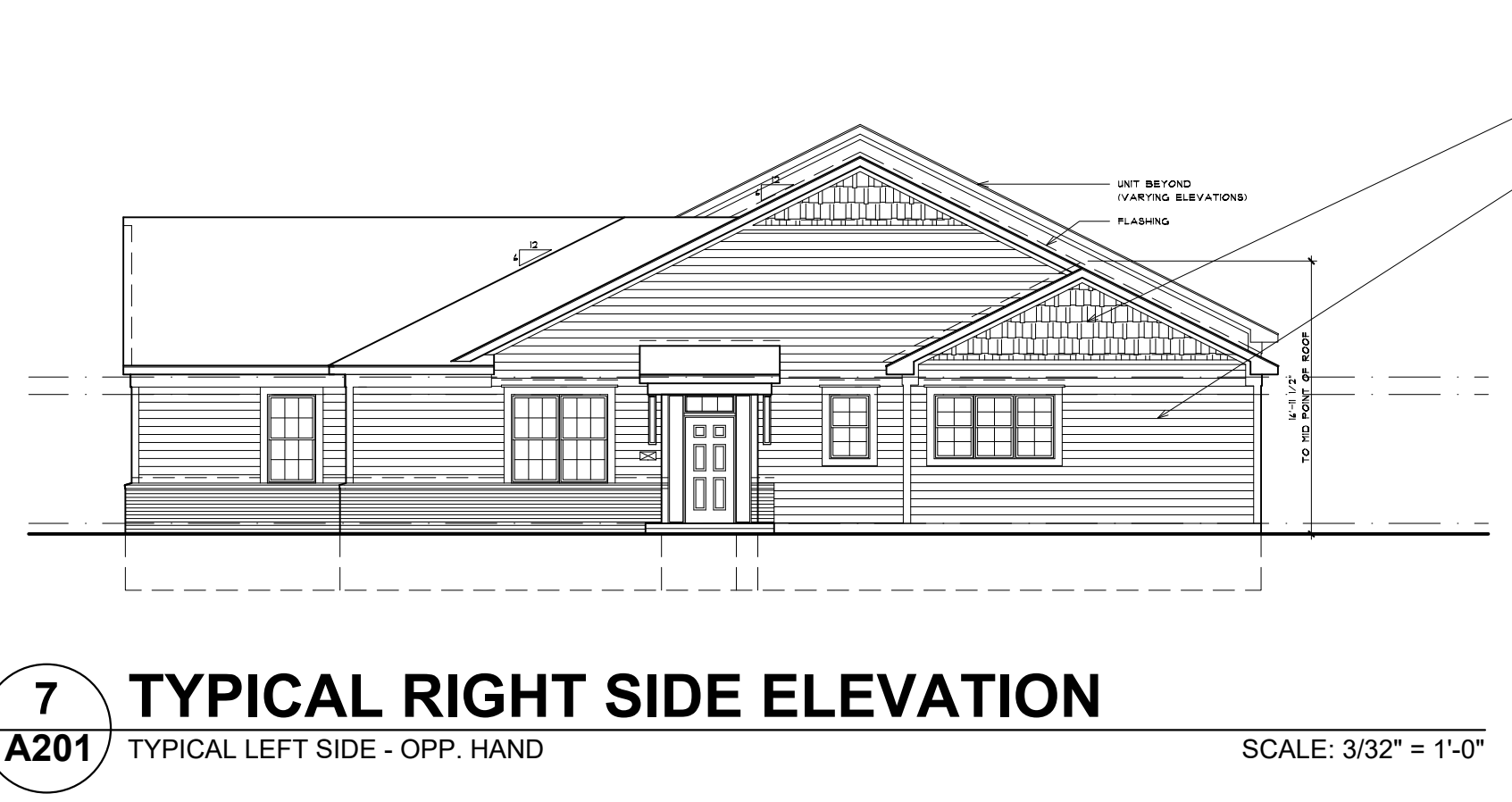
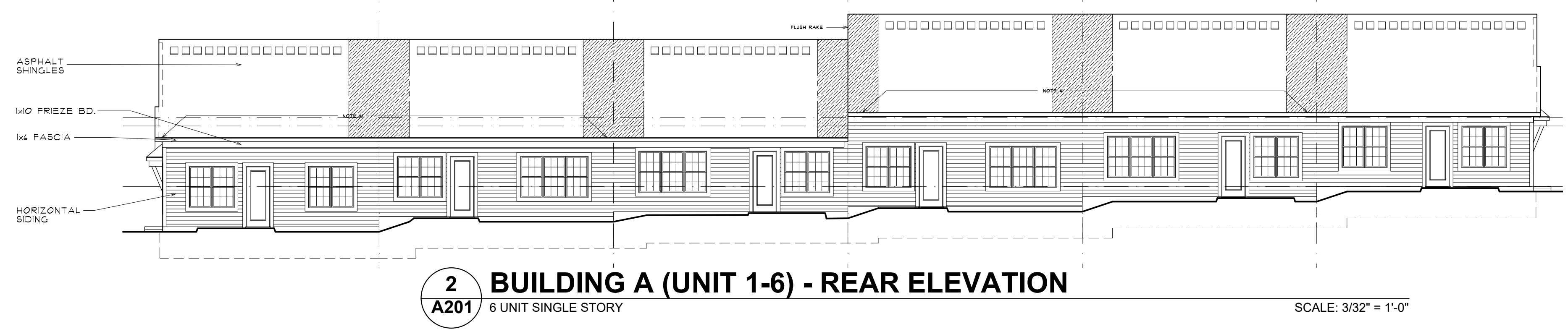
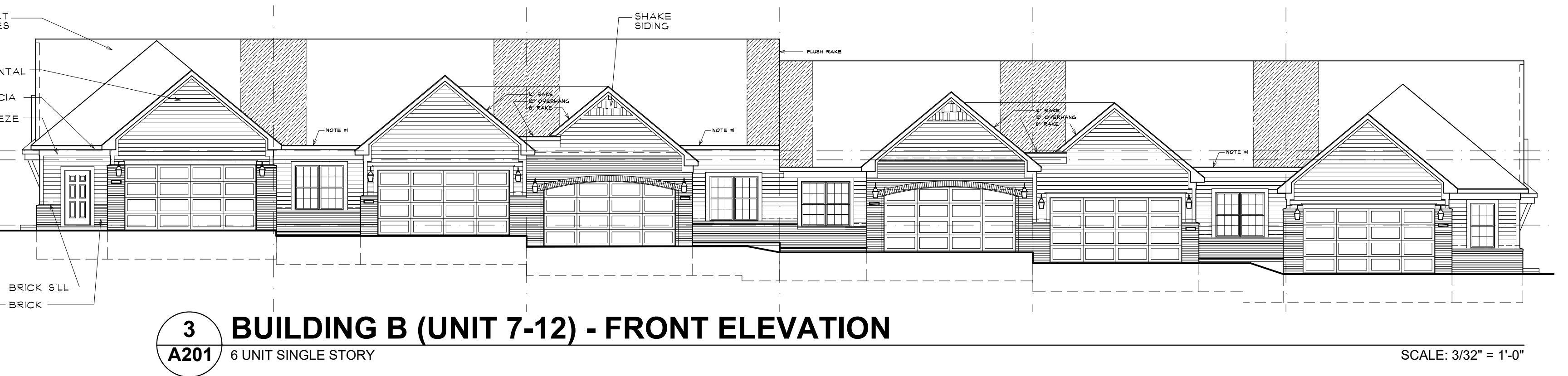
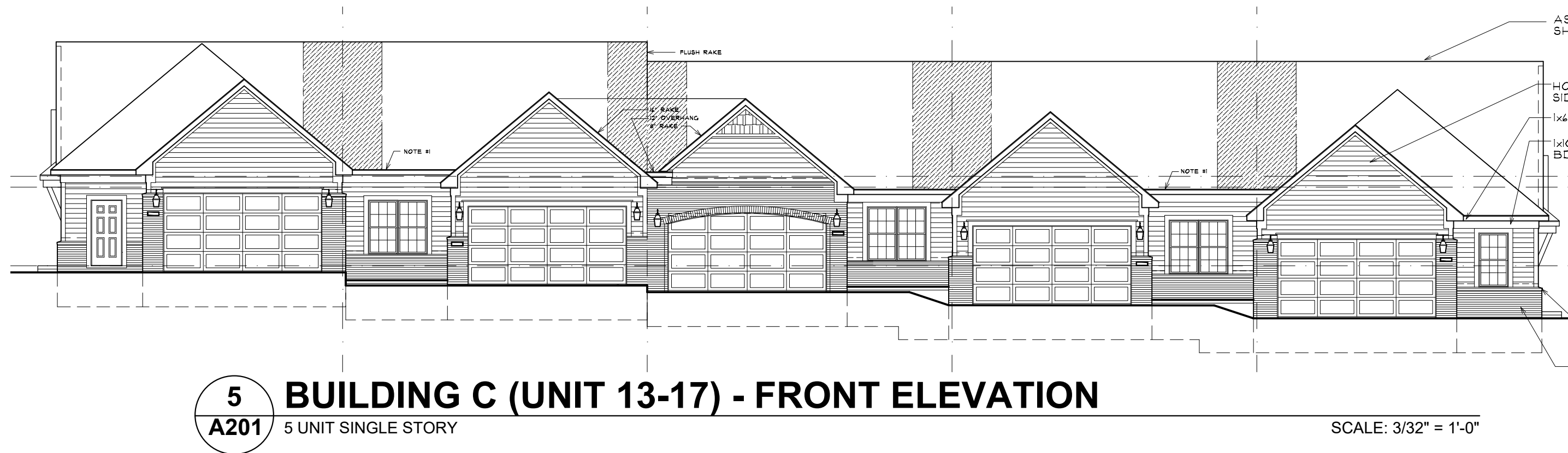
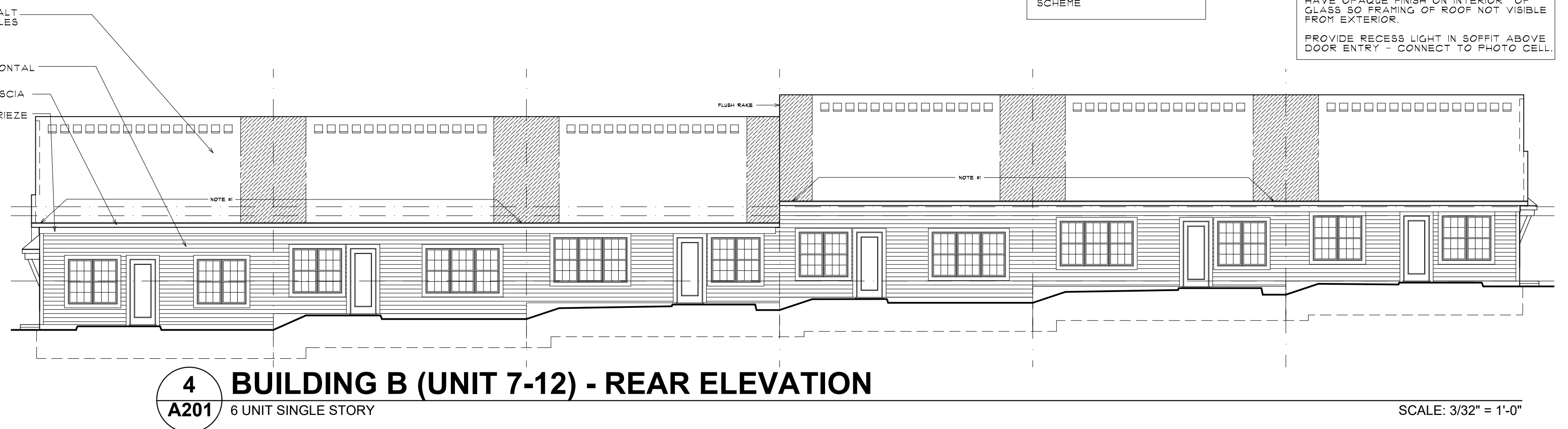
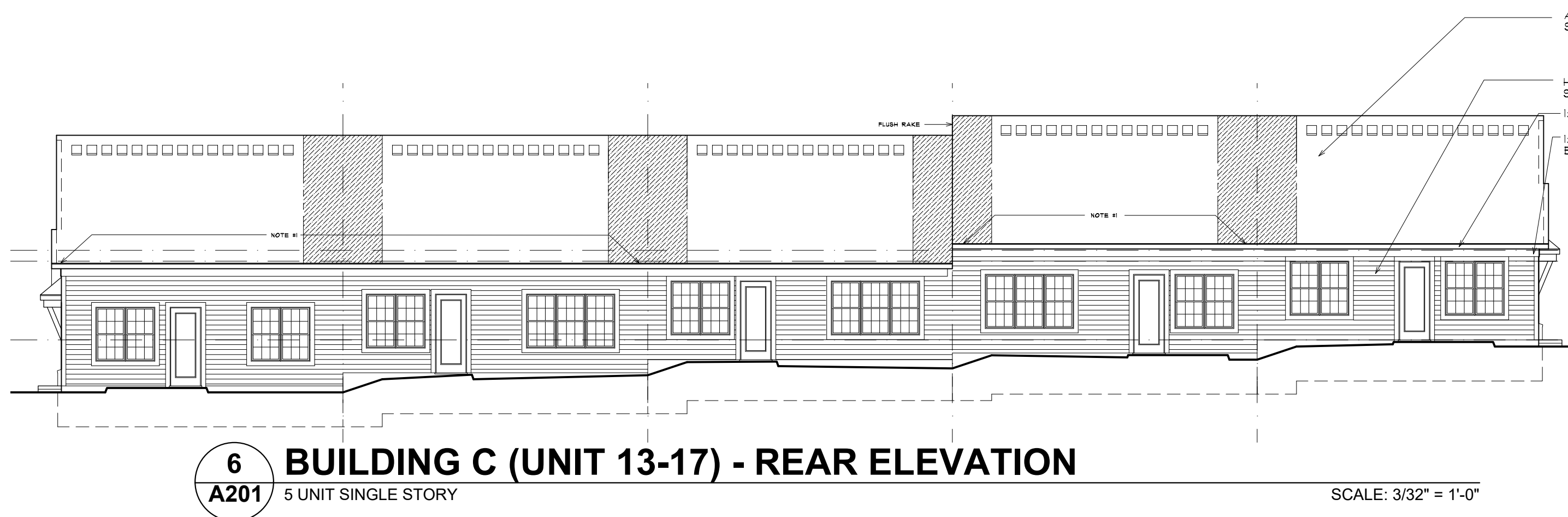


NOTE:
REFER TO 1/4" SCALE ELEVATIONS ON SHEET A102 FOR ADDITIONAL NOTES AND DIMENSIONS. SEE SHEET S-1 FOR COLOR SCHEME OF BUILDINGS.

NOTE #1:
RAISE HEELS AS NECESSARY TO ELIMINATE STEPPING IN ROOF.

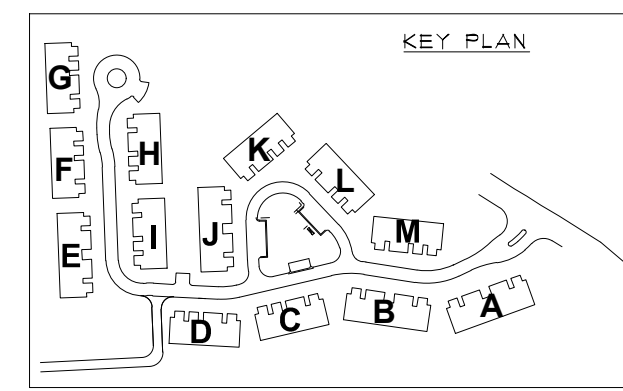
NOTE #2:
SEE AS-1 FOR INDIVIDUAL BUILDING COLOR SCHEME

NOTES
ALL EXTERIOR TRIM TO BE ALUMINUM WRAPPED OR VINYL. VERIFY EXACT LOCATIONS FOR EACH MATERIAL WITH OWNER PRIOR TO CONSTRUCTION.
PROVIDE PEEP HOLES AND DEAD BOLTS AT ALL FRONT ENTRY DOORS. SEE BUILDER FOR SPECIFICATIONS.
ALL DRYWALL TO BE READY TO BE PAINTED.
BRICK ROWLOCK SILLS MAY BE REPLACED WITH PRECAST STONE OR CONCRETE. VERIFY WITH BUILDER PRIOR TO CONSTRUCTION.
FIXED GLASS WINDOWS IN GABLES TO HAVE OPAQUE FINISH ON INTERIOR OR GLASS SO FRAMING OF ROOF NOT VISIBLE FROM EXTERIOR.
PROVIDE RECESS LIGHT IN SOFFIT ABOVE DOOR ENTRY - CONNECT TO PHOTO CELL.



ALL INTERIOR PARTITION DIMENSIONS ARE 3 1/2" UNLESS NOTED OTHERWISE.
 BEFORE CONSTRUCTION OBTAIN WINDOW & DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER.
 SEE SHEETS N-1 - N-4 FOR ADDITIONAL DETAILS REGARDING DRAWINGS & CONSTRUCTION.
 SEE SHEETS D1-D4 FOR ADDITIONAL NOTES REGARDING DRAWINGS & CONSTRUCTION.
 DO NOT SCALE THESE DRAWINGS. USE CALCULATED DIMENSIONS. IF VARIATIONS OCCUR CONTACT ARCHITECT FOR CLARIFICATION.

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NOTE:
 REFER TO 1/4" SCALE ELEVATIONS ON SHEET A103 FOR ADDITIONAL NOTES AND DIMENSIONS. SEE SHEET S-1 FOR COLOR SCHEME OF BUILDINGS.

NOTE #1:
 RAISE HEELS AS NECESSARY TO ELIMINATE STEPPING IN ROOF.

NOTE: SEE AS-1 FOR INDIVIDUAL BUILDING COLOR SCHEME

NOTES

ALL EXTERIOR TRIM TO BE ALUMINUM WRAPPED OR VINYL. VERIFY EXACT LOCATIONS FOR EACH MATERIAL WITH OWNER PRIOR TO CONSTRUCTION.

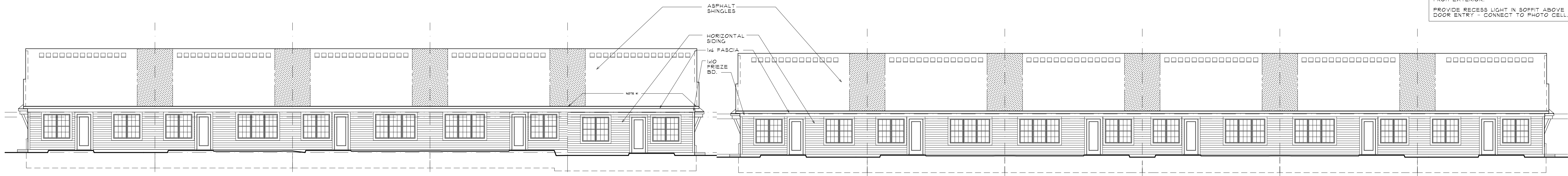
PROVIDE PEEP HOLES AND DEAD BOLTS AT ALL FRONT ENTRY DOORS. SEE BUILDER FOR SPECIFICATIONS.

ALL DRYWALL TO BE READY TO BE PAINTED.

BRICK ROWLOCK SILLS MAY BE REPLACED WITH PRECAST STONE OR CONCRETE. VERIFY WITH BUILDER PRIOR TO CONSTRUCTION.

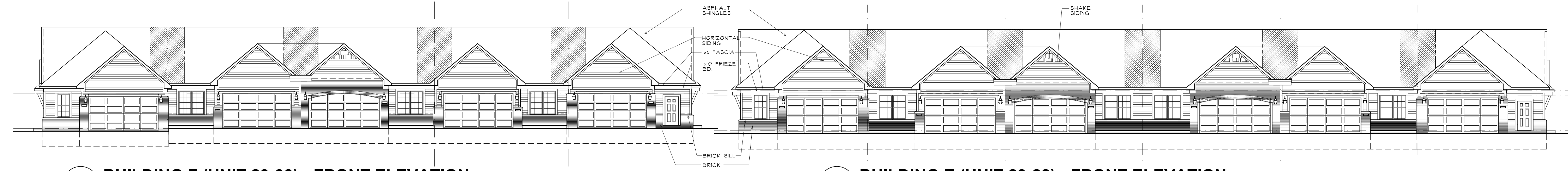
FIXED GLASS WINDOWS IN GABLES TO HAVE OPAQUE FINISH ON INTERIOR OR GLASS SO FRAMING OF ROOF NOT VISIBLE FROM EXTERIOR.

PROVIDE RECESS LIGHT IN SOFFIT ABOVE DOOR ENTRY - CONNECT TO PHOTO CELL.



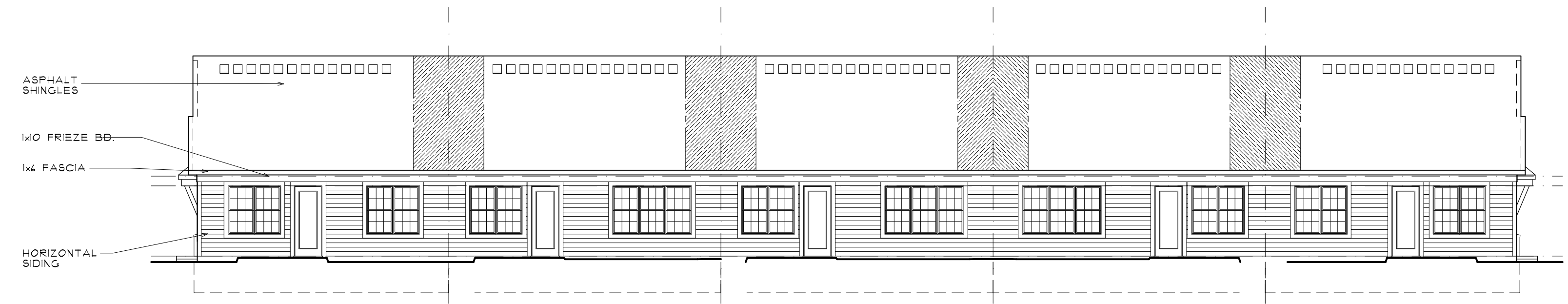
6 BUILDING F (UNIT 29-33) - REAR ELEVATION
 A203 5 UNIT SINGLE STORY SCALE: 3/32" = 1'-0"

4 BUILDING E (UNIT 23-28) - REAR ELEVATION
 A203 6 UNIT SINGLE STORY SCALE: 3/32" = 1'-0"

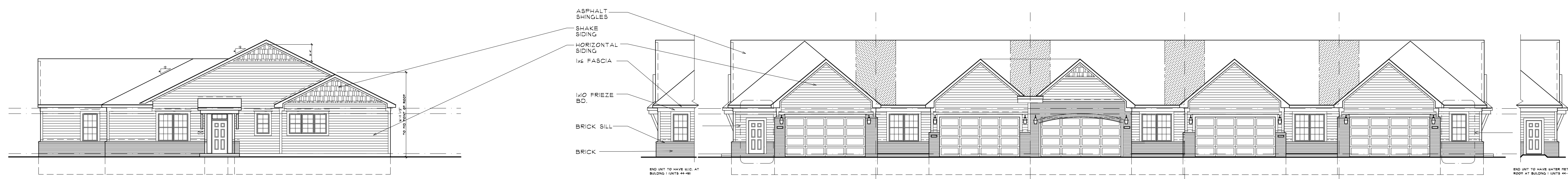


5 BUILDING F (UNIT 29-33) - FRONT ELEVATION
 A203 5 UNIT SINGLE STORY SCALE: 3/32" = 1'-0"

3 BUILDING E (UNIT 23-28) - FRONT ELEVATION
 A203 6 UNIT SINGLE STORY SCALE: 3/32" = 1'-0"



2 BUILDING D & I (UNIT 18-22 & 44-48) - REAR ELEVATION
 A203 5 UNIT SINGLE STORY SCALE: 3/32" = 1'-0"



7 TYPICAL RIGHT SIDE ELEVATION
 A203 TYPICAL LEFT SIDE - OPP. HAND SCALE: 3/32" = 1'-0"

1 BUILDING D & I (UNIT 18-22 & 44-48) - FRONT ELEVATION
 A203 5 UNIT SINGLE STORY SCALE: 3/32" = 1'-0"

ALL INTERIOR PARTITION DIMENSIONS ARE 3 1/2" UNLESS NOTED OTHERWISE.

BEFORE CONSTRUCTION OBTAIN WINDOW & DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER.

SEE SHEETS N-1 - N-4 FOR ADDITIONAL DETAILS REGARDING DRAWINGS & CONSTRUCTION.

SEE SHEETS D1-D4 FOR ADDITIONAL NOTES REGARDING DRAWINGS & CONSTRUCTION.

DO NOT SCALE THESE DRAWINGS. USE CALCULATED DIMENSIONS. IF VARIATIONS OCCUR CONTACT ARCHITECT FOR CLARIFICATION.

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1 SITE PLAN
 NOTE: SITE PLAN SHOWN FOR REFERENCE ONLY. REFER TO CIVIL ENGINEERING DRAWINGS FOR ALL ADDITIONAL INFORMATION.
 Scale: NONE

2 COLOR SCHEMES
 Scale: NONE

FUNARI: WEST VALLEY EXTERIOR MATERIALS AND FINISHES Updated: 10-18-2022

Scheme A	Brampton Brick Crossroads Series "Whitestone". Queen Size	Variform American Herald: Board & Batten 5.5" x 1.5", Double 5" Horizontal Siding. Color: Rich Mocha	Vinyl Trim: Dover White	Variform Heritage Cedar Shake Siding: Double 5" exposure. Color: Wedgewood	Front Entry Door Paint: Sandstone	Garage: Mid America Vinyl Shutters in Black #02	Roof Shingles: Certaineed "Landmark Series" Weathered Wood
Scheme B	Brampton Brick Crossroads Series "Crawford". Queen Size	Variform American Herald Board & Batten 5.5" x 1.5", Double 5" Horizontal Siding. Color: Sandy Tan	Vinyl Trim: Heritage Linen	Variform Heritage Cedar Triple 5" exposure. Color: Island Pearl	Front Entry Door Paint: Desert Tan	Garage Door: Mid America Vinyl Shutters in Midnight Blue #166	Windows & Railings: Black
Scheme C	Brampton Brick Crossroads Series "Greystone". Queen Size	Variform American Herald Board & Batten 5.5" x 1.5", Double 5" Horizontal Siding. Color: Mountain Clay	Vinyl Trim: Heritage Linen	Variform Heritage Cedar Triple 5" exposure. Color: Lakeshore Fern	Front Entry Door Paint: Desert Tan	Garage Door: Mid America Vinyl Shutters in White #01	Trex Decking in Rocky Harbor. Scheme A Trex Decking in Coastal Bluff. Scheme B & C

Note: Photos are a digital representation of specified materials. All Materials to be similar/equal. Refer to Architect's renderings and construction drawings for material locations.

Item A.

Alexander V. Bogaerts + Associates, P.C. • Architecture • Planning • Interior Design
 2445 Franklin Road
 Bloomfield Hills, MI 48302
 248 • 334 • 5000

WEST VALLEY MULTIFAMILY COMMUNITY
 WHITE LAKE, MICHIGAN

AS-1

CLIENT/PROJECT: WEST VALLEY MULTIFAMILY COMMUNITY
 COPYRIGHT 2021 ALEXANDER V. BOGAERTS + ASSOC.
 PRELIMINARY 08-19-19
 BIDS 00-00-00
 PERMITS 06-15-21
 CONSTRUCTION 00-00-00
 REVISIONS 22-10-18 OWNER SCHEMATIC RESPONSE 2024 02 07
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 CAD FILENAME: UNITPLANS.DWG
 CHECKED BY: TM
 JOB NUMBER: 8140
 DATE: DATE HERE
 SHEET NUMBER: 96